Redes de Computadores - RECOMP – 2024/2025

1. Project Guidelines

1.1. Project teams

In order to create teams, the laboratory class will be separated into groups of three or four students, with the condition that all team members must be from the same laboratory class.

1.2. RECOMP sprints

The RECOMP Project is organized in 3 sprints, each with a duration of four or five weeks:

Table 1 – RECOMP sprints

RECOMP PROJECT	SPRINT START	SUBMISSION DEADLINE
Sprint 1	16-09-2024	20-10-2024
Sprint 2	21-10-2024	17-11-2024
Sprint 3	18-11-2024	15-12-2024

1.3. Sprint presentation

After the sprint deadline, each team will give a 15-minute presentation during the next laboratory class to the teacher. The presentation must include a live demo.

1.4. Deliverables

- Packet trace file
- Configurations files
- Sprint Report.

2. Project Description – Sprint 2

Routing configuration between branches

Check the routing table and statically configure a default route with the same gateway received from the DHCP server in Oporto and Warsaw routers.

Configure default routes in both MLSs pointing to the Oporto router interfaces.

GRE configuration

Define two IP address subnets with a /30 mask from the 10.0.0.0/8 network, one for each connection between Oporto/Warsaw and Oporto/Munich.

To establish direct connections between the HQ and the Warsaw and Munich branches and bypass public Internet routing for internal traffic. Configure a GRE tunnel between Oporto-Warsaw, and Oporto-Munich using the two subnets created.

OSPF Configuration

Configure the OSPF router-id in the Oporto and Warsaw routers to 1.1.1.1 and 2.2.2.2 respectively.

Configure OSPF in Oporto attaching the previously created tunnel interface to Warsaw to area 0 and Oporto's local networks to area 1. Don't forget to configure OSPF in Oporto's MLSs.

Configure OSPF in Warsaw attaching the previously created tunnel interface to Oporto to area 0 and Warsaw's local networks to area 2.

EIGRP Configuration

Configure EIGRP in the Oporto tunnel interface, Munich's tunnel interface, and local networks.

Configure Routing redistribution in Oporto between OSPF and EIGRP to achieve full connectivity.

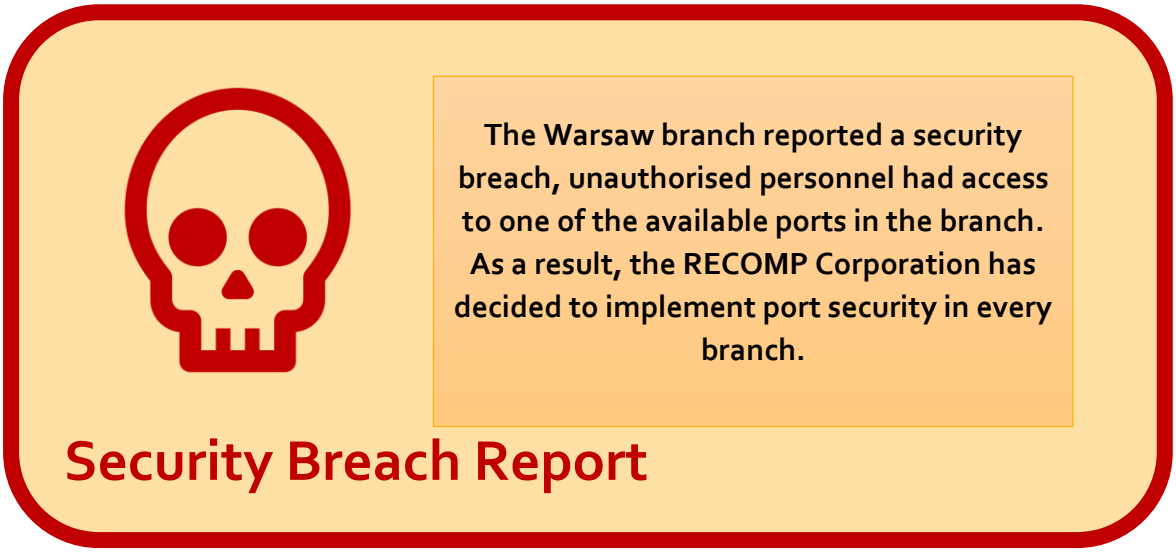
Test connectivity between the hosts in different locations.

PAT Configuration

Configure PAT to allow all users to access the INTERNET.

Test connectivity between hosts and Google.

Port Security Configuration



Configure and activate port security to shutdown the interface if more than 2 MAC addresses are registered in an individual interface for VLAN 10, 20, 30, and 40. Make sure that the interface registers every MAC address that is recognised.

ACLs

Block all spoofing, as far as possible in all the routers (Oporto, Warsaw, and Munich). Internal spoofing from local networks. External spoofing in traffic incoming from the Internet.

All traffic directed to the routers (with a destination IPv4 node address belonging to the routers) is to be blocked, except for the traffic required for the current features to work (GRE, DHCP, OSPF, EIGRP, among others…).

The remaining traffic passing through the router should be allowed.

IPv6

The RECOMP Corporation has decided to migrate IPv4 to IPv6. While the full migration does not happen, both protocols must be supported.

Your team has been assigned the task of making a **detailed study** of all the configurations and alterations needed, in each of the branches and between branches to support both IPv4 and IPv6.

Your recommendations should include, among others, IPv6 subnetting, IPv6 assignment to devices, methods of IPv6 distribution (SLAAC, DHCPv6), Dynamic Routing (OSPF, EIGRP) and Security Issues that your team deems important.

This study will not require packet tracer implementation.