



1. Remove your existing defaultroute:
route delete default
2. Find your group's local network allocation from TABLE TWO. Allocate one IP address to the router and one each to the clients (remember you cannot use the network address or broadcast address). Write them in the diagram above.
3. On both ROUTER and CLIENTS, remove your existing x10 connection. Connect them to your group's hub instead. Configure your x10 with your new IP address and netmask (see commands below). Make sure the three machines can ping each other. If they cannot, then debug the problem before continuing.
4. On the ROUTER, configure x11 with your new backbone address and netmask from TABLE ONE, and plug it into the backbone switch. Make sure you can ping all the other group's routers (202.144.139.193 to .197 inclusive). If you cannot, check that the other group's router is configured properly, and try "arp -d x.x.x.x" where x.x.x.x is the other router's IP address before pinging them again.
5. On the ROUTER only, issue the command to enable IP forwarding:
sysctl net.inet.ip.forwarding=1
6. On both the CLIENTS and the ROUTER, add routes to be able to reach the rest of the classroom. Eventually you should be able to ping all addresses.

Don't change /etc/rc.conf, because we don't want these changes to be permanent. The commands you will need are:

```

ifconfig                                     # show interfaces
ifconfig x10 x.x.x.x/p                       # configure interface
ifconfig x10 x.x.x.x netmask y.y.y.y        # (alternative form)

netstat -nr                                  # show routes (ignore ipv6)
route add x.x.x.x/p z.z.z.z                 # add a route to network x.x.x.x/p
#                                           # via next-hop z.z.z.z
route add -net x.x.x.x -netmask y.y.y.y z.z.z.z # (alternative form)
route delete x.x.x.x/p                      # delete a route
route delete default                        # delete defaultroute

ping x.x.x.x                                 # send test packets (Ctrl-C to stop)
traceroute -n x.x.x.x                       # show route to destination

```

Remember that the next hop gateway (z.z.z.z) must be an address on one of the networks which you are DIRECTLY connected to.

Can you ping other routers on the backbone? Can you ping other clients in other groups? Debug the problems.