

# WELCOME TO Acadnet 2013

Please read the instructions carefully and follow exactly the given tasks.

Before beginning this lab, you will have to digitally sign the PT file with your name.

From the Options menu select User Profile (or CTRL+SHIFT+U) and enter the following:

- your name in the name field
- your city and high school in the Additional Info field

After pressing **OK**, the activity will reset and you will lose every configuration made until this moment.

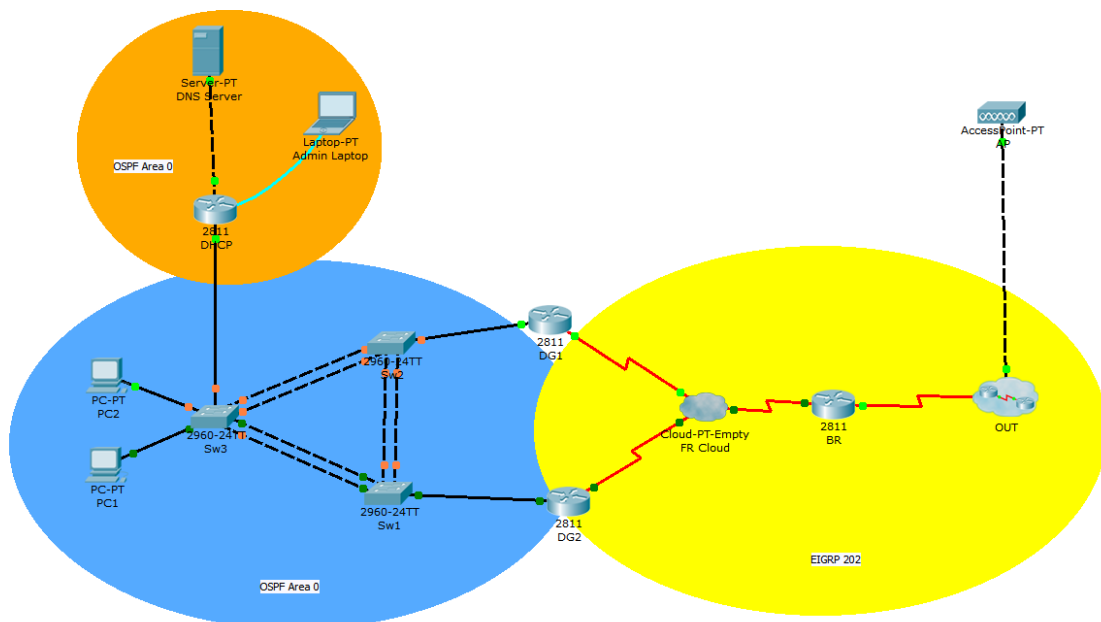
## Warning:

**Please save the PKT file frequently.**

You have 150 minutes available for this activity.

**Good luck!**

## Topology:



# Story

A junior system administrator is tested to prove his technical skills. Thereby, he received an important task to configure multiple devices so that in the end, PC1 and PC2 computers are granted access to the **www.acadnet.com** page, which is hosted on a web server, in the OUT cloud. Most of the devices that the junior is allowed to use have been previously used in other locations, so they may still have left-over configurations in their NVRAM memory. Oh, and guess what: you're the junior administrator. Good luck!

Your supervisor has handed you a piece of paper which contains the IP addresses that are already configured on the devices.

You also have been instructed to follow some general guidelines, but you also have some restrictions.

## General Settings

1. All the routers have been configured with the password "**acadnet**" for enable, console and vty login, except for the routers DHCP and OUT (OUT router is located in the OUT cloud and connects to both the BR and the wireless router).
2. Any necessary loopback interfaces must use a /32 network address.
3. Any static route must be defined using the next-hop address.
4. The OSPF process number used in the company's topology is 1 and the **OSPF area is 0**.
5. The EIGRP process number is **AS 220**.
6. Frame-Relay is correctly configured on the Frame-Relay cloud (FR cloud), with the following mappings:

**DLCI 103: DG1->BR**  
**DLCI 203: DG2->BR**  
**DLCI 301: BR->DG1**  
**DLCI 302: BR->DG2**

7. The directly connected networks of the router OUT will be discovered during configuration.

**Most of the routers are already configured with IP addresses. The following are forbidden on the devices:**

- **Changing existing IP address configurations and shutting down interfaces.**
- **Configuring additional routing protocols.**
- **Deleting the console link, or trying in any way to change the physical topology.**



**[40p] Task1:**

**Goal:** The first task involves all the devices from the OSPF Area 0, and implies that the PCs should receive the IP addresses from the DHCP Server. Consider the following:

**Requirements:**

1. VLANs that should be configured on each switch are **VLAN 11, VLAN 22 and VLAN 100**. These should be assigned as follows:
  - Check that all of the links between the switches allow **only** the 3 VLANs (11, 22 and 100)
  - PC1 belongs to VLAN 11
  - PC2 belongs to VLAN 22
  - DHCP belongs to VLAN 100
  - DG1 allows on its Fa0/0 interface traffic from both VLAN 11 and VLAN 100
  - DG2 allows on its Fa0/0 interface traffic from both VLAN 22 and VLAN 100

! The switches have been previously configured with VTP. Existing VTP configurations shouldn't be changed.

2. DG1 is the default gateway of PC1. To get to DG1, PC1 traffic should pass through all 3 switches. The odd links of the switches should be preferred to transfer VLAN11 traffic.  
! Complete these tasks while maintaining redundancy on all VLANs (you're not allowed to change the VLANs allowed).
3. DG2 is the default gateway of PC2. To get to DG2, PC2 traffic should pass through all 3 switches. The even links of the switches should be preferred to transfer VLAN22 traffic.  
! Complete these tasks while maintaining redundancy on all VLANs (you're not allowed to change the VLANs allowed).
4. Make sure that all switch ports that allow only one VLAN, will immediately enter into forwarding state if they are restarted.
5. The DHCP router was used before, but the last administrator who used it forgot its enable password. Connect to the DHCP server through the console port, from the Admin Laptop, and find out its password. **Keep it** somewhere **safe** - you'll need it later.  
! The break sequence is CTRL+C.
6. OSPF Area 0 has to be configured for all the networks involved (VLAN 11, VLAN 22, VLAN 100 and the DNS Server network). Taking in consideration that VLAN 100 is a multi-access environment, make sure that DG1 is responsible for all the OSPF updates of the other two routers (DG2 and DHCP), and that DG2 will take its place if DG1 should not work properly. Do these two tasks in two different ways.



7. On the DHCP router configure the necessary pools, considering the IP address scheme. The IP address for the DNS Server is 192.168.50.2.

**Verify that PC1 and PC2 gained a proper IP address, network mask and DNS Server, and that they have access to their own default gateway.**

### [20p] Task2:

**Goal:** Now that the PCs are configured with the proper IP addressing scheme, Junior still has many challenges ahead. The next challenge implies that the PCs can access BR, a branch router, without any problems - ICMP should be used to verify the connectivity.

### Specifications:

Frame-Relay mapping has already been configured on the Frame-Relay cloud. Unfortunately, the former systems administrator has made some mistakes in the Frame-Relay configuration on the DG1, DG2 and BR routers, and also while configuring EIGRP AS220 over the FR cloud.

### Requirements:

1. You have to configure the routers correctly, so that EIGRP runs properly on the FR network. DG1, DG2 and BR should have static FR mappings.
2. Without configuring any static route on DG1 and DG2, make sure that DG1 and DG2 have access to other networks, which are beyond BR router.
3. Traffic from VLAN 11 should be recognized by the BR router only through DG1's serial 0/1/0 IP address and traffic from VLAN 22 should be recognized by the BR router only through DG2's serial 0/1/0 IP address. (**Hint:** Use NAT)

### [10p] Task3:

**Goal:** Users of the PC1 and PC2 computers are close to getting access to the web server. The next task implies that the PCs can access the OUT router without any problems - ICMP should be used to verify the connectivity.

### Requirements:

1. The network address belonging to the link between BR and OUT routers should be observed from the BR router. The encapsulation used is PPP. To authenticate themselves through plain text passwords, the routers use their own names and the same password, acadnet. The router OUT has already been configured for PPP.



**Specifications:**

1. The PPP network is configured with the optimal IP subnet mask for a point to point link.
2. EIGRP220 is also configured on the OUT router, for the PPP network.

**[20p] Task4:**

**Goal:** After solving the connectivity issues to the OUT cloud, Junior is able to ping, from the two PCs, the OUT router, but he still can't access the web server. To troubleshoot these problems, he has to remotely access the OUT router, which can only be accessed through SSH from the Laptop.

**Requirements:**

1. The IP address of the OUT router on the interface connecting the wireless access point should be discovered using PC2 through a DNS query to **admin\_ip**. Configure the laptop with an IP address from the same network, knowing that the network mask is 255.255.255.0.
2. The SSH user is **admin**.
3. The SSH password is the one that has been discovered through the previous password recovery process.
4. Once the Admin Laptop is connected to the OUT router, troubleshoot why the two PCs don't have connectivity and solve the problem. On the OUT router, you are not allowed to change the routing configuration or to use additional routing (no routing protocols nor static routes).

**Ultimate goal:**

The PCs have to have access to the [www.acadnet.com](http://www.acadnet.com) website located on the web server.

