

## Report 4

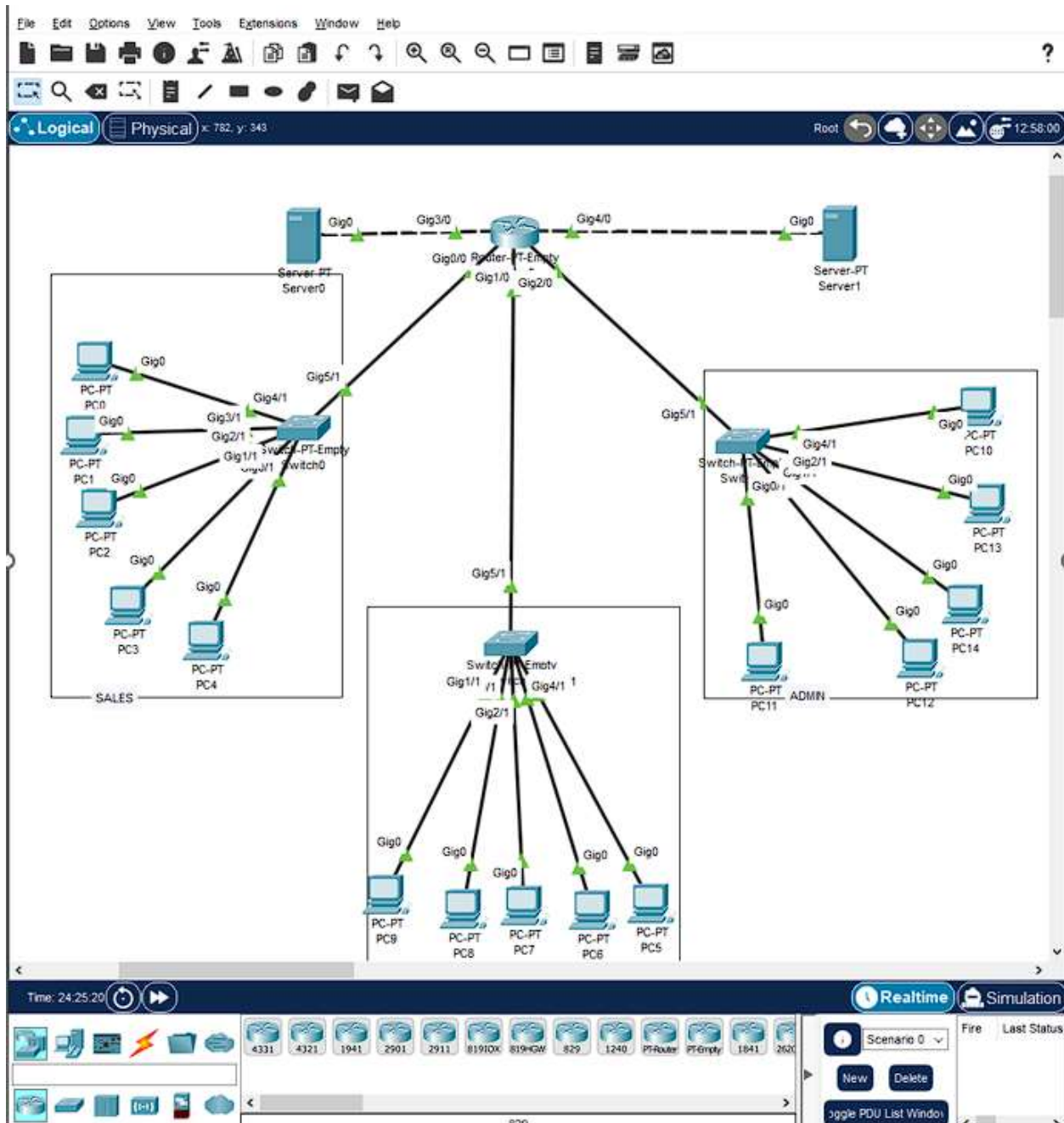
### Configuring DNS Server

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## Introduction

The objective of this assignment is to configure a DNS server in the previously created topology of DHCP (Assignment 3) and create domain names for one computer each from the VLANs and for both the DHCP server and the DNS server. Then the IP address for each is connected to the domain name.

### Network Topology Description:



From the Above diagram, it can be seen that, there are 3 switches being used, each assigned with a VLAN (SALES, MARKETING, ADMIN) and each switch are connected with 5 PCs. The router has 4 interfaces, 3 connected to the switches and one connected to a DHCP server. For all the connections, a 1 CGE cable is used. The router is used so that inter VLAN is possible. Inter VLAN is important because it helps PC from 1 VLAN connect and another and transfer data and share resource as well as provide proper security. A new server (DNS) is added to the router and connected with 1 CGE cable.

### **Switch Configurations**

To configure all the three switches, first all three switches are set with their respective VLANs (VLAN 10 as SALES, VLAN 20 as MARKETING and VLAN 30 as ADMIN). Then 15 PCs are taken and 5 each PCs are connected to all the 3 switches through CGE cable (CGE module is replaced in both all the PCs and switches). Then all the connected PCs in each of the switches are joined to their respected VLANs. We can check if the PCs are in VLAN through “do show VLAN” command in each of the command line in the switches. The reason VLANs are created on switches are because they logically can segregate network traffic, by the IDs and prevent the PCs in the VLAN to communication to PCs outside of the server (unless routing is used). They also optimize the network by reducing traffic and does not allow unauthorized devices access the network as well its resources.

### **Router Configuration**

When configuring the router, we first add 4 interfaces in it (here we are using CGE) and connect three of the interfaces to the switches (VLANs). The other cable is connected to the DHCP server. The interface facing the switch and the interface facing the server are giving IP addresses and subnet Masks. Then in the router we configure DHCP relay by specifying the ip address of the DHCP server on the router to all the other 3 interfaces connecting to the switches (VLANs). This will enable the server to be able to connect to the networks.

### **DHCP Server Configuration**

The server is first modified with a 1CGE cable and is connected to the router through it. Then default gateway is set to the router’s IP address to pass information when it does not know where the destination of the devices is. Also, an IP address is given to the interface connected to it. Then to enable DHCP, we enable its service. After than we create 3 pool (SalesPool, MarketingPool and AdminPool) giving the starting IP range of the subnet (in my case, 192.168.2.10 for SALES, 192.168.3.10 for marketing and 192.168.4.10 for ADMIN) with default gateway being the IP address of interface connecting each switches. (In assignment I set 192.168.2.1 for SALES, 192.168.3.1 for marketing and 192.168.4.1 for ADMIN) with max number of user set as 5. Then the server sends IP to all the VLANs under the subnet provided and assigns IP to all the PCs automatically as shown in image below. Also all the PCs needs to be selected as DHCP in IP configuration instead of Static for it to work.

PC0

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

GigabitEthernet0

IP Configuration

☒ DHCP

☐ Static

IPv4 Address

192.168.2.10

Subnet Mask

255.255.255.0

Default Gateway

192.168.2.1

DNS Server

0.0.0.0

IPv6 Configuration

☐ Automatic

☒ Static

IPv6 Address

/

Link Local Address

FE80::201:C7FF:FE83:88E6

Default Gateway

DNS Server

802.1X

☐ Use 802.1X Security

Authentication

MD5

Username

Password

☐ Top

## DNS Server Configuration:

After connecting the DNS server to the router, to setup DNS server, in the DNS server, we setup A records for 3 pc from each VLANs (SALES, MARKETING, ADMIN), the DHCP server and the DNS server by connecting to each devices ip to the name. Then CNAME is assigned to each host Name and the records name is given.

Server1

Physical

Config

Services

Desktop

Programming

Attributes

SERVICES

HTTP

DHCP

DHCPv6

TFTP

DNS

SYSLOG

AAA

NTP

EMAIL

FTP

IoT

VM Management

Radius EAP

DNS

DNS Service ☒ On ☐ Off

Resource Records

Name  Type

Host Name

Add

Save

Remove

No.	Name	Type	Detail
0	adminpc3	CNAME	pc3.admin.com
1	dhcp.com	A Record	192.168.1.2
2	dhcpserver	CNAME	dhcp.com
3	dns.com	A Record	192.168.5.2
4	dnserver	CNAME	dns.com
5	marketingpc2	CNAME	pc2.marketing.com
6	pc1.sales.com	A Record	192.168.2.14
7	pc2.marketing.com	A Record	192.168.3.13
8	pc3.admin.com	A Record	192.168.4.14
9	salespc1	CNAME	pc1.sales.com

DNS Cache

☐ Top

## Testing and Verification

To test if our DNS server was working or not, we ping the pc to the pc name and to the domains name. The tests can be seen in the picture below.

```
PC11
Physical Config Desktop Programming Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping dns.com

Pinging 192.168.5.2 with 32 bytes of data:

Reply from 192.168.5.2: bytes=32 time<1ms TTL=127
Reply from 192.168.5.2: bytes=32 time<1ms TTL=127
Reply from 192.168.5.2: bytes=32 time<1ms TTL=127
Reply from 192.168.5.2: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.5.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping salespcl

Pinging 192.168.2.14 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.14: bytes=32 time<1ms TTL=127
Reply from 192.168.2.14: bytes=32 time<1ms TTL=127
Reply from 192.168.2.14: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.14:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

## Conclusion

In conclusion, we can see that to connect a DNS server to the topology, A record and CNAME are set. Domain names are used because how user friendly it is to search and use the names instead of the Ips address that the system uses.