

AcadNet 2018
IT is[®] your power



MINISTERUL
EDUCAȚIEI
NAȚIONALE



AcadNet 2018 – International phase

NETWORKS

Please read carefully all the subjects before starting to solve them.

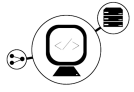
From the 180 minutes allocated for solving the subjects, the maximum of minutes allocated for the theoretical test is 50. This theoretic part will be solved on <http://play.acadnet.ro/>. You can start in any order you want.

Time: 180 mins

Max Points: 100 points

Goodluck!





AcadNet 2018 – International phase

STORY

You were hired to bring Tendaca's network back to life. The network is spread over 3 locations that are connected to the Internet via the ISP router.

The addresses of each of Tendaca's networks comply to the following address distribution policy:

- the first network address is for the router interface,
- the following for switches (in alphabetical order of their names)
- the rest of the addresses for hosts.

SUBJECT 1 – SIGN THE PKT

Sign the PacketTracer file with your name and your email address. Use Options->User Profiles. The signing must be done at the beginning because it resets all the configurations.

SUBJECT 2 – Configure Central Location

2.1 IPv6 networks

The transition to IPv6 has started here, so all devices have two addresses: one IPv4 and one IPv6. For the IPv6 address space you received: 2018 :: / 64. You will have to allocate the addresses in the alphabetical order of the router names and for a router in alphabetical order of the interface names. You will allocate address space, in order, for:

- a. The Administrative network
- b. Central1-Central2 connection
- c. The Technicians network
- d. Central2-Central3
- e. The Guest network
- f. Central3 - Central4 connection
- g. The Boss network
- h. Central4-Central

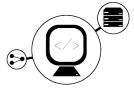
2.2 IPv4 networks

For addressing IPv4 you can use the address space 10.1.0.0/16. The Administrative network should be able to support 500 hosts, the Technicians network 50 hosts, the Guest network 1000 hosts, the Boss network 50. Addresses are shared so that the unused addresses remain at last. Addresses for router connections are distributed in the order Central1-Central2, Central2-Central3, Central3-Central4, Central4-Central.

2.3 OSPF

You must configure both IPv4 and IPv6 OSPF. The Router-id for Central1 is 1.1.1.1, for Central2 2.2.2.2, for Central3 3.3.3.3, for Central4 4.4.4.4, and for Central 5.5.5.5.





AcadNet 2018 – International phase

2.4 Guess Wireless

The **GuestsWireless** network will accept up to 50 users, you can use 192.168.10.0/24, SSID *Guests*, and password *p455w0rd*.

2.5 DHCP and IP addressing

In all networks containing computers the last network address will be assigned to the computer, except for the Boss network, where the addresses will be provided through DHCP (only for IPv4), pool's name will be DHCP, the DNS for the computers in the network will have the address of the router.

2.2 Default route

Central router will distribute a default static route to ISP router through OSPF (IPv4 and IPv6).

SUBJECT 3 – Location1 and Location2 networks

For Location1 and Location2 (Sales) you have the 10.2.0.0/24 address space. You have to share the addresses, in order to have 100 computers in Location 1 and 50 computers in Location2 (Sales). PCs in Location1 will receive network addresses via DHCP.

SUBJECT 4 – Configure Location1

4.1 Etherchannel

Configure etherchannel for the interfaces of switch Gateway with the others switches.

4.2 STP

Configure stp so the switch Gateway will be root.

4.3 DEBUG

Make sure that all the interfaces work properly and you can ping between PCs.

SUBJECT 5 – Configure Location2

5.1 IOS update

Update the IOS on the switch Sales0 to version 15.

5.2 Password

Change password on switch Sales1 and Sales2 to “acadnet2018”.

5.3 VLANs

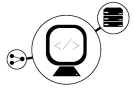
Interfaces FastEthernet 0/1-8 of the switches are in vlan 10, and interfaces FastEthernet 0/9-16 in vlan 20, and Interfaces FastEthernet 0/17-24 are in management vlan 99. Share the addresses equally between the vlans in the order of their ids.

5.4 PPP multilink

The connection between Location 1 and Location 2 must be implemented through ppp multilink.

5.5 PAT

Configure PAT on router Sales for the ip addresses in vlan 10 and 20 that are going to other locations than Location2.



AcadNet 2018 – International phase

5.6 Connectivity

For connectivity inside and outside of Location2 you can use static routes.

SUBJECT 6 – Frame Relay

Connections between locations are done through Frame Relay point-to-point. To achieve the IP connectivity, you received the address space 192.168.1.0/24, which was partitioned in order to obtain the maximum possible number of networks. You will use the next DLCIs:

- a. Location1-Central DLCI 102
- b. Location1-ISP DLCI 109
- c. Central-Location1 DLCI 201
- d. Central-ISP DLCI 209
- e. ISP-Location1 DLCI 901
- f. ISP-Central DLCI 902

Make sure you have connection between all locations.