CTIS 262 Computer Networks II

2019-2020 Spring Semester

PROJECT

Instructions:

Three company networks are connected to the same ISP with stub routers. Use any three different names for the companies. Students are requested to create the topology from scratch using **Packet Tracer 7.3.0,** assign hostnames and configure these networks according to the below listed instructions.

1. **First Company** network requirements:
    a. **IPv4 addressing** will be used.
    b. At least **five internal networks** will be connected with routers.
    c. **RIP** will be used as the dynamic routing protocol between internal networks.
        i. Default routes will be distributed within RIP updates.
        ii. Configure **passive interfaces** where necessary.
    d. Configure **DHCPv4 Server** on one of the routers with at least **two pools**.
        i. Exclude first five addresses from each LAN for static assignment.
        ii. At least two PCs from two different LANs will receive the **IP address**, **Subnet Mask**, **Default Gateway** address dynamically from the DHCPv4 Server.
    e. Configure **port-security** with **sticky** MAC addresses, on at least **two** switch ports that are connected to a PC or a server.
    f. **Check the connectivity** between all devices in this company network**.**
2. **Second Company** network requirements:
    a. There will be **three** separate departments, each will be assigned a **data VLAN**. Two additional VLANs must be created, one as a **management** and another as a **native** VLAN.
    b. No additional routers will be used except the stub router.
    c. At least **five switches** will be used in a **hierarchical collapsed core** network design.
    d. Assign and configure an **IP address**, **subnet mask** and **default gateway** to all switches from the **management VLAN**. Configure **SSH** on all switches. Use your ***firstname*** as the username and your ***lastname*** as the password on all switches (don't use any Turkish characters).
    e. Configure **Router-on-a-stick** inter-vlan routing on the stub router.
    f. **Check the connectivity** between all devices in this company network including the switches. Switches should be accessible from any company PC in management VLAN using **SSH** only.
3. **Third Company** network requirements:
    a. Only **IPv6** addressing will be used and the addresses will be assigned statically to all interfaces.
    b. There will be at least **five internal networks** connected with routers.
    c. **Static IPv6 routing** will be used.
    d. Check the connectivity between company networks.
4. Configure **default static routes** from company stub routers to the ISP router. Configure single **summary** static routes from ISP towards each company network. The ISP router should be running both **IPv4** and **IPv6** protocols (Dual stack) and should allow both IPv4 and IPv6 routing.
5. Create and apply a **named standard ACL** to block all class **A**, **B** and **C private IPv4** addresses on the ISP router and apply it towards the IPv4 company networks.
6. **Check the connectivity** between all company devices and the ISP.
7. Create a **Word document** that includes:
    a. A table with the assigned IP addresses for all devices and interfaces of all company networks.
    b. VLAN information and the username and passwords for the SSH configurations of the switches of the second company.
8. **Save** the Packet Tracer **solution file** (.pkt) with your ***lastname***, add the **Word** document, zip them and **upload** it to Moodle **no later than** the due date and time.