

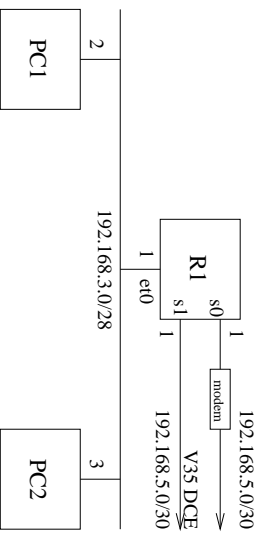
Routing

Main Goals

1. Routers configuration
2. Backup connection
3. Static routing
4. Dynamic routing using RIP
5. Dynamic routing using OSPF

Note: use tip hardware or tip hardware-a to connect to the router.

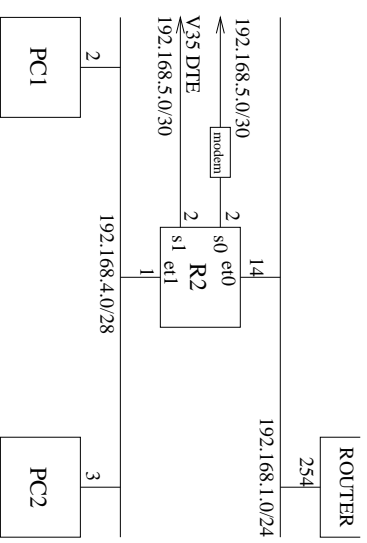
Network Topology - Left Side



Description of Router CISCO Commands

| | |
|--------------------|--------------------------------|
| enable | enter privileged mode |
| configure terminal | source of configuration |
| ip subnet-zero | enables subnet zero |
| ip classless | enables subnetting |
| interface name | configuring interface |
| exit | goes to the upper level |
| ping IP address | ping command |
| write memory | saves configuration to NVRAM |
| show conf | shows configuration from NVRAM |
| show ip route | shows routing tables |

Network Topology - Right Side



Interface Configuration

```
interface name
ip address IP-address netmask
no shutdown
Set transmission speed for interfaces connected by V35 cable only
for router DCE
clock rate speed
Example:
clock rate 125000
```

Note: command show running-config shows running configuration.

Static Routing

```
ip route network-number mask gateway
```

Default Routing

```
ip route 0.0.0.0 0.0.0.0 gateway
```

RIP Protocol Configuration

```
router rip
network network-number
```

Note: use redistribute connected and redistribute static for redistribute routing information.

Backup Connection

Note1: Configure only on one of routers

Note2: Configure s0 as primary interface and s1 as backup interface

When primary link breaks down backup connection is established after *time-on* seconds. When primary link becomes working then after *time-off* seconds backup connection is being turned off.

```
interface primary interface
backup interface backup interface
backup delay time-on time-off
```

OSPF Protocol Configuration

```
router ospf process-number
network network-number inverted-mask area area
```

The above command joins to the area the networks that addresses match given network number on these bits that are equal to zero in a given inverted mask.

Example — joining all the networks beginning with 192.168 to area 0:

```
network 192.168.0.0 0.0.255.255 area 0
Redistribution RIP in OSPF:
redistribute rip metric 10 subnets
```