Lab exercise: build an internet

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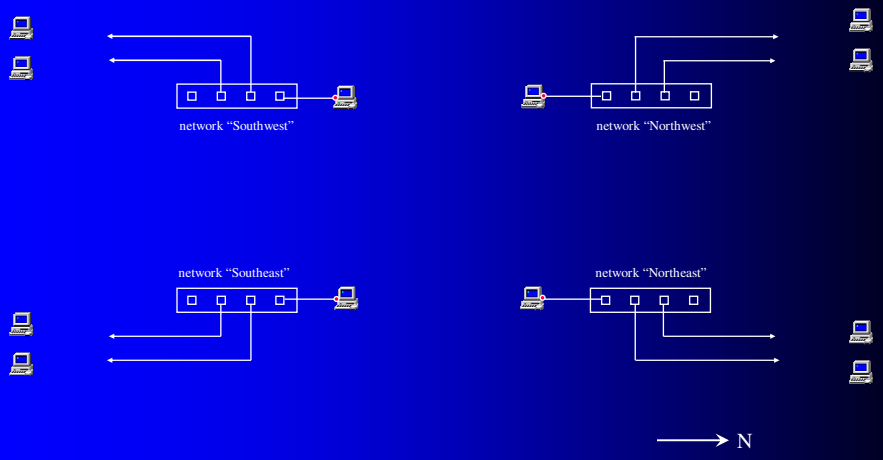
Your localnet ingredients

- 1 switch or hub, with power supply
- 3 hosts – 2 desktops, 1 laptop
- 1 USB NIC
- 3 cables

Construct your localnets

task: enable internal ping

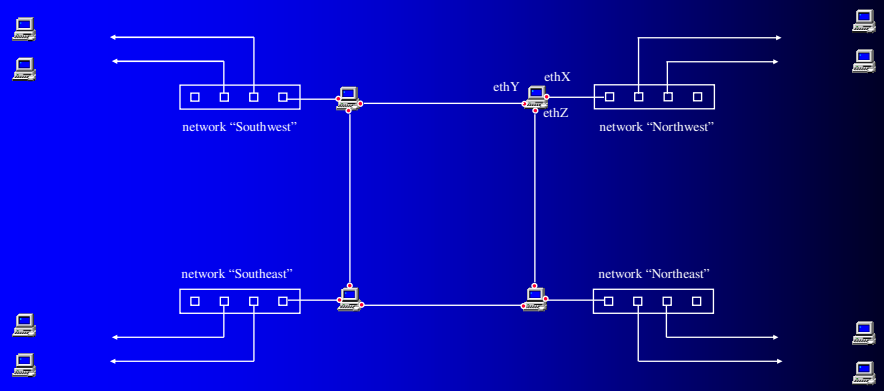


Your internet ingredients

- 1 USB NIC
- 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

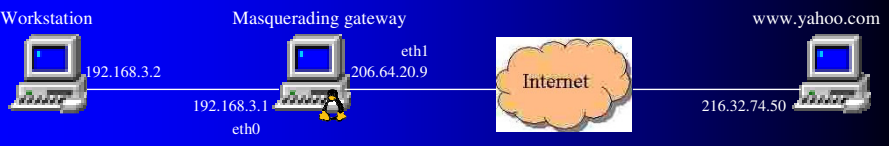
  iptables -A OUTPUT
  -o <outgoing interface> -s <internal network>
  -j DROP

To undo masqerading or firewalling, replace "-A" with "-D" in the respective command

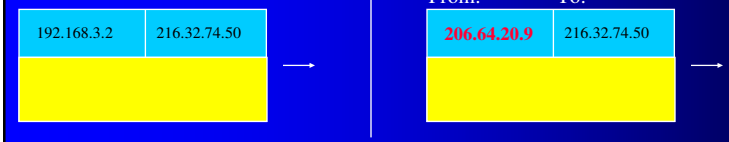
IP masquerading

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: