

Lab exercise: build an internet

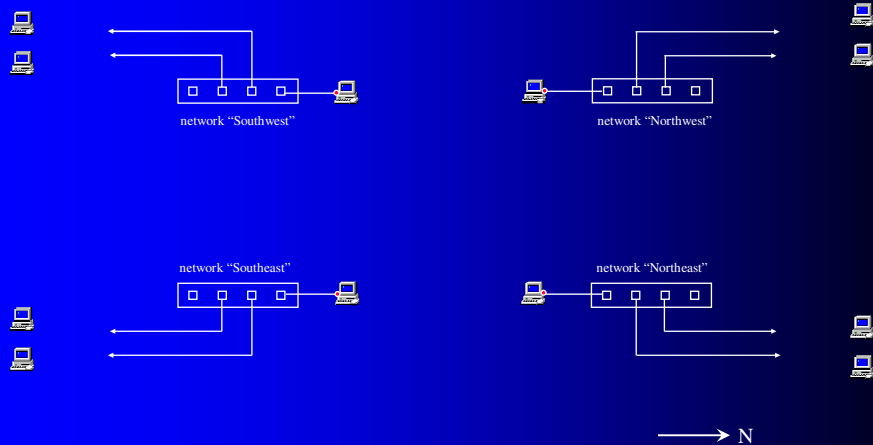
David Morgan

Your localnet ingredients

- 1 switch or hub, with power supply
- 3 laptops
- 3 cables

Construct your localnets

task: enable internal ping

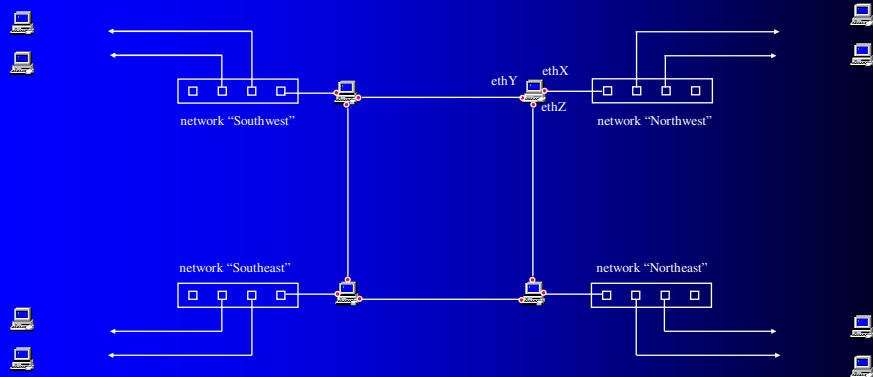


Your internet ingredients

- 2 USB NICs
- 2 cables (to be shared between your net and another one)

Construct your internets

task: enable external/universal ping



How many distinct, separate local networks are shown?
Be sure you are able to identify each by drawing a circle around it.

→ N

Reference – linux syntax

- host route - to a single machine
 - route add –host 192.168.4.2 eth0
- network route, local - to a group of machines
 - route add –net 192.168.4.0 netmask 255.255.255.0 eth0
- network route, thru gateway - to a group of machines
 - route add –net 192.168.5.0 netmask 255.255.255.0 gw 192.168.4.1
- default route - to “any and all” else
 - route add default gw 192.168.4.1

Reference – linux syntax

- Forwarding enabler

```
echo 1 > /proc/sys/net/ipv4/ip_forward
```

- Masquerading

```
iptables -t nat -A POSTROUTING  
-o <outgoing interface> -s <internal network>  
-j SNAT --to <outgoing interface's IP>
```

- Firewalling

```
iptables -A OUTPUT  
-o <outgoing interface> -s <internal network>  
-j DROP
```

To undo masquerading or firewalling, replace “-A” with “-D” in the respective command

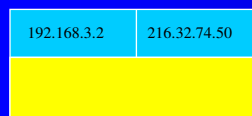
IP masquerading

a.k.a NAT (network address translation)

```
iptables -t nat -A POSTROUTING  
-o eth1 -s 192.168.3.0/24 -j SNAT --to 206.64.20.9
```



Outbound packet:



Reply:

