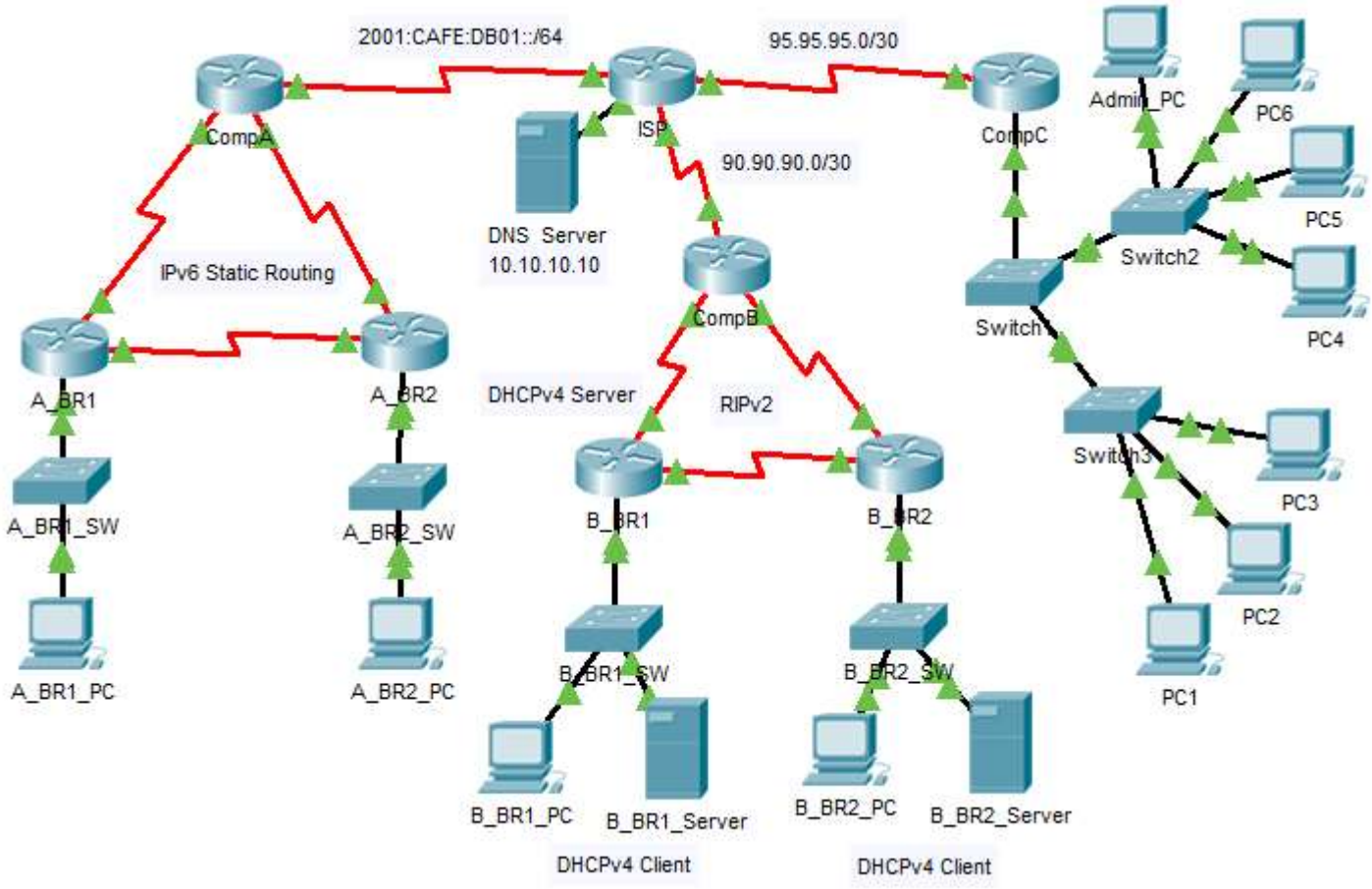
CTIS 262 Computer Networks II

2018-2019 Spring Semester

Instructors: Vural Polat, Dr. H.Murat Yıldırım

PROJECT



Instructions:

0. Refer to the above topology.
    a. **Three company networks** are connected to the same ISP. Students are requested to create the topology and configure these company networks according to the instructions listed below.
    b. Students may form **groups of two** (max) to collaborate and complete this project. In that case all group members will get the same score.
    c. Create a **Word** document, add **group members names** and ids as the heading. Add an **IP Address table** with the assigned IP addresses for all devices and interfaces. Also include all the **passwords** that you configure on the switches of the CompC network.
    d. **Save** the Packet Tracer **solution file** (.pkt) with your group member ***lastnames***, add the **IP address Table** document and zip them. **Upload** it to Moodle **no later than** the due date and time.
1. Create the topology from scratch using **Packet Tracer 7.2.1**.
    a. Insert **WIC-2T** cards to the routers for required number of serial interfaces.
    b. Choose the correct cable type and **connect the cables** to the interfaces as shown. You are free to choose the specific interfaces.
    c. Configure the **interfaces** between the company gateway routers and the ISP with the given IP addresses.
2. Configure **Company A** network.
    a. Assign any **IPv6** addresses to Company A router interfaces and the PCs.

b. Configure **Static IPv6 routing** on all Company A routers, choosing the shortest paths to all Company A remote networks (except the interface that connects to the ISP).
c. Configure IPv6 static **default routes** on all Company A routers, that will forward all packets that are destined to the outside networks, towards **ISP,** and configure one IPv6 static **summary route** on **ISP** for all Company A networks.
d. **Check the connectivity** between all Company A devices and the ISP.

3. Configure **Company B** network.
    a. Choose one **Class C IPv4** network address, **subnet (**fixed size with **/30** mask**)**, assign **three** of the subnets to the serial networks between **CompB** and **B_BR1** and **B_BR2** routers. Configure the IP addresses of the **serial interfaces** using these adresses.
    b. Choose **two** more **Class C IPv4** network adresses, assign them to the **BR1_LAN** and **BR2_LAN**. Do **NOT** assign static IP addresses to the PCs.
    c. Configure **RIPv2** on all Company B routers (except the network between CompB and ISP, which should be configured as static routing).
    d. Configure a static **default route** on **CompB** router that will forward all packets that are destined to the outside networks, to the **ISP**. **Distribute** the default route to the other CompB routers within **RIP updates**.
    e. Configure **passive interfaces** for the interfaces that should not send routing updates.
    f. Configure a **static summary route** on **ISP**, that will forward all packets destined for Company B, to the **CompB** router.
    g. Configure **DHCPv4** on **B_BR1** router with two pools for **BR1_LAN** and **BR2_LAN**.
        i. Exclude the first **10 IP addresses** from each LAN for DHCP assignment.
        ii. **BR1_PC**, **BR1_Server**, **BR2_PC and BR2_Server** should be able to dynamically receive the **IP address**, **Subnet Mask**, **Default Gateway**, and **DNS Server (10.10.10.10) IP** from the DHCPv4 Server.
    h. **Check the connectivity** between all **Company B** devices and the ISP**.**
4. Configure **Company C** network.
    a. Assign one **Class C IPv4** address to Company C network and **subnet** (fixed size with **/26**) the address according to the following requirements.
    b. Create four **VLANs** (3 data VLANs, 1 Native and Management VLAN). Each VLAN will not accomodate more than **60** hosts.
    c. Assign **PC1** and **PC4** to the first data VLAN, **PC2** and **PC5** to the second data VLAN, **PC3** and **PC6** to the third data VLAN. Assign **Admin_PC** to the Management VLAN.
    d. Assign **IP addresses**, **subnet masks** and **default gateways** to the PCs from each VLAN they belong to.
    e. Assign and configure **IP addresses** and the **default gateways** to **Switch1**, **Switch2** and **Switch3** from the Management VLAN for remote access.
    f. Configure **console**, **vty** and **enable secret** passwords on **Switch1**, **Switch2** and **Switch3**.
    g. Configure **SSH** on **Switch1**, **Switch2** and **Switch3**, that will enable remote access to the switches.
    h. Configure **Router-on-a-stick** inter-vlan routing on **CompC** router.
    i. **Check the connectivity** between the devices and **SSH** connection from **Admin_PC** to any switch on **CompC** network.
5. Apply **Security Policies** using two standard **ACLs**:
    a. **Policy-1**: **Permit** traffic **only** from **CompanyB** to the **DNS Server**. All other traffic to the DNS Server should be **denied**.
    b. **Policy-2**: **Deny** traffic from **Company C** to **B_BR2_LAN**. All other traffic to the **B_BR2_LAN** should be **permitted**.
    c. **Test the connectivity** according to the security policies.