S1E4 - Introduction to the Arista CLI, continued

Nicholas Morrison nick@nanocat.net

Connecting to the Lab Server

To quickly delete an old ssh fingerprint from your known_hosts file:

```
$ ssh-keygen -R netlab.nanocat.net
# Host netlab.nanocat.net found: line 83
# Host netlab.nanocat.net found: line 84
/Users/nickm/.ssh/known_hosts updated.
Original contents retained as /Users/nickm/.ssh/known_hosts.old
$
```

To connect to the lab server:

```
$ ssh lab@netlab.nanocat.net
The authenticity of host 'netlab.nanocat.net (167.235.49.166)' can't be established.
ED25519 key fingerprint is SHA256:x/Rrd66apuL9new7ewxpcR7cuKg9/yHL/JejJzPxmBk.
This host key is known by the following other names/addresses:
    ~/.ssh/known_hosts:85: 167.235.49.166
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'netlab.nanocat.net' (ED25519) to the list of known hosts.
lab@netlab.nanocat.net's password: (provided elsewhere!)
```

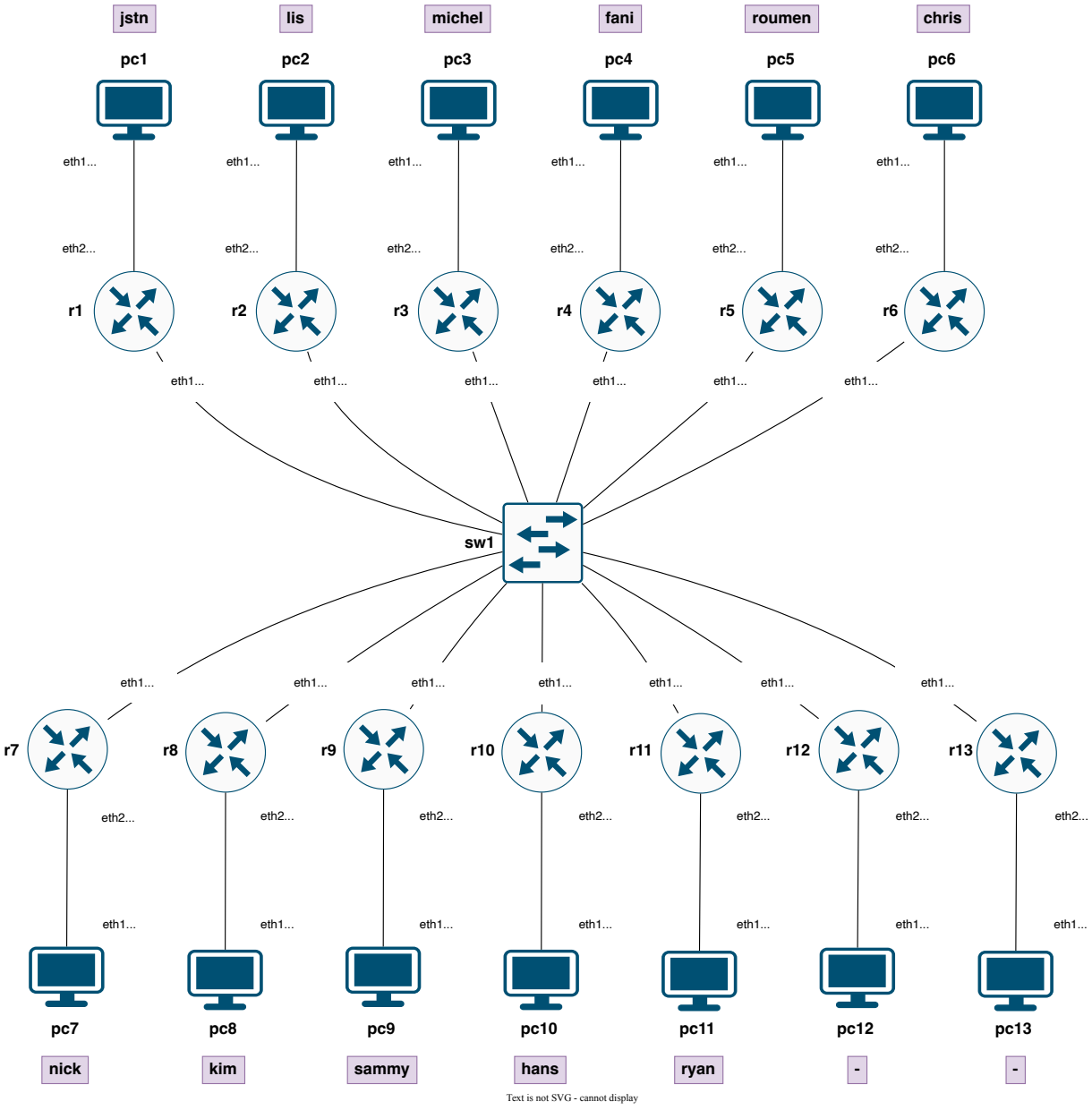
Sources

Topology: five-routers-five-pcs

If you want to, you can clone this repository to your own computer. **This isn't necessary to complete the workshop!**

```
$ git clone git@code.nanocat.net:nickm/networking-workshops.git
.....
$ cd networking-workshops/topologies
$ ls -la
```

Diagram



The Final Goal

All PCs (pc1 through pc5) should be able to ping one another.

- Work step by step!
- Refer to s1e3-arista-cli for reminders (perhaps keep this open in a tab for reference)
- Ask questions
- Experiment! You can't break anything.

Step 1 - configure eth1

The first step is to configure the IP address on your router's `eth1` interface.

Connecting:

```
$ sudo containerlab inspect --all          <- show all running devices
$ sudo docker exec -it DEVICE-NAME Cli     <- connect to an Arista
```

Configure as follows:

```
rX#config                                   <- enter configuration mode

rX(config)#interface eth1                   <- enter the interface
                                               configuration context

rX(config-if-eth1)#show active              <- shows the configuration
                                               just for this context

rX(config-if-eth1)#description to Switch    <- create a human-readable
                                               description for this
                                               interface

rX(config-if-eth1)#no switchport            <- make this a routed (L3)
                                               port (default is switched
                                               (L2) port)

rX(config-if-eth1)#ip address 10.0.0.x/24   <- refer to the diagram
rX(config-if-eth1)#show active
rX(config-if-eth1)#end                      <- exit configuration mode

rX#show ip interface brief                  <- print a list of all
                                               interfaces with an IPv4
                                               (L3) address
...
```

Test by seeing if you can ping another router's IP address! You might need to ask your lab-mates whether they have already configured their devices.

```
rX#ping 10.0.0.X
...
```

Step 2 - configure eth2

This is the interface that connects to the PC.

This interface will serve as the **default gateway** or **gateway of last resort** for the PC.

Configure as follows:

```
rX#config
rX(config)#interface eth2
```

```
rX(config-if-eth2)#show active
rX(config-if-eth2)#description to PC
rX(config-if-eth2)#no switchport
rX(config-if-eth2)#ip address 192.168.X.1/24   <- refer to the diagram
rX(config-if-eth2)#show active
rX(config-if-eth2)#end                      <- fully exit configuration mode
rX#show ip interface brief            <- print a list of all interfaces with a IPv4 (L3) address
...
```

Test to see if you can ping your PC (`192.168.X.2`)

```
rX#ping 192.168.X.2
```

Step 3 - configure some static routes

- The when the router receives a packet, it checks the destination of the packet to decide which interface to forward it out of.
- The router uses a **routing table** to make this decision.
- There are different ways for a routing table to become populated with data.
  - Static routes
  - Dynamic routes

Configure a static route:

```
rX#show ip route                              <- take a look at the routing table
...
rX#configure
rX(config)#ip route 192.168.X.0/24 10.0.0.X   <- when I have a packet that is destined for
                                                 192.168.X.something, forward it on to 10.0.0.x
rX(config)#end
rX#show ip route                              <- take another look at the routing table
...
```

Repeat this for all of the remote networks.

Test by pinging a remote PC from your own PC. You might have to check with the other lab members to make sure they're up and running.

```
pcX$ ping 192.168.X.2
```

You can also try a traceroute:

```
pcX$ traceroute -n 192.168.X.2    <- the -n tells traceroute not to try to resolve the IP
                                     addresses into names
...
```

Things to try

- Run a tcpdump on your router:

```
rX#bash
$ tcpdump -i eth1 icmp          <- listen for traffic on eth1, and only print ICMP (ping) packets
...
(press ctrl-c to terminate tcpdump)
```

- Watch what happens when you send a successful ping
- .. or an unsuccessful ping
- .. or a ping to an unknown network

Questions

- Are the routers in the same network, or different networks?
- Which devices are in the same network as the PCs?