

| Sl | Device | Interface | IP address | Subnet Mask | Default Gateway |
|----|------------|-----------|---------------|-----------------|-----------------|
| 1 | Wind | Fa5/0 | 192.168.0.1 | 255.255.252.0 | N/A |
| | | Se2/0 | 192.168.8.145 | 255.255.255.252 | N/A |
| | | Se0/0 | 192.168.8.149 | 255.255.255.252 | N/A |
| | | Se1/0 | 192.168.8.141 | 255.255.255.252 | N/A |
| | PC_wi | N/A | Dynamic | 255.255.252.0 | 192.168.0.1 |
| | Printer_wi | N/A | 192.168.0.2 | 255.255.255.0 | 192.168.0.1 |
| 2 | Speed | Se0/0 | 192.168.8.146 | 255.255.255.252 | N/A |
| | | Fa5/0 | 192.168.4.1 | 255.255.254.0 | N/A |
| | PC_s | N/A | 192.168.4.2 | 255.255.254.0 | 192.168.4.1 |
| | Printer_s | N/A | 192.168.4.3 | 255.255.254.0 | 192.168.4.1 |
| 3 | Intel | Fa5/0 | 192.168.8.1 | 255.255.255.192 | N/A |
| | | Se0/0 | 192.168.8.142 | 255.255.255.252 | N/A |
| | PC_i | N/A | Dynamic | 255.255.255.192 | 192.168.8.1 |
| | Printer_i | N/A | 19.168.8.2 | 255.255.255.192 | 192.168.8.1 |
| | Mail_i | N/A | 198.168.8.3 | 255.225.255.192 | 192.168.8.1 |
| 4 | Fire | Se0/0 | 192.168.8.134 | 255.255.255.252 | N/A |
| | | Se1/0 | 192.168.8.129 | 255.255.255.252 | N/A |
| | | Se2/0 | 192.168.8.13 | 255.255.255.252 | N/A |
| | | Fa9/0 | 192.168.7.1 | 255.255.255.0 | N/A |
| | PC_f | N/A | Dynamic | 255.255.255.0 | 192.168.7.1 |
| | Printer_f | N/A | 192.168.7.2 | 255.255.255.0 | 192.168.7.1 |
| 5 | Water | Se0/0 | 192.168.8.134 | 255.255.255.252 | N/A |

| | | | | | |
|---|-----------|-------|---------------|-----------------|--------------|
| | | Se1/0 | 192.168.8.137 | 255.255.255.252 | N/A |
| | | Fa5/0 | 192.168.8.65 | 255.255.255.192 | N/A |
| | PC_w | N/A | 192.168.8.69 | 255.255.255.192 | 192.168.8.65 |
| | Printer_w | N/A | 192.168.8.70 | 255.255.255.192 | 192.168.8.65 |
| | DNS | N/A | 192.168.8.68 | 255.255.255.192 | 192.168.8.65 |
| | Web | N/A | 192.168.8.67 | 255.255.255.192 | 192.168.8.65 |
| | DHCP | N/A | 192.168.8.66 | 255.255.255.192 | 192.168.8.65 |
| 6 | Mind | Se0/0 | 192.168.8.130 | 255.255.255.252 | N/A |
| | | Se1/0 | 192.168.8.138 | 255.255.255.252 | N/A |
| | | Fa5/0 | 192.168.6.1 | 255.255.255.0 | N/A |
| | PC_m | N/A | Dynamic | 255.255.255.0 | 192.168.6.1 |
| | Printer_m | N/A | 192.168.6.2 | 255.255.255.0 | 192.168.6.1 |

Assumptions:

Dynamic: fire, intel, speed

Static: wind, water, mind

Administrative distance: 200

Default router: Speed router

Floating route/backup route: Fire-mind

Main route: Mind-water-fire

Wind:

```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ter
Router(config)#config
Router(config)#config-register
Router(config)#config-register
Router(config)#config ter
Router(config)#int fa5/0
Router(config-if)#ip address 192.168.0.1 255.255.252.0
Router(config-if)#no shut
```

```
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet5/0, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet5/0, changed state to up
```

```
Router>EN
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int s0/0
Router(config-if)#ip address 192.168.8.149 255.255.255.252
Router(config-if)#int s1/0
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router#en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int s1/0
Router(config-if)#ip address 192.168.8.141 255.255.255.252
Router(config-if)#no shut
```

```
%LINK-5-CHANGED: Interface Serial1/0, changed state to down
```

Routing:

```
Router_Wind>en
Router_Wind#config
ip route 192.168.4.0 255.255.254.0 192.168.8.146
ip route 192.168.8.0 255.255.255.192 192.168.8.142
ip route 192.168.7.0 255.255.255.0 192.168.8.150
Exit
Router_Wind>en
```

```
Router_Wind#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router_Wind(config)#ip route 192.168.6.0 255.255.255.0 192.168.8.150
Router_Wind(config)#ip route 192.168.8.64 255.255.255.192 192.168.8.150
Router_Wind(config)#exit
```

Fire:

```
Router>en
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int s0/0
Router(config-if)#ip address 192.168.8.134 255.255.255.252
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial0/0, changed state to down
Router(config-if)#int s1/0
Router(config-if)#ip address 192.168.8.129 255.255.255.252
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial1/0, changed state to down
Router(config-if)#int se2/0
Router(config-if)#ip address 192.168.8.13 255.255.255.252
Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial2/0, changed state to down
```

Water:

```
Router>en
Router#config t
```

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#int s0/0

Router(config-if)# 192.168.8.134

^

% Invalid input detected at '^' marker.

Router(config-if)#

Router(config-if)#ip address 192.168.8.134

% Incomplete command.

Router(config-if)#

Router(config-if)#ip address 192.168.8.134 255.255.255.252

Router(config-if)#no shut

Router(config-if)#

%LINK-5-CHANGED: Interface Serial0/0, changed state to up

Router(config-if)#int se1/0

Router(config-if)#

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up

Router(config-if)#int s1/0

Router(config-if)#ip address 192.168.8.137 255.255.255.252

Router(config-if)#no shut

%LINK-5-CHANGED: Interface Serial1/0, changed state to down

Router(config-if)#int fa5/0

Router(config-if)#ip address 192.168.8.65 255.255.255.192

Router(config-if)#no shut

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet5/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet5/0, changed state to up

Routing:

Router_Water>en

Router_Water#config

Configuring from terminal, memory, or network [terminal]?

Enter configuration commands, one per line. End with CNTL/Z.

Router_Water(config)#ip route 192.168.6.0 255.255.255.0 192.168.8.138

Router_Water(config)#ip route 192.168.7.0 255.255.255.0 192.168.8.133

Router_Water(config)#ip route 192.168.0.0 255.255.252.0 192.168.8.133

```
Router_Water(config)#ip route 192.168.4.0 255.255.254.0
```

```
Router_Water#
```

```
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router_Water#en
```

```
Router_Water#config t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router_Water(config)#ip route 192.168.4.0 255.255.254.0 192.168.8.133
```

```
Router_Water(config)#ip route 192.168.8.0 255.255.255.192 192.168.8.133
```

```
Router_Water(config)#exit
```

Mind:

```
Router>en
```

```
Router#config t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
Router(config)#int s0/0
```

```
Router(config-if)#ip address 192.168.8.130 255.255.255.252
```

```
Router(config-if)#no shut
```

```
Router(config-if)#
```

```
%LINK-5-CHANGED: Interface Serial0/0, changed state to up
```

```
Router(config-if)#int s
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up  
1/0
```

```
Router(config-if)#int s1/0
```

```
Router(config-if)#ip address 192.168.8.138 255.255.255.252
```

```
Router(config-if)#no shut
```

```
Router(config-if)#
```

```
%LINK-5-CHANGED: Interface Serial1/0, changed state to up
```

```
Router(config-if)#int fa5/0
```

```
Router(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up
```

```
Router(config-if)#int fa5/0
```

```
Router(config-if)#ip address 192.168.6.1 255.255.255.0
```

Router(config-if)#no shut

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet5/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet5/0, changed state to up

DHCP:

Router_Mind>

Router_Mind>en

Router_Mind#config

Configuring from terminal, memory, or network [terminal]?

Enter configuration commands, one per line. End with CNTL/Z.

Router_Mind(config)#int

% Incomplete command.

Router_Mind(config)#interface f5/0

Router_Mind(config-if)#ip helper-address 192.168.8.66

Router_Mind(config-if)#exit

Router_Mind(config)#exit

Router_Mind#

Speed:

Router>en

Router#config

Configuring from terminal, memory, or network [terminal]? t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#int fa5/0

Router(config-if)#ip address 192.168.4.1 255.255.254.0

Router(config-if)#no shut

Router(config-if)#

%LINK-5-CHANGED: Interface FastEthernet5/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet5/0, changed state to up

Router>en

Router#config t

Enter configuration commands, one per line. End with CNTL/Z.

Router(config)#int se0/0

```
Router(config-if)#ip address 192.168.8.146 255.255.255.252
Router(config-if)#no shut
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

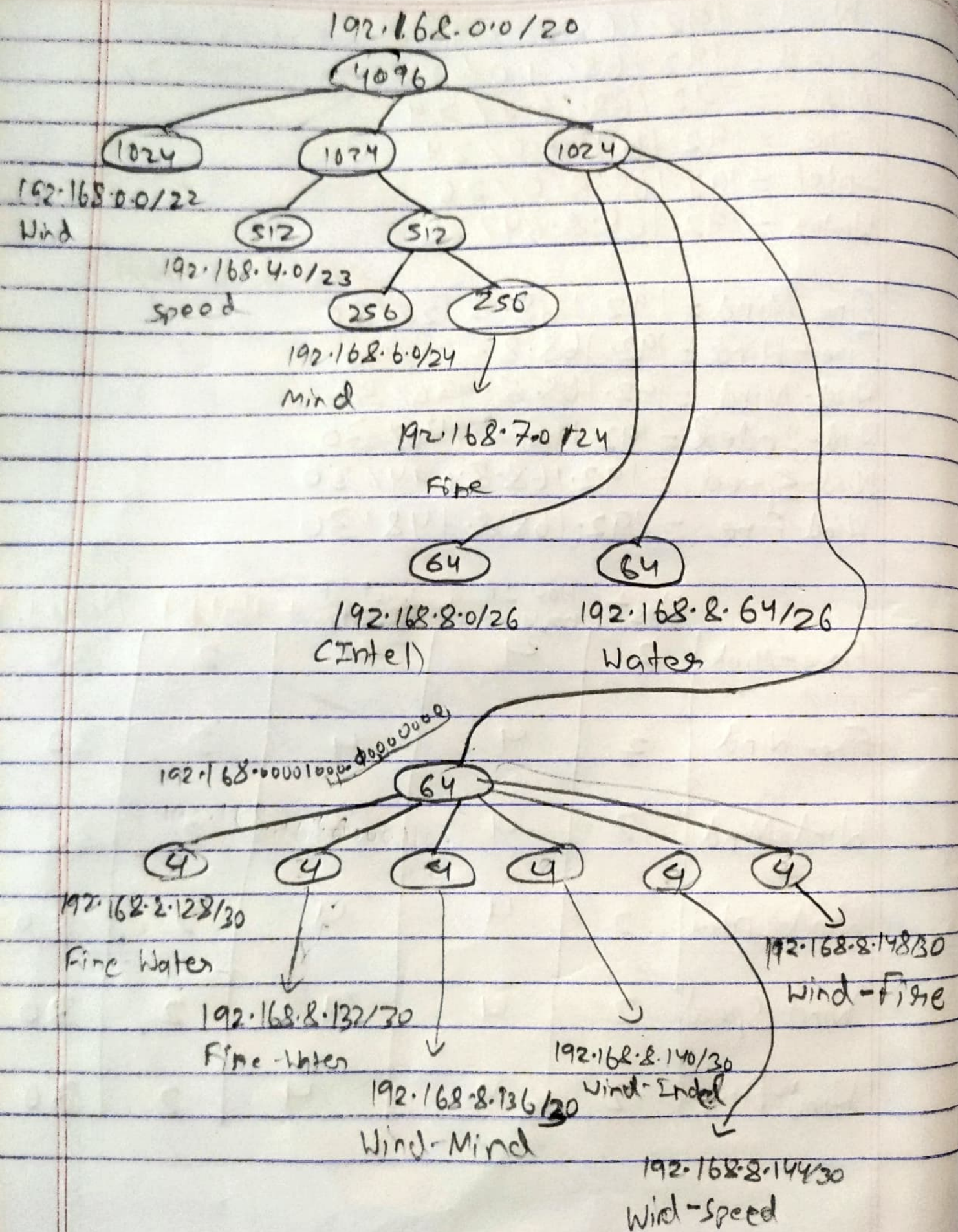
Intelligence(Int):

```
Router>
Router>EN
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#int fa5/0
Router(config-if)#ip address 192.168.8.1 255.255.255.192
Router(config-if)#int se0/0
Router(config-if)#ip address 192.168.8.142 255.255.255.252
Router(config-if)#no shut

Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0, changed state to up

Router(config-if)#int fa5/0
Router(config-if)#no shut
```


| | Host requirement | Host IP assignment | Least IP | Host bit | Network bit |
|--------------|---------------------|-----------------------|----------|----------|----------------|
| Fine | 129 | 131 | 256 | 8 | 24 |
| Water | 43 | 45 | 64 | 6 | 26 |
| Wind | 512 | 514 | 1024 | 10 | 22 |
| Mind | 224 | 226 | 256 | 8 | 24 |
| Speed | 378 | 380 | 512 | 9 | 23 |
| Intelligence | 64 | 64 | 64 | 6 | 26 |



$$\text{Wind} = 192.168.0.0/22$$

$$\text{Speed} = 192.168.4.0/23$$

$$\text{Mind} = 192.168.6.0/24$$

$$\text{Fine} = 192.168.7.0/24$$

$$\text{Intel} = 192.168.8.0/26$$

$$\text{Water} = 192.168.8.64/26$$

$$\text{Fine-Mind} = 192.168.8.128/30$$

$$\text{Fine-Wind} = 192.168.8.132/30$$

$$\text{Wind-Mind} = 192.168.8.136/30$$

$$\text{Wind-Intel} = 192.168.8.140/30$$

$$\text{Wind-Speed} = 192.168.8.144/30$$

$$\text{Wind-Fine} = 192.168.8.148/30$$