

**Intro:**

ACME Inc. contacts you again and besides this time nothing is wrong, they need to connect the company to the internet.

**The Scenario:**

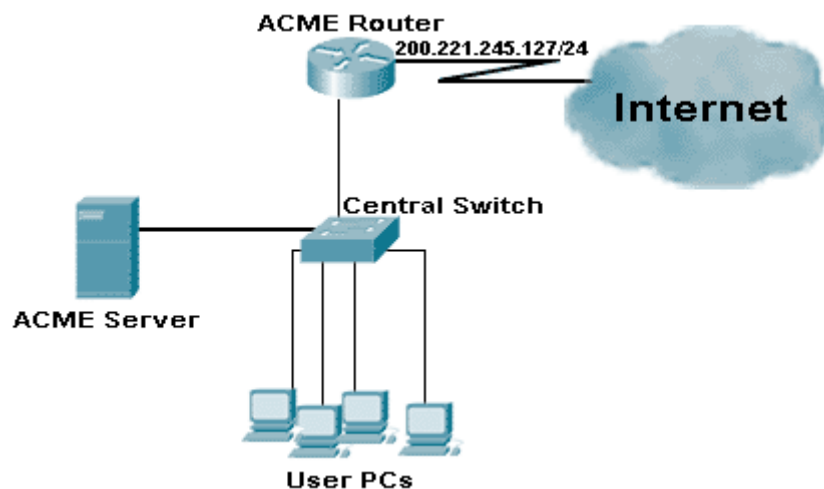
You get to the ACME Inc. office with the updated project. Since you focused the original project on scalability, with a switch as a central device, the internet connection gets quite straight forward.

**Question 1:**

Based on the original project designed by you:

- a. Which main device must be added to the ACME Inc. network topology in order to get it connected to the Internet?

The new topology is shown below:



Since you are configuring an Internet connection to the company, an Internet Service Provider (ISP) must be contacted. The ISP will provide the path to the Internet and a valid IP Address as well.

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The ISP provided 1 valid IP address to be assigned to ACME network border device. The provided Class C IP is 200.221.245.127/24 and instructs you to assign it to the external interface of the just added ACME Internet Router.

**Note.** The ISP only provided 1 valid IP address because it expects its customers to perform Network Address Translation (NAT). NAT will not be covered on this Case Study.

**Question 2:**

- a. From the viewpoint of ACME's user PCs and Server, what is the function of the new router?
- b. Do the user PCs and Server need to be aware of this router's internal interface IP address? Why?
- c. What is the most suitable IP address to be assigned to the router's internal interface?

ACME also decided to separate traffic within the company. Since each department will not have more than 15 User PC's, the plan is to have each department working inside its own VLAN and a separate VLAN to the server. The departments/VLANs are listed below:

- Sales
- Accounting
- Human Resources
- Server VLAN

**Question 3:**

- a. ACME's network had a /24 network mask before. Since the internal 192.168.2.0/24 class C IP range won't be changed, is that necessary to change this mask? Why?
- b. If so, what is the most suitable new mask to be applied to the class C 192.168.2.0/24?

**Answers:**

*Q1. A network router must be added.*

*Q2a. It is a Default Gateway or Default Router*

*Q2b. Yes. The router's internal address is the address to be used by the user PCs to reach the internet. It is the Default Gateway address and must be configured on the user PCs.*

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*Q2c. There is no 'most suitable' address. Any valid address WITHIN the network range is acceptable to be used as a default gateway address. Some administrators use the first valid address as the default gateway, others use the last valid address but there is no rule on this.*

*Q3a. Yes. 4 networks need to be created. The /24 mask provide only 1 network.*

*Q3b. /26 mask is enough. It provides 4 networks with 62 hosts per network.*