

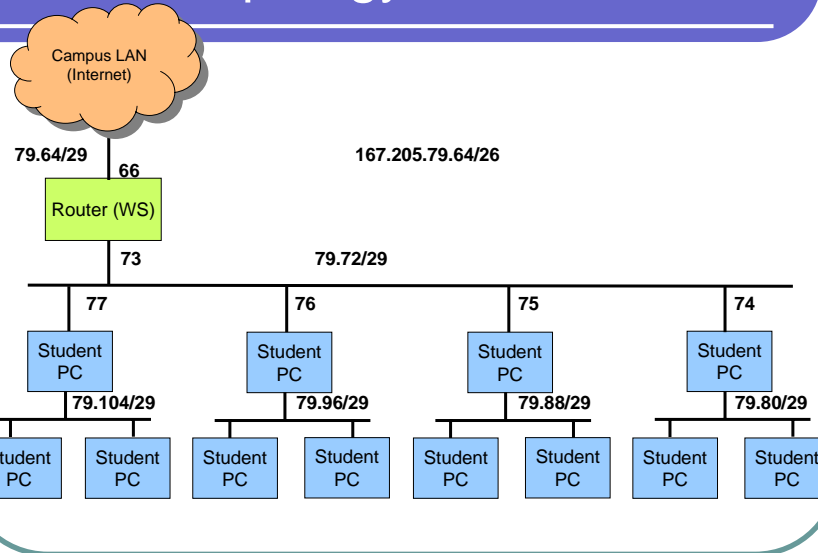
Building A Small Network with Router and Switch/Hub

Static Routing

Requirements

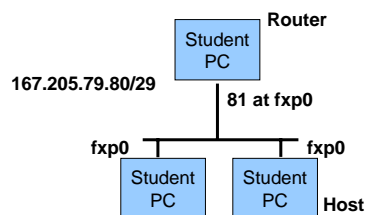
- Computer with Free BSD System Operation
- (At least) two network interface cards, certainly, for router
- Software :
 - ifconfig
 - route
 - netstat
 - arp
 - ping
 - traceroute

Network Topology



Configuring Host and Router at Participants' Site

- An example of UB participants' site
 - Network : 167.205.79.80/29
 - Host's Gateway : 167.205.79.81
 - Host's IP is participants' decision at fxp0



Configuring Host and Router at Participants' Site

- Host
 - Edit /etc/rc.conf
 - Configure IP for fxp0
 - ifconfig_fxp0
 - Configure the default gateway's IP
 - defaultrouter
 - Save the configuration
 - Reboot

Configuring Host and Router at Participants' Site

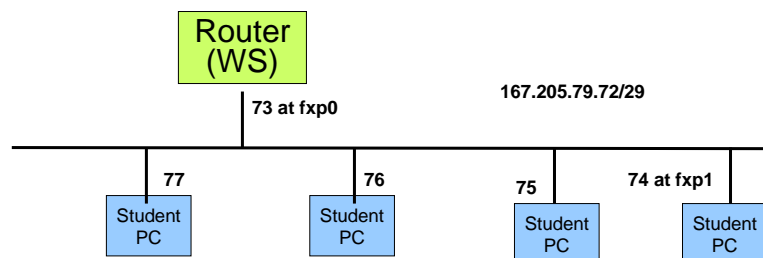
- Router at Site
 - Two interfaces :
 - Attached to network : 167.205.79.80/29
 - Router's IP at fxp0 : 167.205.79.81

 - Attached to network : 167.205.79.72/29
 - Router's IP at fxp1 : 167.205.79.74
 - Has default route to : 167.205.79.73
(To Router (WS))

Configuring Host and Router at Participants' Site

- Router at Site (cont.)
 - Edit file `/etc/rc.conf`
 - Configure fxp0 (IP, netmask, broadcast)
 - Configure fxp1 (IP, netmask, broadcast)
 - Configure default gateway's IP (167.205.79.73)
 - Change `gateway_enable="YES"`
 - Reboot
 - Show Routing table
 - `netstat -nr`

Configuring Host and Router at Participants' Site



Configuration on Router

- Router (namely WS)
 - Two interfaces
 - Attached to network : 167.205.79.72/29
 - fxp0 : 167.205.79.73
 - Attached to network : 167.205.79.64/29
 - fxp1 : 167.205.79.66
 - Edit /etc/rc.conf
 - Configure fxp0
 - Configure fxp1
 - Configure defaultrouter (167.205.79.65)
 - Change gateway_enable = "YES"
 - Reboot

Configuration on Router

- Router (namely WS) (cont.)
 - Adding routing table by executing these commands
 - route add -net 167.205.79.80/29 167.205.79.74
 - route add -net 167.205.79.88/29 167.205.79.75
 - route add -net 167.205.79.96/29 167.205.79.76
 - route add -net 167.205.79.104/29 167.205.79.77

Configuration on Router

- Save Static Routing on /etc/rc.conf
 - static_routes="route1 route2 route3 route4"
 - route_route1="-net 167.205.79.80/29 167.205.79.74"
 - route_route2="-net 167.205.79.88/29 167.205.79.75"
 - route_route3="-net 167.205.79.96/29 167.205.79.76"
 - route_route4="-net 167.205.79.104/29 167.205.79.77"

Configuration on Router

- Router (namely WS) (cont.)
 - Show routing configuration
 - netstat -nr -f inet

Checking Network Connection

- Show routing table of the Router Site
 - `netstat -nr -f inet`
- Then ping to host's IP of the other participant (ask your peer for the IP)
- Show routing table of the Router Site again (same way)

Saving Configuration of Routing

- The static routing added using route command is not permanent
- Save this in a file configuration in such a way that the routing configuration is loaded when the router is booting.
 - Edit file `/etc/rc.network`
 - Adding routing commands which have been described previously at last portion of this file.