BSc in Telecommunications Engineering

TEL3214

Computer Communication Networks

Mid-Semester Assignment

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1. Routing Lab Assignment

This exercise is to be carried out individually. Please SFTP the file to the address given in the notes section of the course when completed. You require the NTE_v2.0 or later VM for VirtualBox to complete the exercise which can be downloaded from:

- **http://www.netlabsug.org/NTE/**

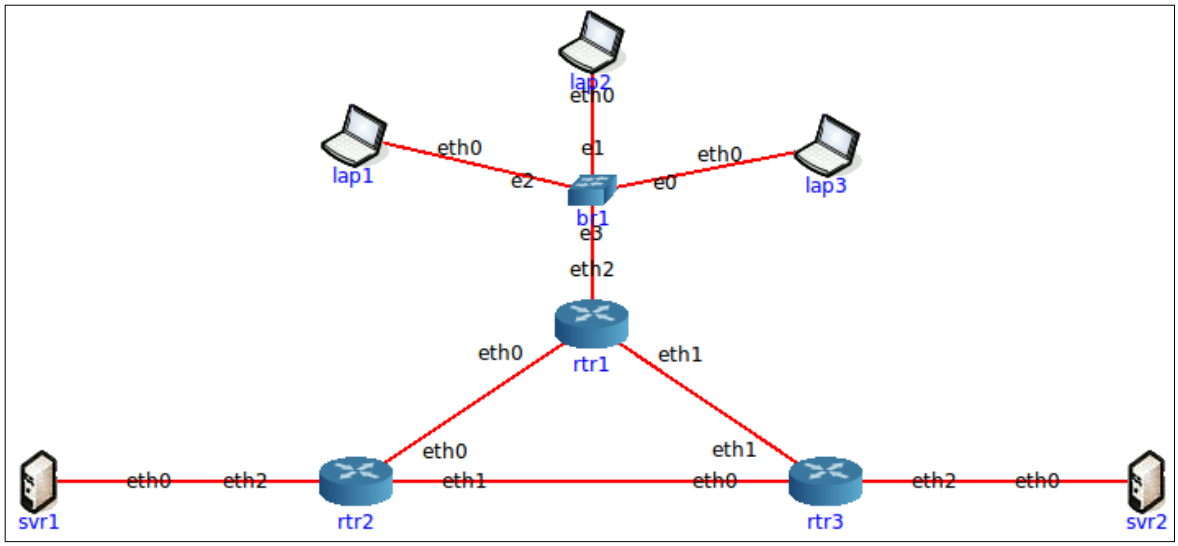

Illustration 1: Routing Lab

1.1 Instructions

1. Open T**EL3214-Routing2-Example.imn** in NTE
   i. File → Open
   ii. /home/net/TEL-3214-exercises/TEL3214-Routing2-Example.imn
   iii. Open
2. Build the network such that:
   i. Laptops (lap) are assigned IPv4 addresses by DHCP and IPv6 by SLAAC
   ii. Servers (svr) are assigned static IPv4 and IPv6 addresses.
   iii. Interlinks between routers (rtr) used /30 subnets from the range 192.77.203.0/24 for IPv4 and /127 from the range 2192:1::/112 for IPv6
   iv. Local interface addresses are assigned host routes (/32) from the 10.0.0.0/8 range for IPv4 and (/128) from 2010::/32 for IPv6
   v. Server networks will be assigned as /29 from the network 200.1.1.0/24 for IPv4 and /112 from the network 2200:1:1::/64 for IPv6
   vi. Laptop network will be assigned a /24 from the network 191.1.0.0/16 for IPv4 and 2191:1::/60 for IPv6
   vii. OSPF and OSPF6 routing protocols to be used
3. Return a **.txt** file with the name **<student IS>.txt** (example: 214074652.txt) as follows:

1.2 File format

```
Student Number: <Number>
Registration number: <Number>
Student family name: <Name>
Student given name: <Name>
--
nte@NTE-i386:~$ blkid | grep -oP 'UUID="\K[^"]+' | sha256sum | awk '{print $1}'
--
rtr1# show ip route
< Result>
–
rtr1# show ipv6 route
< Result>
--
rtr2# show ip route
< Result>
--
rtr2# show ipv6 route
< Result>
--
rtr3# show ip route
< Result>
--
rtr3# show ipv6 route
< Result>
--
nte@NTE-i386:~$ brctl show
< Result>
--
svr1# ip addr list
< Result>
--
svr2# ip addr list
< Result>
--
lap1# ping -c1 <IP svr1>
< Result>
--
lap1# ping6 -c1 <IP svr1>
< Result>
--
lap2# ping -c1 <IP svr2>
< Result>
--
lap2# ping6 -c1 <IP svr1>
< Result>
--
lap3# traceroute <IP svr1>
< Result>
--
lap3# traceroute6 <IP svr1>
< Result>
--
```

1.3 Returning the file

Use the SFTP protocol to return the file to me. From the directory containing the file you created do the following (assuming the file is 214074652.txt):

```
ada@lovelace:~$ ssh <username>@netlabsug.org
<username>@netlabsug.org's password: <password>
Connected to netlabsug.org.
sftp> put 214074652.txt
Uploading 214074652.txt to /home/ccn/214074652.txt
214074652.txt                         100%    0     0.0KB/s   00:00
sftp>
```

<username> and **<password>** will be given by e-mail.

Windows users will need to download an SFTP client from:

https://www.ssh.com/ssh/putty/download

Alternatively use the shell within the NTE VM to SFTP the files as shown above.