Cisco lab

Using Packet Tracer, you will build a network for a small branch network for a client. The network will be built from the ground up by you to connect to a WAN service. I have included the base Packet Tracer file with the WAN connection.

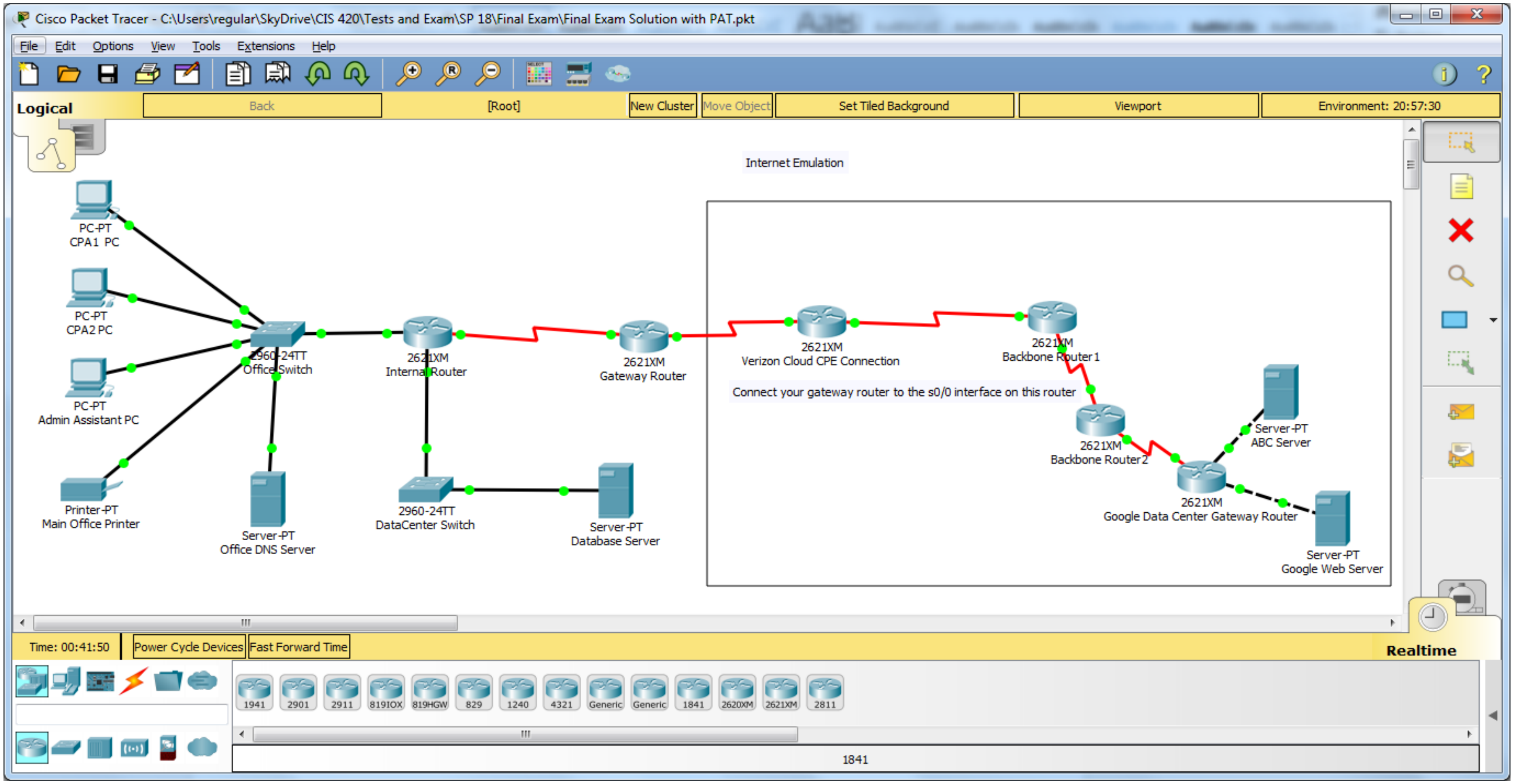
The network is for a small accounting service. The company employs two CPA's and an administrative assistant. These three persons are in an office suite and share a printer and a DNS server. The office suite computers and printer are on one subnet and share one access layer switch. A second subnet hosts a database server with all of the company's and clients' information. It is connected to an access layer switch. Both subnets' switches connect to the fast Ethernet interfaces of the internal router. Your network will have two routers: gateway and internal. The gateway router will connect to the Verizon CPE and to the internal router. The internal router will connect to the gateway router and the two subnet switches. The subnet with the database server will be protected with two ACL's assigned to the internal routers fast Ethernet interface that connects to the switch in the database server subnet. Traffic to and from the database server subnet will be restricted to the office computers. The gateway router will have an ACL attached to its outward facing interface (the one connected to the Verizon CPE). It will only permit established TCP traffic from entering the company's network and it will prohibit all ICMP traffic. A suggested network topology is attached to these instructions.

Here are the following specs for the network:

1. Connect the serial 0/0 interface on the Verizon CPE Router to the serial 0/0 interface on your gateway router. Use the IP address **177.100.100.2 255.255.255.252.**
2. Configure a default static route in your gateway router that directs to the serial 0/0 interface (facing the Verizon CPE Router).
3. You will need one internal router connected to the gateway. Configure OSPF on both your gateway router and internal router. Note: use 'area 1' in your OSPF network advertisements. Do not advertise the 177.100.100.0 network on your gateway router's OSPF configuration. We are isolating the OSPF of our autonomous system from the Internet. Also, remember to use the 'default-information originate' command on the gateway router.
4. Configure NAT on the gateway router. You will overload the s0/0 interface on the gateway router.
5. Configure static IP addresses on all of your internal hosts.
6. Configure the DNS server for the abc.com and google.com web sites.
7. Configure ACL's on the internal router to protect the database server.
8. Configure an ACL on the gateway router to protect the network.
9. Network will be fully functional to send and receive traffic both internally and externally.

I would suggest using an agile approach to developing this network. Here are some suggested steps:

1. Place all of the hosts, switches and routers on the Packet Tracer Canvas and connect them with appropriate connectors.
2. Develop IP addresses for each subnet. I would suggest using 192.168.0.0/24 for the three internal subnets (gateway router to internal router, office subnet and database server subnet).
3. Configure the end IP values on the hosts in each subnet including the workstations, printer, DNS and Database servers. Double check the configurations.
4. Configure the DNS server for the abc.com and google.com websites.
5. Configure the routers with the correct interface IP addresses and subnet masks. Configure NAT on the gateway router. I would test the network at this point by using the office computers to ping each other, the printer and the servers.
6. Configure the routers with the internal OSPF configuration. I would use something like this on the internal router (use similar commands on the gateway, but remember, do not advertise the 177.100.100.0 network on the gateway router. It will only have one network advertisement and that will be the network that it shares with the internal router):
    a. Router OSPF 2
    b. Network 192.168.10.0 0.0.0.255 area 1
    c. Network 192.168.20.0 0.0.0.255 area 1
    d. Network 192.168.30.0 0.0.0.255 area 1
7. Test the network by using the internal workstations to ping all internal hosts and the two web servers abc.com and google.com. If the pings fail, use tracert instead to see where the packet is not getting through.
8. Configure the ACL's on the internal and gateway routers.
9. Test the network by visiting the abc.com and google.com websites with one of the office workstation's Web browser and then by trying to ping them from the same office workstation. The workstation should be able to get the abc.com and google.com web pages, but it should not be able to ping the servers.



Connect your gateway router to the s0/0 interface on this router