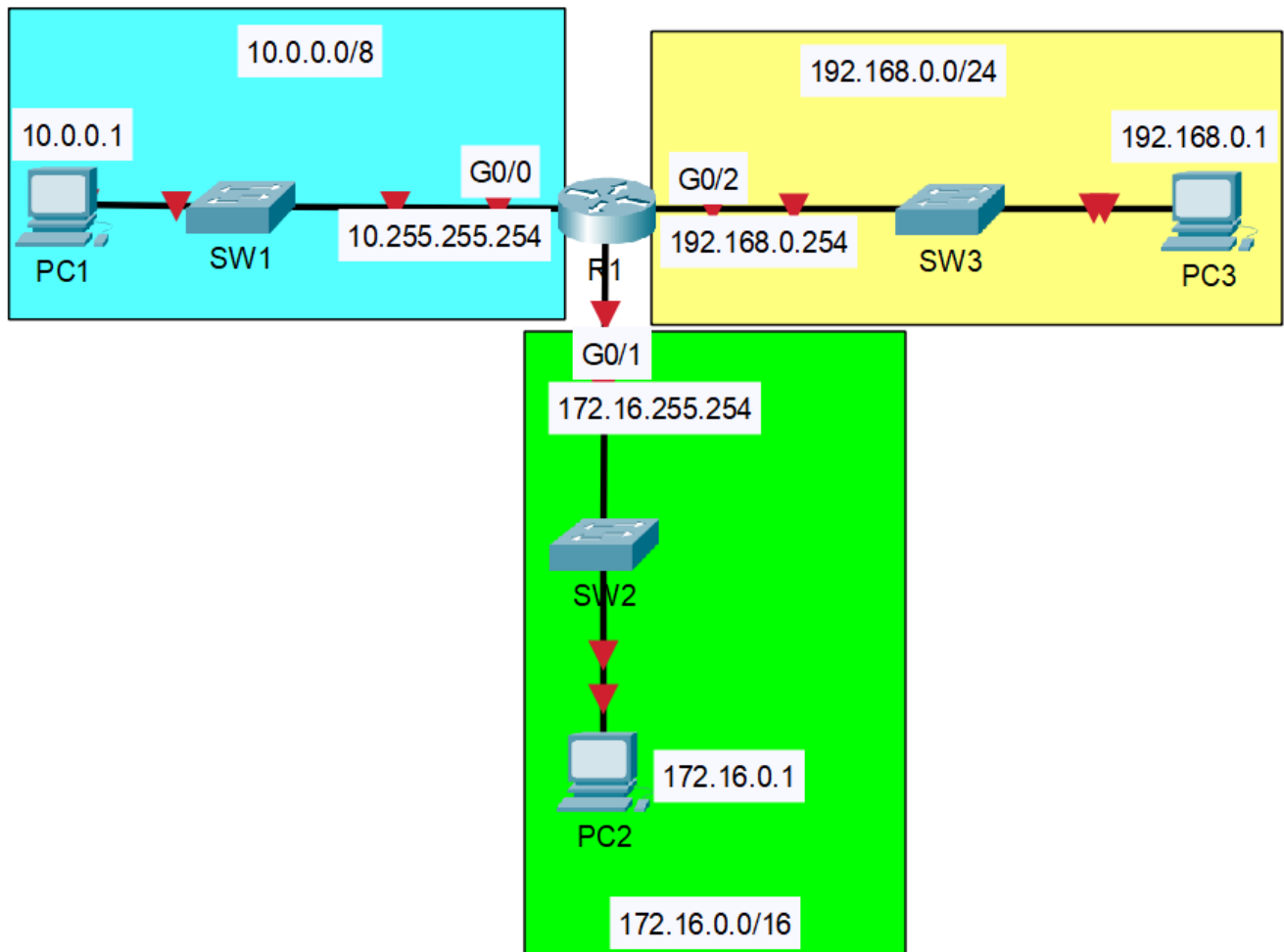


# DAY 8 - Router Interfaces

## IPv4 Configuration (Cisco Devices)

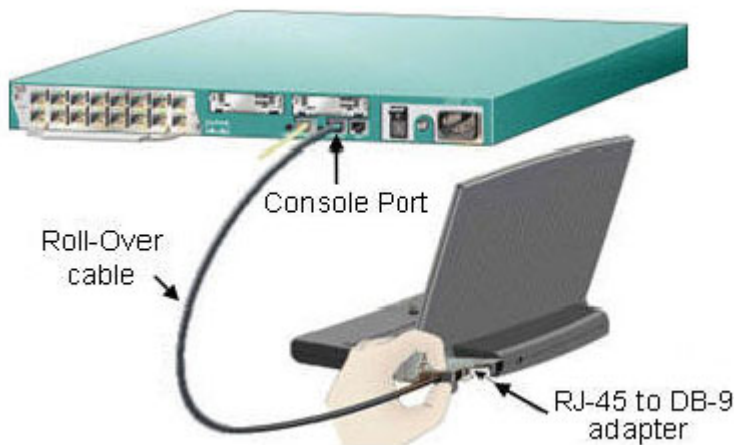


- **3 LAN** connected through a router **R1**:
  - **10.0.0.0/8** network connected to R1 through the **G0/0** Interface, which is assigned the address **10.255.255.254**
  - **172.16.0.0/16** network connected to R1's **G0/1** Interface, with an IP address of **172.16.255.254**
  - **192.168.0.0/24** network connected to the R1's **G0/2** Interface, the interface is assigned the address **192.168.0.254**

## Configuring the R1 Router.

### Pre-Configuration:

- Connecting to the Router's console.



- Changing the Router's hostname to **R1**

```
Router>en
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname R1
R1(config)#do copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
```

- View the router's interfaces status with `show ip interface brief`:

```
R1(config)#do show ip interface brief
Interface          IP-Address      OK? Method Status          Protocol
GigabitEthernet0/0 unassigned      YES unset  administratively down down
GigabitEthernet0/1 unassigned      YES unset  administratively down down
GigabitEthernet0/2 unassigned      YES unset  administratively down down
Vlan1               unassigned      YES unset  administratively down down
```

- **Notes:**

- **Status: Layer 1 (Physical) Status.**

- `administratively down` = Interface has been **disabled** using the `shutdown` command.
  - This is the **Default Status** of Cisco *Router* Interfaces.
  - Whereas Cisco *Switch* Interfaces are not `administratively down` by default.

- **Protocol: Layer 2 (Data Link) Status.**

## Configuration:

1. Enter **Sub-Configuration** mode for interface `G0/0` :

```
R1>en
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface G0/0
R1(config-if)#
```

## 2. Set the wanted IP and mask.

```
R1(config-if)#ip address 10.255.255.254 255.0.0.0
R1(config-if)#
```

---

## 3. Enable the **G0/0** using `no shutdown`

```
R1(config)#interface G0/0
R1(config-if)#ip address 10.255.255.254 255.0.0.0
R1(config-if)#no shutdown

R1(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state
to up
```

## 4. View **G0/0** Interface's Details using `show interfaces g0/0`. (With an `s`. Try not to be confused with `show ip interface brief` that has none).

```
R1(config-if)#do show interfaces g0/0
GigabitEthernet0/0 is up, line protocol is down (disabled)
  Hardware is CN Gigabit Ethernet, address is 00d0.ffe3.7a01 (bia 00d0.ffe3.7a01)
  Internet address is 10.255.255.254/8
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Full-duplex, 100Mb/s, media type is RJ45
  output flow-control is unsupported, input flow-control is unsupported
  ARP type: ARPA, ARP Timeout 04:00:00,
  Last input 00:00:08, output 00:00:05, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0 (size/max/drops); Total output drops: 0
  Queueing strategy: fifo
  Output queue :0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer
    Received 0 broadcasts, 0 runs, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    0 watchdog, 1017 multicast, 0 pause input
    0 input packets with dribble condition detected
    0 packets output, 0 bytes, 0 underruns
    0 output errors, 0 collisions, 2 interface resets
    0 unknown protocol drops
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out
```

## 5. Repeat for all the interfaces.

---

# Summary:

1. `show ip interface brief`: View information about IP Addresses on each router's interface.
    1. **Administratively Down**: Interface is disabled with a `shutdown` command, a default **Status** for routers.
    2. **Protocol**: Data Link Layer's Status.
  2. `show interfaces g0/0`: View information about a *specific* interface.
  3. `interface g0/0`: Enter a specific interface configuration (eg. **G0/0**)
  4. `ip address 192.168.1.1 255.255.255.0`
    - Will still be disabled until a `no shutdown` on that interface is performed.
-