



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Experiment Name: Routing Through Hub and Switch and Verification of
Some Fundamental command of Network Connections

Experiment No: 1

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1 Objective

The goal is to see how information moves through a hub and a switch, and to check if basic network commands like ping and traceroute are working. We also want to fix any problems we find by using these commands, and make sure data is sent smoothly between different parts of the network.

2 Network Diagram

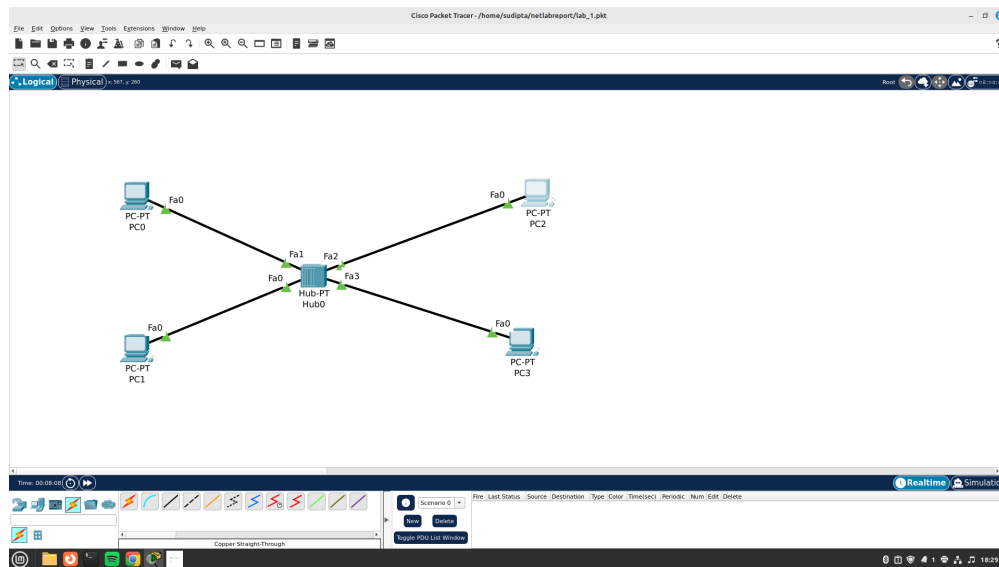


Figure 1: Network Diagram for Routing Through Hub

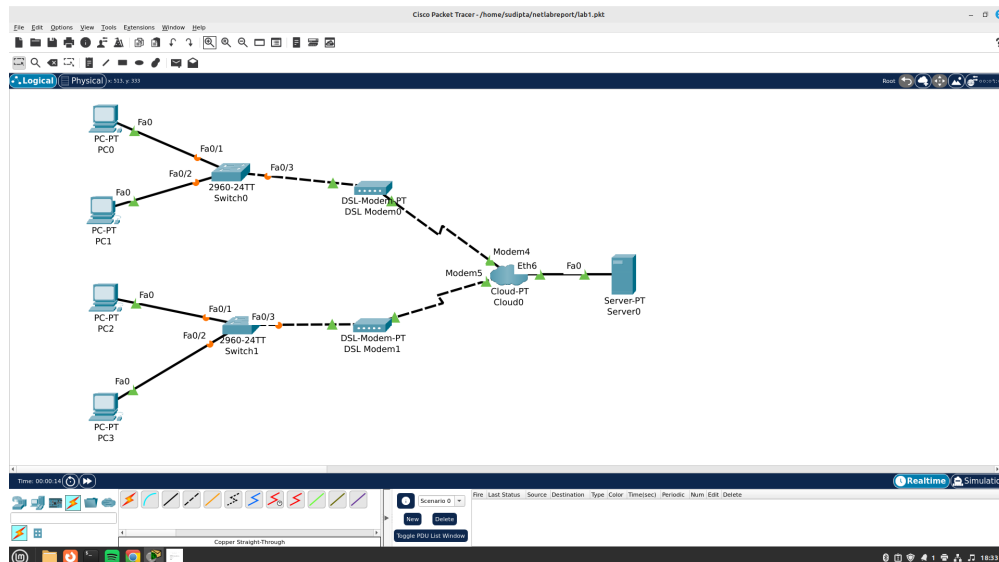


Figure 2: Network Diagram for DSL Model in WAN

3 Procedure

The above network diagram is created using Cisco Packet Tracer software. The computers, switch, and hub are all taken from built-in devices in Cisco Packet Tracer. For testing ping and traceroute we use those commands

```
$ ping www.google.com
$ traceroute www.google.com
```

4 Result

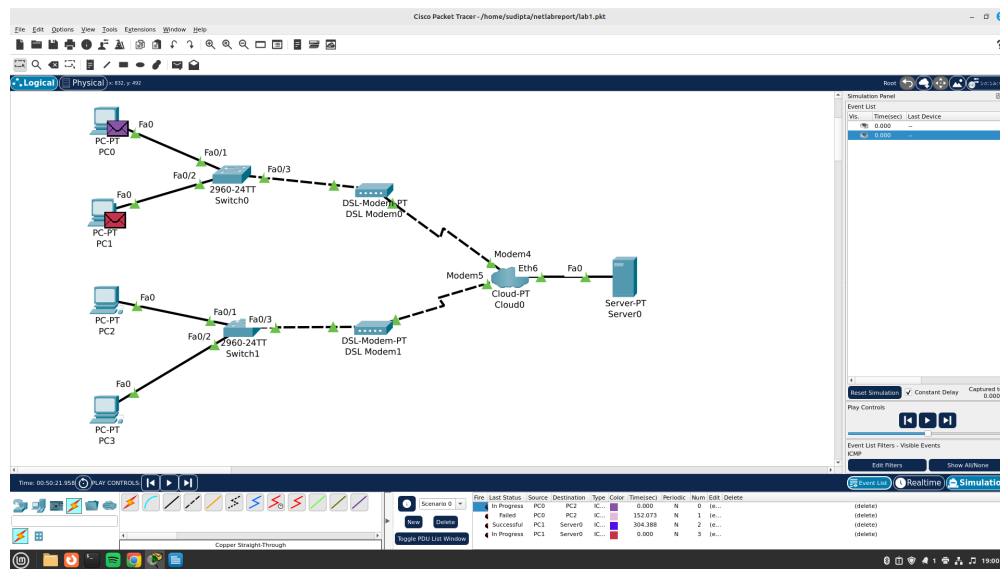


Figure 3: The Packet is leaving the source computer

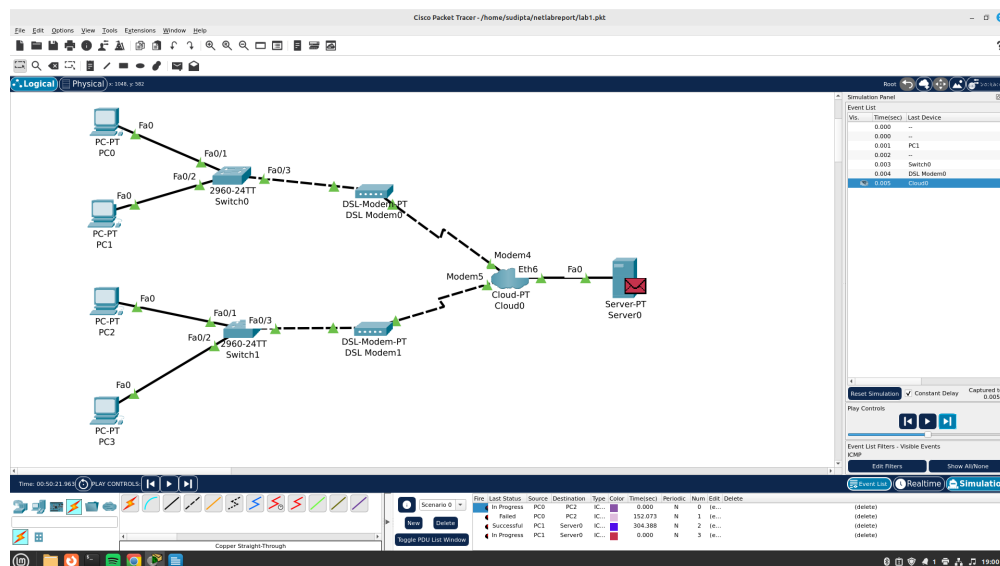


Figure 4: The Packet reached the Server

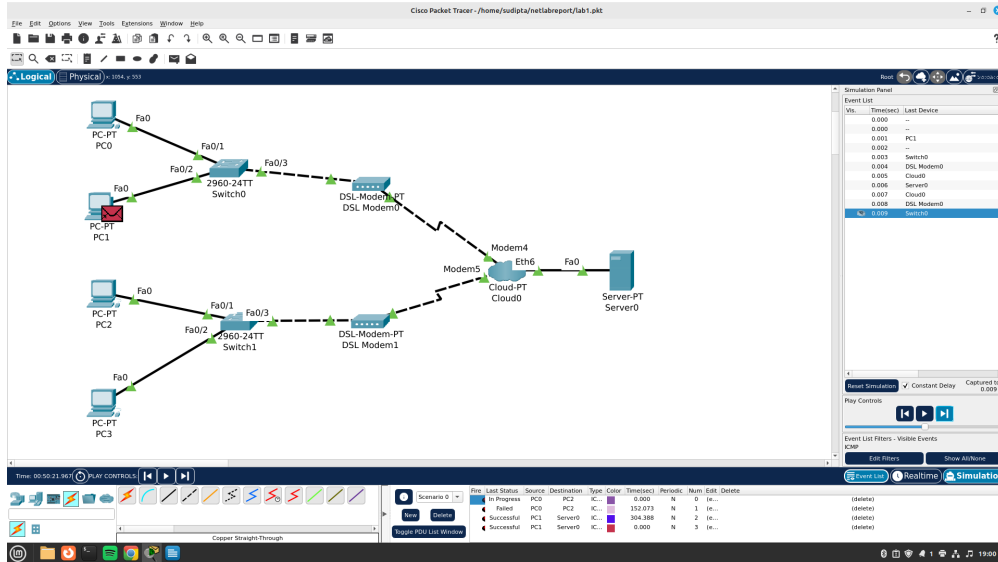


Figure 5: The acknowledgement reached the source pc

```

sudipta@cplab: ~
File Edit View Search Terminal Help
sudipta@cplab:~$ ping www.google.com
PING www.google.com (142.250.194.4) 56(84) bytes of data:
64 bytes from del12s01-in-f4.1e100.net (142.250.194.4): icmp_seq=1 ttl=112 time=
46.0 ms
64 bytes from del12s01-in-f4.1e100.net (142.250.194.4): icmp_seq=2 ttl=112 time=
39.1 ms
64 bytes from del12s01-in-f4.1e100.net (142.250.194.4): icmp_seq=3 ttl=112 time=
38.8 ms
64 bytes from del12s01-in-f4.1e100.net (142.250.194.4): icmp_seq=4 ttl=112 time=
39.3 ms
64 bytes from del12s01-in-f4.1e100.net (142.250.194.4): icmp_seq=5 ttl=112 time=
38.8 ms
64 bytes from del12s01-in-f4.1e100.net (142.250.194.4): icmp_seq=6 ttl=112 time=
38.8 ms
64 bytes from del12s01-in-f4.1e100.net (142.250.194.4): icmp_seq=7 ttl=112 time=
39.0 ms
64 bytes from del12s01-in-f4.1e100.net (142.250.194.4): icmp_seq=8 ttl=112 time=
39.1 ms
64 bytes from del12s01-in-f4.1e100.net (142.250.194.4): icmp_seq=9 ttl=112 time=
39.1 ms
^C
--- www.google.com ping statistics ---
9 packets transmitted, 9 received, 0% packet loss, time 801ms
rtt min/avg/max/mdev = 38.780/39.772/45.959/2.192 ms

```

Figure 6: Ping result for ping www.google.com

```
sudipta@cplab: ~  
File Edit View Search Terminal Help  
sudipta@cplab:~$ traceroute www.google.com  
traceroute to www.google.com (142.250.194.4), 30 hops max, 60 byte packets  
 1 _gateway (172.16.0.1) 1.086 ms 1.063 ms 1.045 ms  
 2 10.10.180.1 (10.10.180.1) 1.041 ms 1.038 ms 1.056 ms  
 3 172.16.251.33 (172.16.251.33) 1.031 ms 1.028 ms 1.024 ms  
 4 172.16.251.9 (172.16.251.9) 1.042 ms 1.039 ms 1.036 ms  
 5 163.47.36.9 (163.47.36.9) 1.033 ms 1.029 ms 1.026 ms  
 6 * * *  
 7 100.100.0.61 (100.100.0.61) 2.079 ms 2.063 ms 2.334 ms  
 8 180.211.162.109 (180.211.162.109) 3.448 ms 3.433 ms 3.418 ms  
 9 123.49.8.41 (123.49.8.41) 3.403 ms 3.388 ms 12.197 ms  
10 123.49.13.89 (123.49.13.89) 17.945 ms 9.008 ms 9.303 ms  
11 142.251.195.122 (142.251.195.122) 47.566 ms 38.954 ms 38.645 ms  
12 * * *  
13 142.251.52.216 (142.251.52.216) 39.761 ms 72.14.233.166 (72.14.233.166) 48  
.283 ms 64.233.174.70 (64.233.174.70) 47.075 ms  
14 192.178.82.236 (192.178.82.236) 41.961 ms 142.251.255.54 (142.251.255.54)  
48.127 ms 142.251.52.199 (142.251.52.199) 47.523 ms  
15 216.239.54.93 (216.239.54.93) 49.522 ms 192.178.83.227 (192.178.83.227) 39  
.715 ms del12s01-in-f4.1e100.net (142.250.194.4) 48.209 ms  
sudipta@cplab:~$
```

Figure 7: Traceroute result for traceroute www.google.com