

Lab 1: Review of Static Routing

Or: A quick check on how much Routing you remember!

What you will do:

1. Review the use of Packet Tracer GUI and CLI modes
2. Configure IP addresses on loopbacks and ethernet interfaces
3. Configure a default route
4. Configure static routes to loopbacks and networks
5. Verify *full* end-to-end reachability everywhere throughout the topology
6. Demo your working configuration

Things that you will need to know or learn:

1. How to access the BrightSpace page for this course (to download a version of PT)
2. How to access the course web site (to download the PT file and these instructions)
3. How to configure IP addresses on ethernet interfaces on a Cisco router
4. How to configure a loopback on a Cisco router
5. How to configure a default route
6. How to configure a static route to a remote network

What you need to submit and when:

1. There is no pre-lab quiz 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 9**) @ **10am**

Required Equipment:

- **Wed** Lab: Lab01-StaticRouting-Empty.pkt from course web site
- **Mon** Lab: Lab01-StaticRouting-IpAddrs.pkt from course web site
- PC on which you can install Packet Tracer
(NB: this would be a *new* installation; you may *need* version PT 6.2)
- Hard-cover lab notebook, for reference during SBA at the end of the course.
- Internet access

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 that you still know how to configure interfaces (loopback, ethernet)

[1 mark] Verify and Prove that you still know how to configure static routes properly

[1 mark] Verify and Prove that you have completed all required static routes for full reachability

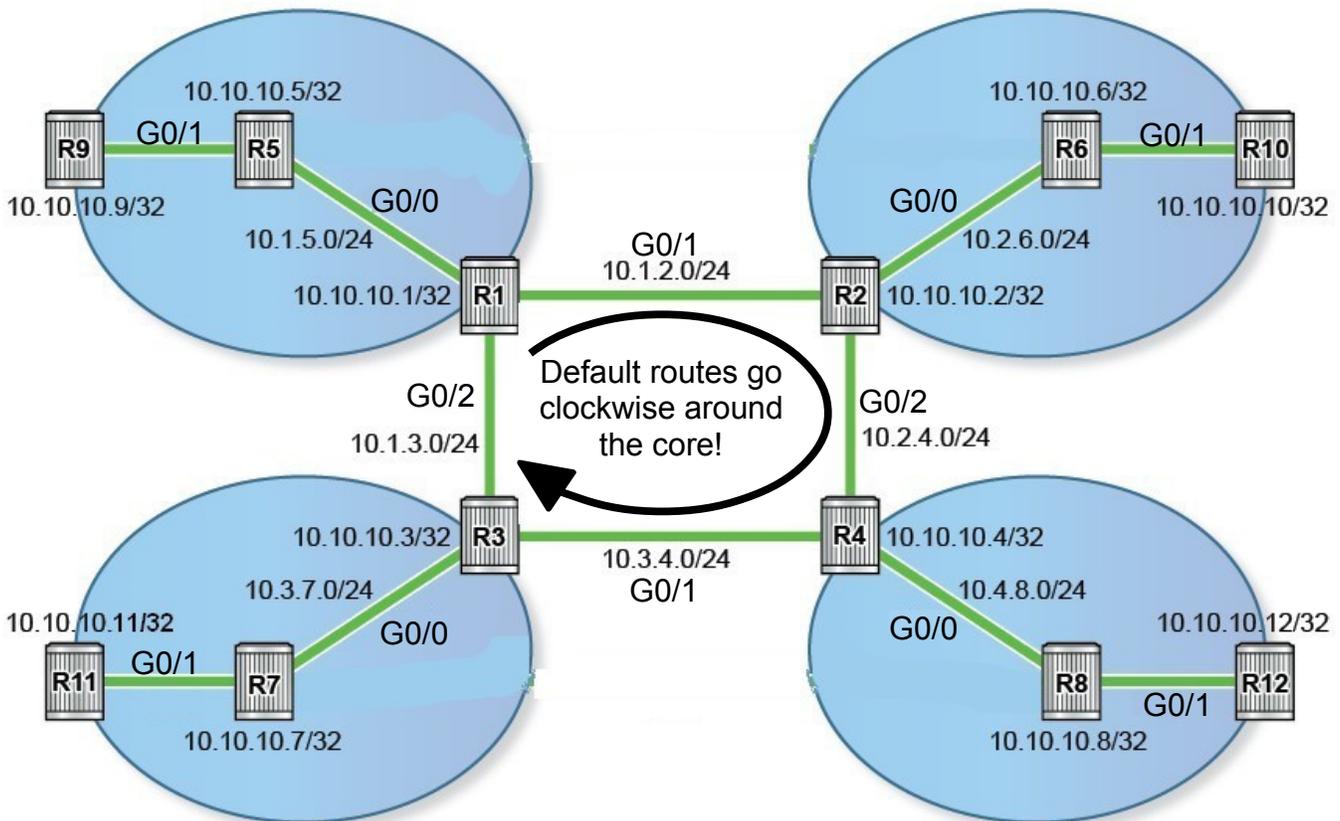
10% of your final mark is for labs done during the course of the semester.

References and Resources:

- Cisco NetAcad portal; <https://www.netacad.com>
- Algonquin LMS: <https://brightspace.algonquincollege.com>
- course notes and Lab notebook from NET1006
- Topology diagram (next page)

Topology

This is the full network *topology* for this exercise (and possibly labwork in future courses). Understanding the rationale behind the cabling and addressing makes it much easier to remember all the values. If you become familiar with this topology, you don't need to constantly flip back to it!



Notice the correlation between router number and:
(i) subnet numbering; (ii) loopback address!

Task 1: Verify Access To Your Accounts

Step 1. Verify your access to NetAcad

NOTE: Cisco changed their setup; your account is now based on your Algonquin email address and your existing password. If need be, do password recovery.

Step 2. Verify your access to BrightSpace

Step 3. Verify your access to the course site and download:

Lab01-StaticRouting-Empty.pkt or **Lab01-StaticRouting-IpAddrs.pkt**

(see link in BrightSpace for all lecture notes, especially for Wk01Day1)

Step 4. Download and install the Packet Tracer, as available on BrightSpace:

If this were a checkpoint (for 1 mark), how would you conclusively prove to the Professor that you've got access to these accounts?

Task 2: Configure Ethernet and Loopback Interfaces (Mon lab: skip this section)

Step 1. Follow the addressing scheme on the topology above (duplicated in the PT network) and configure the loopback and Gigabit ethernet interfaces for all 12 routers.

CHECK POINT #1: Figure out the most efficient way you can demo/prove to the Professor that you've correctly configured the interfaces.

Task 3: Configure Default Routes on the 4 Core Routers

Step 1. For all four core routers (R1 to R4), configure a single default static route to the adjacent router in a *clock-wise* direction: R1 --> R2, R2 --> R4, etc.

Step 2. Thoroughly test & troubleshoot your configuration! From each router, ping every other link in the core as well as the 4 core router loopback addresses. Keep testing & troubleshooting until every ping succeeds.

Step 3. Thoroughly test & troubleshoot your configuration some more! Figure out the extended form of the ping command so that you can use the local loopback as the ping source. Test connectivity to every other core router.

CHECK POINT #2: Demo a ping sourced from one core router's loopback to the adjacent core router.

Task 4: Configure Static Routes, Quadrant-by-quadrant, for Full reachability

Step 1. For all three routers within a single quadrant, configure static routes so that each router can ping all other addresses within the quadrant. Don't forget routes for the loopback interfaces!

Step 2. As in the previous task, thoroughly test and troubleshoot your configuration.

Note that in addition to specific static routes, each of the two outer routers should use a default route (How many? One? Multiple? To where?).

CHECK POINT #3: Demo a successful ping sourced from loopback of one router at the outer edge to the diagonally opposite edge router's loopback. Then do the reverse!

Task 5: 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.

Time Permitting: This lab contains some excellent work to do at the beginning of the term. But that's not all: what's the hidden agenda about what you were supposed to learn with this lab??