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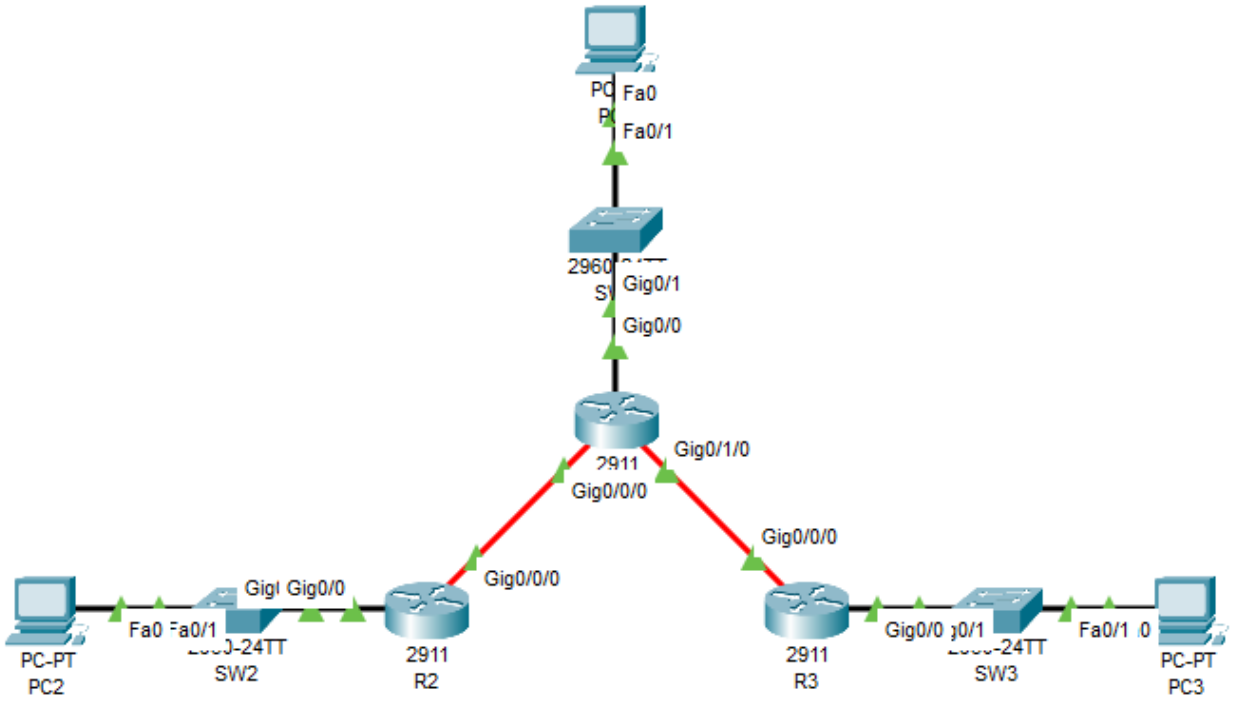
Post College Lab Re-Do | ITS270 | Lab 11: Static Routing

1. Base Network Topology



2. Use the following base configuration

Device	Interface	To	IP Address	Subnet Mask
Router 1 (R1)	Gig0/0	SW1 *Gig0/1*	192.168.10.254	255.255.255.0 (/24)
	Gig0/0/0	R2 *Gig0/0/0*	203.0.113.1	255.255.255.252 (/30)
	Gg0/1/0	R3 *Gig0/0/0*	203.0.113.5	255.255.255.252 (/30)
Router 2 (R2)	Gig0/0	SW2 *Gig0/1*	192.168.20.254	255.255.255.0 (/24)
	Gig0/0/0	R1 *Gig0/0/0*	203.0.113.2	255.255.255.252 (/30)
Router 3 (R3)	Gig0/0	SW3 *Gig0/1*	192.168.30.254	255.255.255.0 (/24)
	Gig0/0/0	R1 *Gig0/1/0*	203.0.113.6	255.255.255.252 (/30)
PC1	*Fa0*	SW1 *Fa0/1*	192.168.10.1	255.255.255.0 (/24)
PC2	*Fa0*	SW2 *Fa0/1*	192.168.20.1	255.255.255.0 (/24)
PC3	*Fa0*	SW3 *Fa0/1*	192.168.30.1	255.255.255.0 (/24)

3. At R1, test connectivity by pinging these devices.
    - **To R2 G0/0/0**: Success
    - **To R3 G0/0/0**: Success
    - **To PC1**: Success
    - **To PC2**: Failure
    - **To PC3**: Failure
4. Why did the pings to PC2 and PC3 fail?
    - No routes were set up to the LANs on R2 and R3.
5. Write static routes on R1, R2, and R3. Afterwards, can all devices reach each other?
    - R1
        - R1(config)# ip route 192.168.20.0 255.255.255.0 203.0.113.2
    - R2
        - R2(config)# ip route 192.168.10.0 255.255.255.0 203.0.113.1
        - R2(config)# ip route 192.168.30.0 255.255.255.0 203.0.113.6
    - R3
        - R3(config)# ip route 192.168.10.0 255.255.255.0 203.0.113.5
        - R3(config)# ip route 192.168.20.0 255.255.255.0 203.0.113.2
    - All devices are able to ping each other with this configuration.
6. Now, remove the static routes on R2 and R3 and write just a default route to R1. Afterwards, can all devices reach each other?
    - R2
        - R2(config)# no ip route 192.168.10.0 255.255.255.0 203.0.113.1
        - R2(config)# no ip route 192.168.30.0 255.255.255.0 203.0.113.6

    - ► R2(config)# ip route 0.0.0.0 0.0.0.0 203.0.113.1
  - R3
    - ► R3(config)# no ip route 192.168.10.0 255.255.255.0 203.0.113.5
    - ► R3(config)# no ip route 192.168.20.0 255.255.255.0 203.0.113.2
    - ► R3(config)# ip route 0.0.0.0 0.0.0.0 203.0.113.5
  - All devices are able to ping each other with this configuration.

Retrospective

Static routing has always been somewhat of a challenge for me, and going back over this lab helped clear things up. This was especially true earlier in my coursework, before my passion for networking had fully developed. Overall this is a good refresher to help remember static routing, especially with multiple hops hops. The trick for me is to remember – t**he router needs to know either the next-hop address or the outgoing interface** to forward packets to a destination.