BIRZEIT UNIVERSITY

Department of Electrical and Computer Engineering

ENCS3320-Computer Networks **(Packet Tracer Project)**

Due date: 07/09/2023

RULES:

1. This is a group project, so you are allowed to work in groups of max 3 students.
2. You are required to use Packet Tracer to solve this mini project.
3. Important: each **snapshot** should include the date and time of your computer.

SUBMISSION:

1. A technical report in pdf format (only pdf format) on moodle (itc.birzeit.edu) that contains **snapshots** with detailed explanation**,** commands, runs, etc.
2. Labels are required to be added to the complete topology in the .pkt file.
3. You are also required to submit .pkt file of the full design with the required routing.

OBJECTIVES:

1. Learn how to use packet tracer.
2. Learn how to do the IP subnetting and assignment.
3. Learn how to configure end devices like PCs and servers.
4. Learn how to setup the routing algorithms on the routers.
5. Learn how to test and debug the design.

TOPOLOGY:

The topology illustrates in **Figure 1** contains the following devices:

1. Routers (**Router-PT**)
2. Switches (**Switch-PT**)
3. Server (**Server-PT**)
4. PCs (**PC-PT**)

The topology consists of the following sub-networks:

1. Data center (Yellow): 3-servers and 1-switch.
2. Company 1 (Green): 2-PCs and 1-switch.
3. Company 2 (Blue): 2-PCs and 1-switch.
4. Home (Purple): 2-PCs and 1-switch.
5. Core (Orange): 3-routers.

REQUIREMENTS:

Part0: IP subnetting and assignment

1. You are required to assign the IP addresses of the routers and end devices with respect to one of the student IDs in your group as follows:
   - Assume the ID is 121**15**31 then the IP is 197.**15**.0.0/24.
   - You need to create the required number of subnets using this IP based on the topology given in **Figure 1**.
2. Note that any solution without including the ID as above **will not be accepted**.

Part1: Building the topology

1. Build the topology given in **Figure 1** using packet tracer based on the IPs found in **Part0** and do the appropriate subnetting.
2. Configure the interfaces of all routers as instructed in the figure.
3. End devices (i.e. PCs and Servers) in the home network (Purple), Company 1 and Company 2 networks (Green and Blue), and data center network (Yellow) are getting their IPs in a static manner based on the assigned network IPs.

Part2: Configuring servers

1. Three servers are used in this topology: HTTP/WEB server, DNS server, and Email server.
2. Configure the DNS server and WEB server with domain name www.ENCS3320.com.
3. Create your website by modifying the index.html file in the HTTP server. Your website should contain:
   - "ENCS3320-Course Website" in the title.
   - "Welcome to Computer Networks course" (part of the phrase is in Red).
   - Group members' names and IDs.
   - Some information about the group members. For instance, projects you have done during different course (programming, electrical, math, etc), skills, hobbies, etc.
   - Try to make the page looks nice.
4. Create usernames/passwords for all PCs (PC0, PC1, PC2, PC3, PC4, and PC5) in the email server (birzeit.edu). The usernames are u0, u1, u2, u3, u4, and u5 and their passwords are same for all "u321".

Part3: Applying routing protocol

You need to use open shortest path protocol (OSPF) on all routers given that the process id is 10 and the areas as follows: Data center (Yellow): area 1, Company 1 (Green): area 2, Company 2 (Blue) and Home (Purple): area 3.

Part4: Testing connectivity, routes, website, and emails:

1. Test the connectivity between all PCs. You need to take **snapshots** of the results for ping and tracert commands between all PCs.
2. Access www.ENCS3320.com from all PCs, take **snapshots** for all cases.
3. Send emails from one PC to other PCs and take **snapshots** at the receiving PCs.
4. Show the outputs of 1,2, and 3 as **snapshots** and record them in your report with detailed explanations.

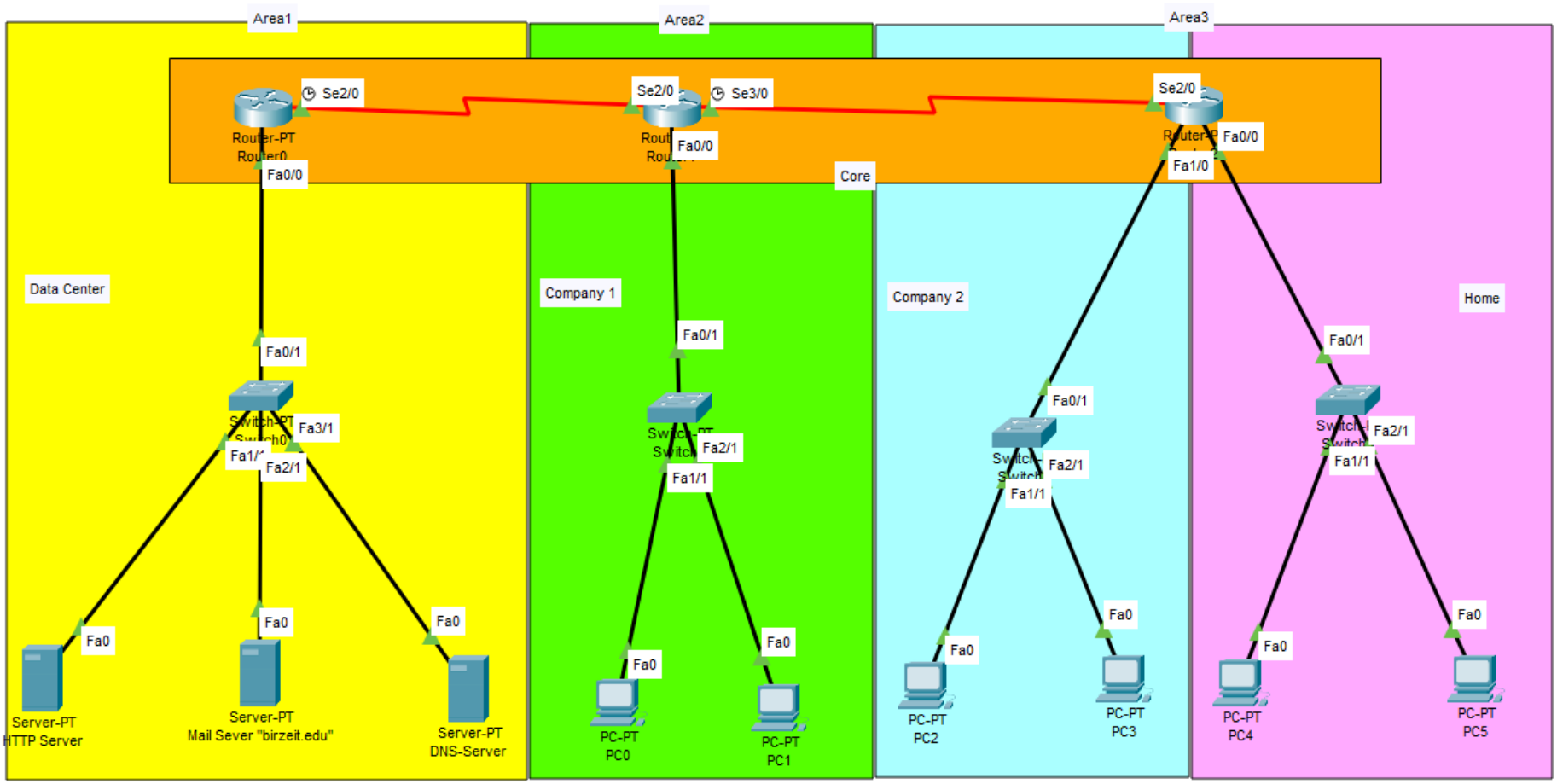

Figure 1: Network topology