

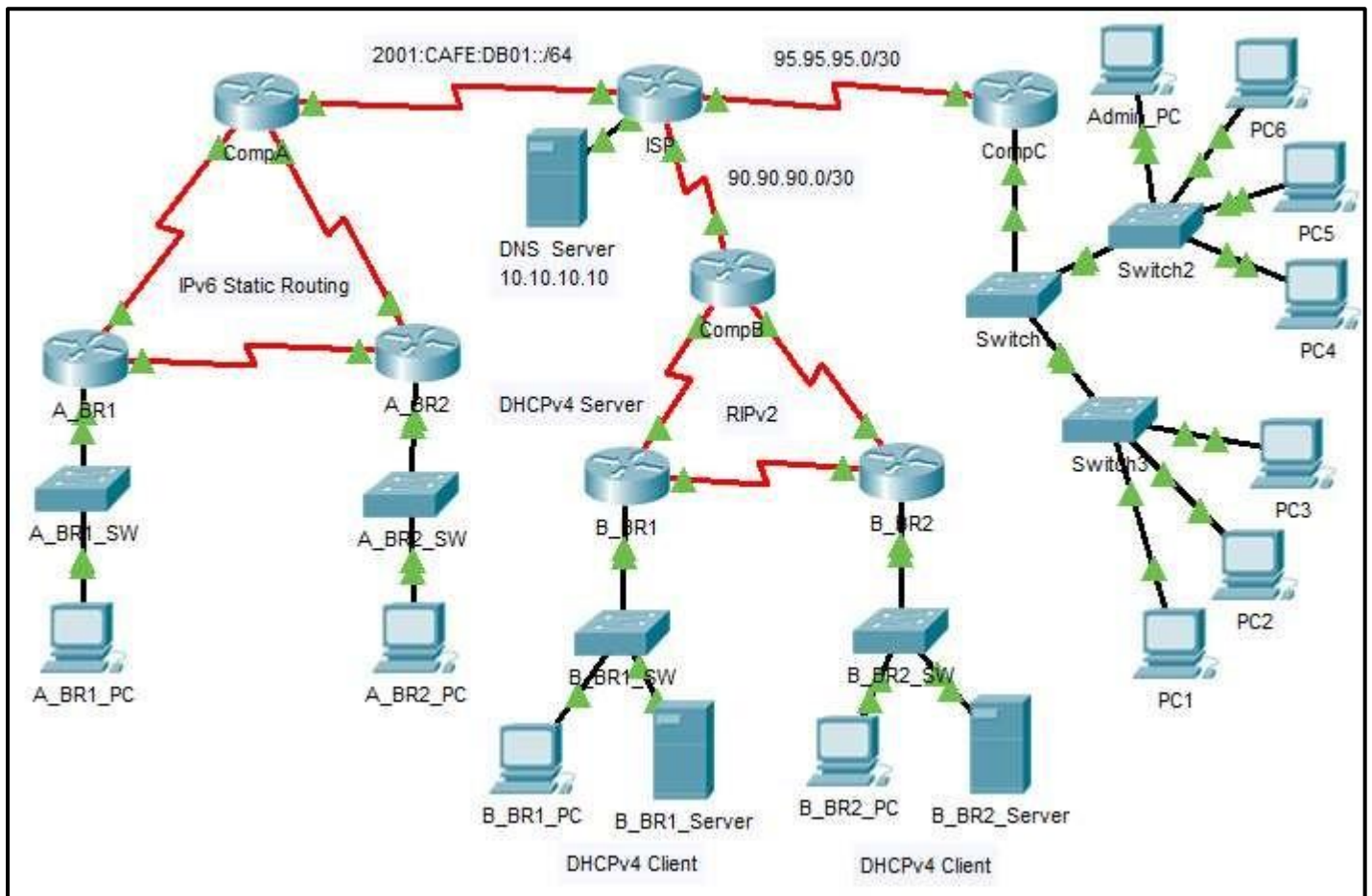
CTIS 262 Computer Networks II

2022-2023 Fall Semester

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PROJECT

Deadline: 4 January 2023, 23:55



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 will form a **group of two** (Min-Max) to collaborate and complete this project.
 - c. Create a **Word** document, add **group member's names** and IDs as the heading. Add
 - i. an **IP Address Table** with the assigned IP addresses for all devices (except the DHCP clients) and interfaces
 - ii. a **VLAN table** with **VLAN names** and **assigned IP addresses**.
 - iii. all the **passwords** that you configure on the switches in the **CompC** network.
 - d. **Save** the MS Word file (.docx) with the file name of the group members' **lastnames**
 - e. **Save** the Packet Tracer **solution file** (.pkt) with the file name of the group members' **lastnames** and zip them. **Upload** it to Moodle **no later than** the due date and time.
1. Create the topology from the scratch using **Packet Tracer 8.2.0**.
 - a. Insert **HWIC-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 (edge) routers and the ISP with the IP addresses specified in the MS Word file.
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 Company A router 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), and 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 addresses. These addresses should be specified in the MS Word file.
 - b. Choose **two** more **Class C IPv4** network addresses, 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 a **static summary route** on **ISP** that will forward all packets destined for Company B, to the **CompB** router.
 - f. 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.
 - g. **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 accommodate 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.