

The following notes for the NET3012-IP Architectures and Solutions course are based on the Nokia MPLS (p/n 3HE02276AA) and Nokia Services Architecture (p/n 3HE02277AA) courses from the Alcatel-Lucent Service Routing Certification Program curriculum. These are copyrighted products of Nokia.

Lab 1: Introduction to the Nokia SR7750 CLI

Or: Cards, MDAs, Interfaces, and static routing

What you will do:

1. Use the Aventail remote access VPN, connect to the lab equipment.
2. Investigate CLI basics for the SR7750 family of devices and naming conventions.
3. Learn important basic commands for configuring the installed cards & modules.
4. Configure hostname, system and hardware interface addresses, and static routes.
5. Capture all configs using your terminal program's logging facility.
6. Save configs

Things that you will need to know or learn:

1. Current Aventail credentials for In-lab sessions
2. Topology of the Nokia lab infrastructure (see next page)
3. CLI commands for configuring interfaces and static routing

What you need to submit and when:

1. Complete the pre-lab (Nokia account creation), **before** the start of your next lab period.
2. Complete the in-lab part of the exercise (see below), **before** the end of this lab period.
3. Complete the "Lab 1 Post-lab" exercise on Blackboard, **before** the assigned due date.

Required Equipment:

- USB memory stick to save results for post-lab questions
- Hard-cover lab notebook, for reference during SBA at the end of the course.
- PC with internet access, Java, and terminal program; eg. Putty (Provided in T108)

Marks:

Each of the lab parts identified above are weighted equally, even though they may have a different number of points assigned to them.

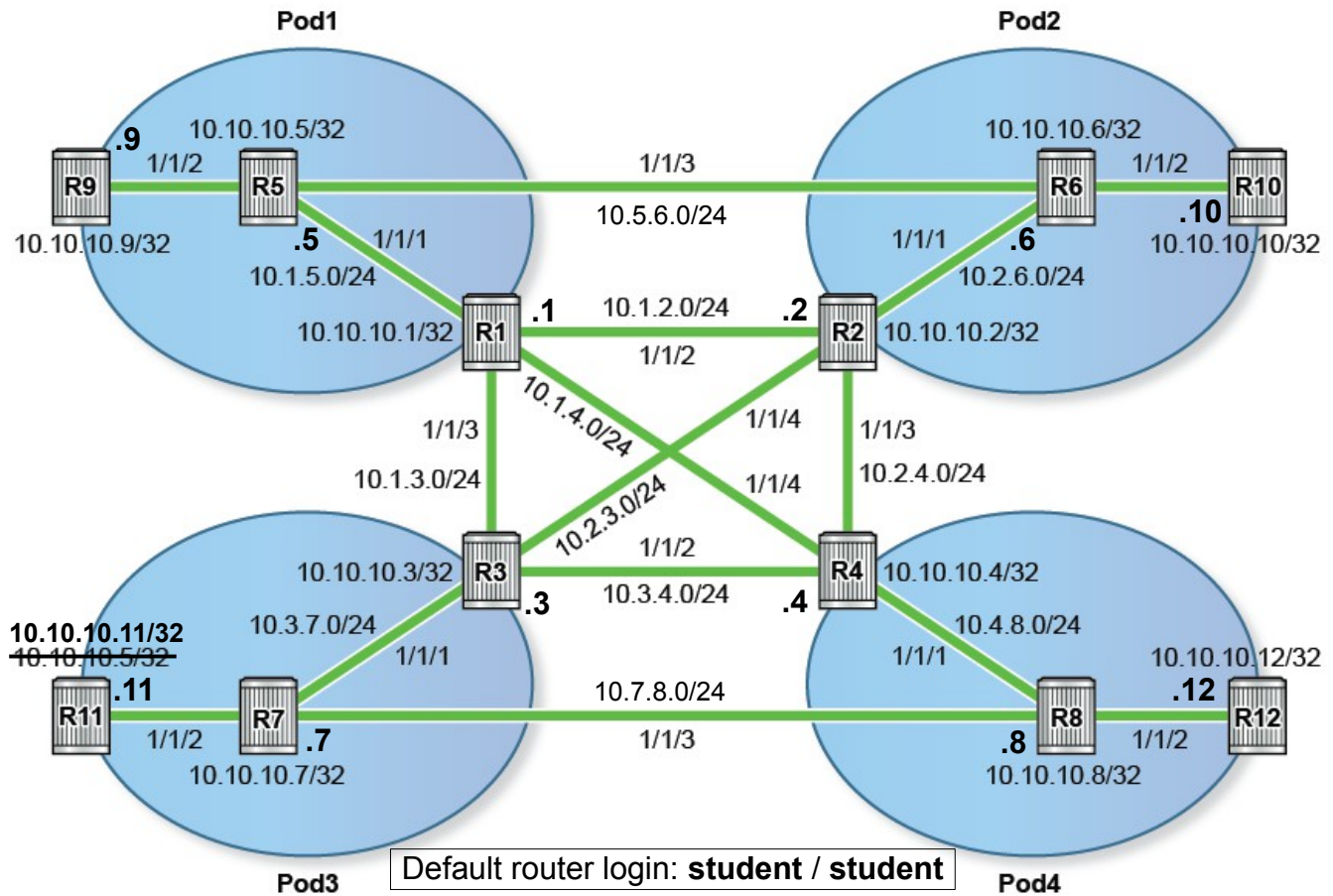
10% of your final mark is for labs done during the course of the semester.

References and Resources:

- Emails sent to your Algonquin college email address during the first week of classes
- ebook and eTextbooks to which you will gain access via your Nokia and Adobe accounts
- Topology diagram (next page)
- Command reference (see below)
- MyNetworkLab: remote-access lab facility hosted at Nokia's Kanata campus

Topology

This is the full network *topology* available to us during weekly labs for the rest of the semester. We will use **Telnet** to access the devices. Understanding the rationale behind the cabling and addressing makes it much easier to remember all the values. You should become very familiar with this topology (ie. memorize it!) so that you don't need to constantly flip back to it!



Addressing & Login Table

	Edu Lab 1	Edu Lab 2
R1	192.168.206.164	192.168.206.196
R2	192.168.206.165	192.168.206.197
R3	192.168.206.166	192.168.206.198
R4	192.168.206.167	192.168.206.199
R5	192.168.206.168	192.168.206.200
R6	192.168.206.169	192.168.206.201
R7	192.168.206.170	192.168.206.202
R8	192.168.206.171	192.168.206.203
R9	192.168.206.172	192.168.206.204
R10	192.168.206.173	192.168.206.205
R11	192.168.206.174	192.168.206.206
R12	192.168.206.175	192.168.206.207

Edu Lab 1 Login	Passwd	Edu Lab 2 Login	Passwd
src-otti01u1		src-otti02u1	
src-otti01u2		src-otti02u2	
src-otti01u3		src-otti02u3	
src-otti01u4		src-otti02u4	
src-otti01u5		src-otti02u5	
src-otti01u6		src-otti02u6	
src-otti01u7		src-otti02u7	
src-otti01u8		src-otti02u8	

See Blackboard for a list of passwords; write **yours** in the space above.

Command Reference

configure • system • name {name}
configure • system • login-control • idle-timeout 180

show card
configure • card {#} • card-type {card-type-from-show-command}

show mda
configure • card {#} • mda [#] mda-type {mda-name}

configure • router • interface **system** • address {address}
configure • router • interface {name} • address {address}
configure • router • interface {name} • loopback
configure • router • interface {name} • port {port}

configure • router • static-route {remote network /mask} next-hop {next-hop-address}

configure • port 1/1/X • no shutdown
configure • port 1/1/X • shutdown

pwc
tree
exit
back
info [detail]
admin • display-config
show • router • interface
show • router • route-table
show • router • static-route

trace {ip address}
ping {ip address}

environment • no more # Enable/disable pagination of output text
admin • save
history

Notes on the SR7750 CLI

- Help is available by using the "?" key
- Command completion occurs whenever you hit the spacebar
- You have the choice of typing a complete, entire command on a single line, or entering deeper sub-levels (context) and providing addition detail (eg. like Cisco)
- **show run** sucks; now the **info** command shows you *only* what you've configured; **info detail** shows you all the config (ie. Including defaults); both versions give you configuration for the current context and below (no extra junk!)
- **admin display-config** is similar to **info**, except that it displays the entire configuration from the root level
- You have a choice of typing a complete, entire **show** command on a single line; or entering deeper sub-levels and providing additional specifiers for what you'd like.
- **tree** gives you a complete listing of all available commands from the current context

Task 1: Connect to an Edu Lab via Aventail

Required resources:

- a role & login credentials, as designated by the lab Professor
- the password for the month, as given by the lab Professor (also available on Blackboard)

- Step 1. Review the lecture notes to gain familiarity with the process (Wk01Day1 ~page 5)
- Step 2. Download the list of passwords (for this month!) from Blackboard (NET3012 Labs)
- Step 3. Experiment with different browsers (Firefox, Chrome, Internet Explorer) to find out which ones work for the remainder of the process in this task: Open a browser window and navigate to: <https://training-ottawa1.alcatel-lucent.com>
- Step 4. Type "student" for the service, then use your assigned login & password, and continue through the documented sequence, until you see the window identifying "Full Network Access"
- Step 5. Refer to the Addressing & Login Table (see above), then use Putty (or similar) to connect via Telnet (not SSH!) to your designated routers.

CHECK POINT #1: If there's more than 15 mins left in the lab period, continue with the next task. If not, ask the lab Professor to verify your connectivity.

Task 2: Confirm that the hardware is properly registered

Required resources

- "show card" and "show mda" commands

- Step 1. Confirm that the line IOM line card is UpUp using the "show card" command. If not, configure it using the commands given in the reference. (See below for sample output.)
- Step 2. Confirm that the **first** MDA is Up/Up using the "show mda" command. If not, configure it using the commands given in the reference. (See below for sample output.)

Card Summary

Slot	Provisioned Card-type	Equipped Card-type	Admin State	Operational State
1	iom-20g	iom-20g	up	up
A	sfm-400g	sfm-400g	up	up/active
B	sfm-400g		up	down/standby

MDA Summary

Slot	Mda	Provisioned Mda-type	Equipped Mda-type	Admin State	Operational State
1	1	m60-10/100eth-tx	m60-10/100eth-tx	up	up
	2		m60-10/100eth-tx	up	unprovisioned

CHECK POINT #2: If there's more than 30 mins left in the lab period, continue with the next task. If not, ask the lab Professor to verify your configuration of the hardware.

Task 3: Configure hostname, system & other interface addresses, and static routes

Use your general knowledge of network configuration, together with the command reference provided above, to configure a basic network setup.

- Core routers (R1-R4) should have a default route pointing to the **next router clockwise** as well as specific routes to associated PE and CE routers.
- PE routers (R5-R8) should have a default route to the core router as well as specific routes to the CE routers.
- CE routers (R9-12) should have a default route to the PE router.

Verify your configuration by pinging across all directly connected segments, then pinging to every other address in the topology.

CHECK POINT #3: If there's more than 15 mins left in the lab period, continue with the next task. If not, ask the lab Professor to verify your configuration of the hardware.

Task 4: Capture the configs for all your assigned routers

Did you remember to assign a hostname? (use a format of *RouterNumber-AlgNetID* eg. R1-ande0001) If not, do it now.

Using the logging facilities of your terminal program, capture the result of displaying each routers configuration. Save this to disk and *also* to an external drive (USB stick or other). Submit it to Blackboard.

Help any of your classmates who haven't yet succeeded in getting all the network configuration complete.

Accounts and Passwords

NB When required, you must supply your **Algonquin** email address to ensure consistency between Nokia systems, as well as with Adobe ID & DRM.

1. Nokia corporate web site
 - Required to get credits for weekly bookings for MyNetworkLab (for **all** post-lab exercises)
 - Login ID is based on your email address (use **Algonquin** email) + a chosen password (password rules: 8 char min, 1+ alpha characters; 1+ non-alphanumeric chars)
2. Adobe ID account (e.g. only one-time use)
 - For Adobe Digital Editions (ADE) unlocking of NRS II ebook; use your **Algonquin** email
3. PDF courseware from Nokia (every time you want to access to MPLS & SA notes)
 - sent in email titled "Algonquin Net3012 IP Architectures and Solutions Course - Access Your Nokia Courseware"
4. MyNetworkLab account
 - Login ID and password assigned to you; neither can be changed; received by email
5. Avenail Service identifier for In-lab access (ie. regular weekly In-lab period)
 - always **student**
6. Avenail account credentials for In-lab access (available on Blackboard)
 - login ID stays the same (e.g. `src-otti01u1`) but password changes every month
7. Credentials for router access during lab periods
 - always **student / student**
8. FTP account for saving, checking, restoring config files during In-lab access
 - **edu1 / dEEtgx2Y** or **edu2 / dEEtgx2Y** for each 1/2 of the class; **Rxx = R01, R02, ...**
~~mkdir: file md ftp://**edu1:dEEtgx2Y**@192.168.181.81/**Rxx**/ande0001~~
save: admin save ftp://**edu1:dEEtgx2Y**@192.168.181.81/**Rxx**/ande0001-L1.cfg
check: file dir ftp://**edu1:dEEtgx2Y**@192.168.181.81/**Rxx**/
restore: exec ftp://**edu1:dEEtgx2Y**@192.168.181.81/**Rxx**/ande0001-L1.cfg
9. Avenail Service identifier for MyNetworkLab access (other than In-lab period)
 - always **mynetworklab**
10. Avenail account credentials for MyNetworkLab access (other than In-lab period)
 - New numeric login ID and password for every booking; sent by email
11. Credentials for router access in MySRLab (other than In-lab period)
 - always **student / student**
12. FTP account for saving, checking, and restoring config files during MySRLab access (for non-inlab sessions) (Note: DNS for mysrlab = 192.168.181.90) **Ry = R1, R2, R3, ...**
 - same as #4 above (eg. your individual, assigned MyNetworkLAB login + password)
~~mkdir: file md ftp://{login}:{pswd}@mysrlab/**STD/Ry**/L2-OSPF~~
save: admin save ftp://{login}:{pswd}@mysrlab/**STD/Ry**/L2-OSPF.cfg
check: file dir ftp://{login}:{pswd}@mysrlab/**STD/Ry**/
restore: exec ftp://{login}:{pswd}@mysrlab/**STD/Ry**/L2-OSPF.cfg

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