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Final Evaluation Laboratory

The presente laboratory contains the final Exercise of the discipline Computer Networks. The configuration of several devices connected by super network will be divided by categories.

This work will have componentes with IPv4 and IPv6 configuration.

Use prevous laboratory experiences and apply it to solve the network required on this evaluation.
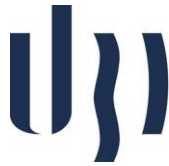
In case of doubt contact the teaching team.

Good work!

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1. **Recriate on the Packet Tracer the following network.**

   1.1. **Exemple of solution to the problem.**

Requirements to fulfill:

The routers MEO-INTERNET, TELECOM, ALTICE, PORTUGAL and EDUROAM and the computer MEO-ADMINISTRADOR and ENSINO should have public address IPv4 from Class A e IPv6 starting at 2001::/64. The following computers inside this network should have IPv4 private address from Class A and IPv6 (no restriction, you choose, as long as they are Unique Local).

The routers RUSSIA, RUMOBILE, RUNET and the computer DHCP-RU, ADMIN-MOBILE and ADMIN-NET should have IPv4 from Class B. the other computers should have private IPv4 address of Class B.

The routers CANADA, BELL-TELUS, BELL and C_S1, and the computers MEDICAL, ADMIN-BELL and others that are in the *stub* northeast of router BELL-TELUS should have public addresses IPv4 from Class C. the other should have private IPv4 address of Class C, assigned by the router BELL which should work as DHCP Server.

The computers RU_* should be in a VLAN diferente from the computers NET_*. The server DHCP-RU should work for the computers RU_*, and computers NET_* should receive addresses from the router RUNET.

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Define the following names on the DNS server and make proper associations to the IPv4 and IPv6 addresses:

www.ubi.pt (computer WEB-UBI)

ubi.pt (for email) (computer MAIL-UBI)

www.canada.ca (computer 12-ServerWeb)

canada.ca (computer 16-ServerMail)

1.2. Use following tables to help you configure the Routers in the network.

device	Interface	address IPv4	address IPv6	Default Gateway
PORTUGAL	Int _____			
	Int _____			
EDUROAM	Int _____			
	Int _____			
WEB-UBI	Int _____			
ENSINO	Int _____			
PORTUGAL	Int _____			
	Int _____			
ALTICE	Int _____			
	Int _____			
EDUROAM	Int _____			
	Int _____			
TELECOM	Int _____			
	Int _____			
	Int _____			
	Int _____			
MEO-NET	Int _____			
	Int _____			
	Int _____			
RUSSIA	Int _____			
	Int _____			
	Int _____			
RUMOBILE	Int _____			
	Int _____			
	Int _____			
	S-Int _____			
	S-Int _____			

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device	Interface	address IPv4	address IPv6	Default Gateway
RUNET	Int _____			
	Int _____			
	Int _____			
	S-Int _____			
CANADA	Int _____			
	Int _____			
BELL-TELUS	Int _____			
	Int _____			
	Int _____			
	S-Int _____			
	S-Int _____			
	S-Int _____			
BELL	Int _____			
	Int _____			
	Int _____			

NOTA: the router BELL-TELUS has 6 inetrfaces, and 3 wires, meaning that there ar cables with more than 1 network.

Tasks to complete:

1. **Add all equipment to the topology. [10]**

2. **Connect all the devices on the topology. [20]**
   NOTA: only actiavte ports after assigning IP configuration.

3. **Configure the fixed IP addresses in all Routers. [16]**

4. **Configure the fixed IP addresses in computer with name. [7]**

5. **Configure the fixed IP addresses in all servers. [7]**

6. **Configure the server network behind the CANADA router with mask /30 and the nearby networks. [12]**
   NOTA: apply VLANs on C_S1.

7. **Configure the server WEB-UBI for it to work as HTTP and DNS for everything behind PORTUGAL router. [6]**

8. **Configure the DHCP-RU server for it to work as DHCP server for the computers in [RU_2:RU_7] and [NET_1:NET_7]. [6]**
   Nota the connection between RUMOBILE-MAIN and RUNET-MAIN is reserved for trafic between DHCP server and the computers [NET_1:NET_7].

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9. **Configure the server 8-ServerDNS for it to work as DNS and DHCP server for the computers in nearby networks as IPv4 and IPv6 [CC_1:CC_7].[6]**

10. **Configure the server 12-ServerWeb for HTTP. [4]**

11. **Configure the servers Mail-UBI and 16-ServerMail. [10]**

12. **Configure the Laptop1 for it to have ubi-mail account and configure the MEDICAL for it to have servermail account. [16]**
    Nota: envie email de laptop1 e envie um de medical, e receba um email no laptop1 e um email no medical,

13. **Configure the Portugal networks trough static/summary routes. [15]**

14. **Configure OSPF routes between routers of the RUSSIA. [21]**

15. **Configure the cloud WEB, to allow connection between devices of RUSSIA, PORTUGAL and CANADA. [25]**
    Nota: those who can not implement WEB cloud, should connect PORTUGAL and CANADA routers by serial wire to test email services. Ones who use this alternative will have 0 on this task.

16. **Configure the connection between "Ensino"-"Portugal"-"Eduroam"-"Web-Ubi" with IPv6.[20]**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	total
10	20	16	7	7	12	6	6	6	4	10	16	15	21	28	16	200

Possible questions:

1. Forbid traffic from RUSSIA to CANADA computers.
2. Configure at least one router with ecnrypted passwords.
3. Configure at least one router and one swithc to allow remote access.
4. Conect the device to Router ALTICE, by using console wire to show that you can configure that router.
5. Define static router from router PORTUGAL to router MEO-INTERNET that does not pass trough router EDUROAM.
6. If Spain wishes to connecto to Cloud Web. What are steps to be performed?
7. The NOS wants to connect to EDUROAM. What are steps to be performed?
8. The RUSSIA wants the Web and Email servers with fast access. Where it can be connected? (why?). the names of this servers should not be registered in DNS of the CANADA. How to solve this?

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