

শিক্ষা নিয়ে গড়বো দেশ

তথ্য-প্রযুক্তির বাংলাদেশ

Bangabandhu Sheikh Mujibur Rahman Digital University, Bangladesh



# LAB REPORT-02

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COURSE NO.-ICT 4256

COURSE TITLE-COMPUTER NETWORKING LAB

## SUBMITTED BY

Mehrin Farzana

ID:2101013

Department of ICT

Session :2021-2022

Bangabandhu Sheikh Mujibur Rahman Digital  
University, Bangladesh

## SUBMITTED TO

Md.Toukir Ahmed

Lecturer

Department of ICT, BDU

Bangabandhu Sheikh Mujibur Rahman Digital  
University, Bangladesh

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### **Lab Introduction:**

In this lab we'll be learning the basics of Router and Repeater and uses of them in LANs using a network simulation tool, Cisco Packet Tracer.

### **Objectives:**

- To learn what a Router and a repeater is
  - How a Router and a repeater works
  - Where and why a Router is needed
  - Where and why a Repeater is needed
- 

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## Experiment No.: 1

### Experiment Title: Introduction with Router using Cisco Packet Tracer

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#### Objectives:

- To learn what a Router is
- How a Router works
- Where and why a Router is needed

#### Discussion:

A Router, an inevitable device for the internet, is a networking device that forwards data packets between computer networks.

- It connects two or more LANs
- It is a layer 3(i.e. Network layer) device
- It has a memory and stores routing table

#### Methodology:

- Create a New Project.
- Create the basic Network topology.
- Configuration of the Network Nodes.
- Choose the Statistics.
- Run the Simulation.
- Analysis of the Results.

#### Working procedure:

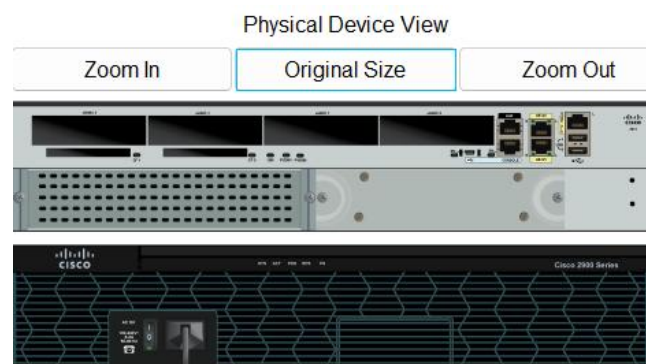


Fig 1.1: Physical rear view of a 2911 Router

## 1. Connecting two LANs of different IP schemes with a Router

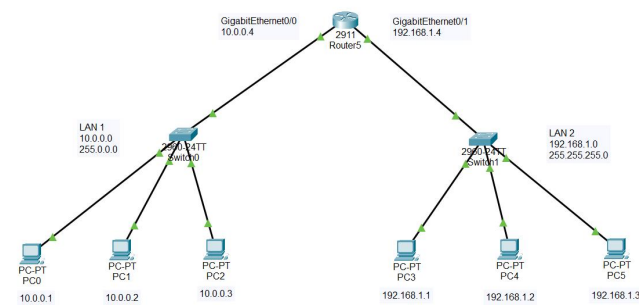


Fig 1.2: Two labeled LANs of different IP schemes connected by a Router in CPT

### 1.1. Configure PC0, PC1, PC2 with the following IP addresses and Subnet Masks

Host	IP Address	Subnet Mask	Default Gateway
PC0	10.0.0.1	255.0.0.0	10.0.0.4
PC1	10.0.0.2	255.0.0.0	10.0.0.4
PC2	10.0.0.3	255.0.0.0	10.0.0.4

### 1.2. Configure PC3, PC4, PC5 with the following IP addresses and Subnet Masks

Host	IP Address	Subnet Mask	Default Gateway
PC3	192.168.1.1	255.255.255.0	192.168.1.4
PC4	192.168.1.2	255.255.255.0	192.168.1.4
PC5	192.168.1.3	255.255.255.0	192.168.1.4

### 1.3. Connection tests across PCs in a single LAN

Ping two PCs by their IP addresses from another PC within a LAN, one after another. If connection is there, four replies will come.

Do the same for the second LAN.

```
Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time=30ms TTL=128

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 30ms, Average = 7ms

C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
```

Fig 1.3: Pinging PC2 and PC1 from PC0

## 1.4. Connecting LANs with a Router

- A. Connecting LAN1 with the Router by the GigabitEthernet0/0 interface
- B. Connecting LAN2 with the Router by the GigabitEthernet0/1 interface
- C. Giving the interfaces an IP address and a Subnet Mask of the same scheme

Interface	IP address	Subnet Mask
GigabitEthernet0/0	10.0.0.4	255.0.0.0
GigabitEthernet0/1	192.168.1.4	255.255.255.0

D. Check “On” in the port status for each interface in the

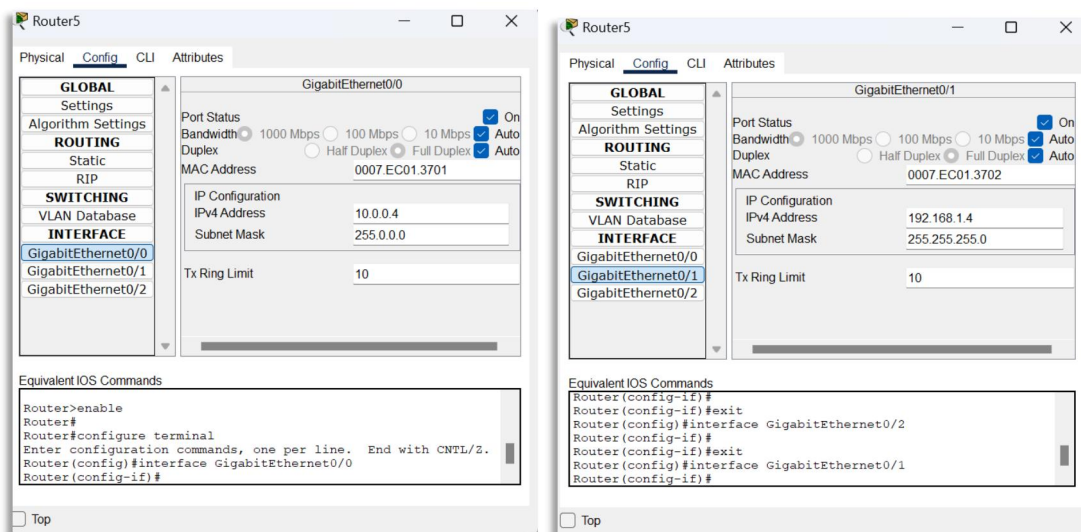


Fig 1.4: Configuring GigabitEthernet0/0 and GigabitEthernet0/1 of the Router

## 2. Sending data across LANs

For the first time communication, 1 packet may be lost, but from then on, data will be transmitted with 0% loss.

Also, if observed in simulation mode, for the first time communication, switch will be broadcasting data packets as the IP address of the Router hasn't been stored.

```
Command Prompt
C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Request timed out.
Reply from 192.168.1.3: bytes=32 time<1ms TTL=127
Reply from 192.168.1.3: bytes=32 time<1ms TTL=127
Reply from 192.168.1.3: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 192.168.1.3

Pinging 192.168.1.3 with 32 bytes of data:

Reply from 192.168.1.3: bytes=32 time=17ms TTL=127
Reply from 192.168.1.3: bytes=32 time=1ms TTL=127
Reply from 192.168.1.3: bytes=32 time<1ms TTL=127
Reply from 192.168.1.3: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 17ms, Average = 4ms

C:\>
```

Fig 1.5: Pinging PC5 from PC0

### 3. Simulation:

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC5	ICMP		0.000	N	0	(edit)	(delete)

Fig 1.6: Successful packets travel across PCs

PDU Information at Device: Router5

OSI Model Inbound PDU Details Outbound PDU Details

At Device: Router5  
Source: PC0  
Destination: PC5

**In Layers**

Layer7  
Layer6  
Layer5  
Layer4  
Layer 3: IP Header Src. IP: 10.0.0.1, Dest. IP: 192.168.1.3 ICMP Message Type: 8  
Layer 2: Ethernet II Header 0001.969B.955D >> 0007.EC01.3701  
**Layer 1: Port GigabitEthernet0/0**

**Out Layers**

Layer7  
Layer6  
Layer5  
Layer4  
Layer 3: IP Header Src. IP: 10.0.0.1, Dest. IP: 192.168.1.3 ICMP Message Type: 8  
Layer 2: Ethernet II Header 0007.EC01.3702 >> 0006.2A86.B032  
Layer 1: Port(s): GigabitEthernet0/1

1. GigabitEthernet0/0 receives the frame.

Challenge Me << Previous Layer Next Layer >>

Fig 1.7: PDU information at Router5

PDU Information at Device: Router5

OSI Model Inbound PDU Details Outbound PDU Details

PDU Formats

**Ethernet II**

0 4 8 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92 96 100 104 108 112 116 120 124 128 132 136 140 144 148 152 156 160 164 168 172 176 180 184 188 192 196 200 204 208 212 216 220 224 228 232 236 240 244 248 252 256 260 264 268 272 276 280 284 288 292 296 300 304 308 312 316 320 324 328 332 336 340 344 348 352 356 360 364 368 372 376 380 384 388 392 396 400 404 408 412 416 420 424 428 432 436 440 444 448 452 456 460 464 468 472 476 480 484 488 492 496 500 504 508 512 516 520 524 528 532 536 540 544 548 552 556 560 564 568 572 576 580 584 588 592 596 600 604 608 612 616 620 624 628 632 636 640 644 648 652 656 660 664 668 672 676 680 684 688 692 696 700 704 708 712 716 720 724 728 732 736 740 744 748 752 756 760 764 768 772 776 780 784 788 792 796 800 804 808 812 816 820 824 828 832 836 840 844 848 852 856 860 864 868 872 876 880 884 888 892 896 900 904 908 912 916 920 924 928 932 936 940 944 948 952 956 960 964 968 972 976 980 984 988 992 996 1000 1004 1008 1012 1016 1020 1024 1028 1032 1036 1040 1044 1048 1052 1056 1060 1064 1068 1072 1076 1080 1084 1088 1092 1096 1100 1104 1108 1112 1116 1120 1124 1128 1132 1136 1140 1144 1148 1152 1156 1160 1164 1168 1172 1176 1180 1184 1188 1192 1196 1200 1204 1208 1212 1216 1220 1224 1228 1232 1236 1240 1244 1248 1252 1256 1260 1264 1268 1272 1276 1280 1284 1288 1292 1296 1300 1304 1308 1312 1316 1320 1324 1328 1332 1336 1340 1344 1348 1352 1356 1360 1364 1368 1372 1376 1380 1384 1388 1392 1396 1400 1404 1408 1412 1416 1420 1424 1428 1432 1436 1440 1444 1448 1452 1456 1460 1464 1468 1472 1476 1480 1484 1488 1492 1496 1500 1504 1508 1512 1516 1520 1524 1528 1532 1536 1540 1544 1548 1552 1556 1560 1564 1568 1572 1576 1580 1584 1588 1592 1596 1600 1604 1608 1612 1616 1620 1624 1628 1632 1636 1640 1644 1648 1652 1656 1660 1664 1668 1672 1676 1680 1684 1688 1692 1696 1700 1704 1708 1712 1716 1720 1724 1728 1732 1736 1740 1744 1748 1752 1756 1760 1764 1768 1772 1776 1780 1784 1788 1792 1796 1800 1804 1808 1812 1816 1820 1824 1828 1832 1836 1840 1844 1848 1852 1856 1860 1864 1868 1872 1876 1880 1884 1888 1892 1896 1900 1904 1908 1912 1916 1920 1924 1928 1932 1936 1940 1944 1948 1952 1956 1960 1964 1968 1972 1976 1980 1984 1988 1992 1996 2000 2004 2008 2012 2016 2020 2024 2028 2032 2036 2040 2044 2048 2052 2056 2060 2064 2068 2072 2076 2080 2084 2088 2092 2096 2100 2104 2108 2112 2116 2120 2124 2128 2132 2136 2140 2144 2148 2152 2156 2160 2164 2168 2172 2176 2180 2184 2188 2192 2196 2200 2204 2208 2212 2216 2220 2224 2228 2232 2236 2240 2244 2248 2252 2256 2260 2264 2268 2272 2276 2280 2284 2288 2292 2296 2300 2304 2308 2312 2316 2320 2324 2328 2332 2336 2340 2344 2348 2352 2356 2360 2364 2368 2372 2376 2380 2384 2388 2392 2396 2400 2404 2408 2412 2416 2420 2424 2428 2432 2436 2440 2444 2448 2452 2456 2460 2464 2468 2472 2476 2480 2484 2488 2492 2496 2500 2504 2508 2512 2516 2520 2524 2528 2532 2536 2540 2544 2548 2552 2556 2560 2564 2568 2572 2576 2580 2584 2588 2592 2596 2600 2604 2608 2612 2616 2620 2624 2628 2632 2636 2640 2644 2648 2652 2656 2660 2664 2668 2672 2676 2680 2684 2688 2692 2696 2700 2704 2708 2712 2716 2720 2724 2728 2732 2736 2740 2744 2748 2752 2756 2760 2764 2768 2772 2776 2780 2784 2788 2792 2796 2800 2804 2808 2812 2816 2820 2824 2828 2832 2836 2840 2844 2848 2852 2856 2860 2864 2868 2872 2876 2880 2884 2888 2892 2896 2900 2904 2908 2912 2916 2920 2924 2928 2932 2936 2940 2944 2948 2952 2956 2960 2964 2968 2972 2976 2980 2984 2988 2992 2996 3000 3004 3008 3012 3016 3020 3024 3028 3032 3036 3040 3044 3048 3052 3056 3060 3064 3068 3072 3076 3080 3084 3088 3092 3096 3100 3104 3108 3112 3116 3120 3124 3128 3132 3136 3140 3144 3148 3152 3156 3160 3164 3168 3172 3176 3180 3184 3188 3192 3196 3200 3204 3208 3212 3216 3220 3224 3228 3232 3236 3240 3244 3248 3252 3256 3260 3264 3268 3272 3276 3280 3284 3288 3292 3296 3300 3304 3308 3312 3316 3320 3324 3328 3332 3336 3340 3344 3348 3352 3356 3360 3364 3368 3372 3376 3380 3384 3388 3392 3396 3400 3404 3408 3412 3416 3420 3424 3428 3432 3436 3440 3444 3448 3452 3456 3460 3464 3468 3472 3476 3480 3484 3488 3492 3496 3500 3504 3508 3512 3516 3520 3524 3528 3532 3536 3540 3544 3548 3552 3556 3560 3564 3568 3572 3576 3580 3584 3588 3592 3596 3600 3604 3608 3612 3616 3620 3624 3628 3632 3636 3640 3644 3648 3652 3656 3660 3664 3668 3672 3676 3680 3684 3688 3692 3696 3700 3704 3708 3712 3716 3720 3724 3728 3732 3736 3740 3744 3748 3752 3756 3760 3764 3768 3772 3776 3780 3784 3788 3792 3796 3800 3804 3808 3812 3816 3820 3824 3828 3832 3836 3840 3844 3848 3852 3856 3860 3864 3868 3872 3876 3880 3884 3888 3892 3896 3900 3904 3908 3912 3916 3920 3924 3928 3932 3936 3940 3944 3948 3952 3956 3960 3964 3968 3972 3976 3980 3984 3988 3992 3996 4000 4004 4008 4012 4016 4020 4024 4028 4032 4036 4040 4044 4048 4052 4056 4060 4064 4068 4072 4076 4080 4084 4088 4092 4096 4100 4104 4108 4112 4116 4120 4124 4128 4132 4136 4140 4144 4148 4152 4156 4160 4164 4168 4172 4176 4180 4184 4188 4192 4196 4200 4204 4208 4212 4216 4220 4224 4228 4232 4236 4240 4244 4248 4252 4256 4260 4264 4268 4272 4276 4280 4284 4288 4292 4296 4300 4304 4308 4312 4316 4320 4324 4328 4332 4336 4340 4344 4348 4352 4356 4360 4364 4368 4372 4376 4380 4384 4388 4392 4396 4400 4404 4408 4412 4416 4420 4424 4428 4432 4436 4440 4444 4448 4452 4456 4460 4464 4468 4472 4476 4480 4484 4488 4492 4496 4500 4504 4508 4512 4516 4520 4524 4528 4532 4536 4540 4544 4548 4552 4556 4560 4564 4568 4572 4576 4580 4584 4588 4592 4596 4600 4604 4608 4612 4616 4620 4624 4628 4632 4636 4640 4644 4648 4652 4656 4660 4664 4668 4672 4676 4680 4684 4688 4692 4696 4700 4704 4708 4712 4716 4720 4724 4728 4732 4736 4740 4744 4748 4752 4756 4760 4764 4768 4772 4776 4780 4784 4788 4792 4796 4800 4804 4808 4812 4816 4820 4824 4828 4832 4836 4840 4844 4848 4852 4856 4860 4864 4868 4872 4876 4880 4884 4888 4892 4896 4900 4904 4908 4912 4916 4920 4924 4928 4932 4936 4940 4944 4948 4952 4956 4960 4964 4968 4972 4976 4980 4984 4988 4992 4996 5000 5004 5008 5012 5016 5020 5024 5028 5032 5036 5040 5044 5048 5052 5056 5060 5064 5068 5072 5076 5080 5084 5088 5092 5096 5100 5104 5108 5112 5116 5120 5124 5128 5132 5136 5140 5144 5148 5152 5156 5160 5164 5168 5172 5176 5180 5184 5188 5192 5196 5200 5204 5208 5212 5216 5220 5224 5228 5232 5236 5240 5244 5248 5252 5256 5260 5264 5268 5272 5276 5280 5284 5288 5292 5296 5300 5304 5308 5312 5316 5320 5324 5328 5332 5336 5340 5344 5348 5352 5356 5360 5364 5368 5372 5376 5380 5384 5388 5392 5396 5400 5404 5408 5412 5416 5420 5424 5428 5432 5436 5440 5444 5448 5452 5456 5460 5464 5468 5472 5476 5480 5484 5488 5492 5496 5500 5504 5508 5512 5516 5520 5524 5528 5532 5536 5540 5544 5548 5552 5556 5560 5564 5568 5572 5576 5580 5584 5588 5592 5596 5600 5604 5608 5612 5616 5620 5624 5628 5632 5636 5640 5644 5648 5652 5656 5660 5664 5668 5672 5676 5680 5684 5688 5692 5696 5700 5704 5708 5712 5716 5720 5724 5728 5732 5736 5740 5744 5748 5752 5756 5760 5764 5768 5772 5776 5780 5784 5788 5792 5796 5800 5804 5808 5812 5816 5820 5824 5828 5832 5836 5840 5844 5848 5852 5856 5860 5864 5868 5872 5876 5880 5884 5888 5892 5896 5900 5904 5908 5912 5916 5920 5924 5928 5932 5936 5940 5944 5948 5952 5956 5960 5964 5968 5972 5976 5980 5984 5988 5992 5996 6000 6004 6008 6012 6016 6020 6024 6028 6032 6036 6040 6044 6048 6052 6056 6060 6064 6068 6072 6076 6080 6084 6088 6092 6096 6100 6104 6108 6112 6116 6120 6124 6128 6132 6136 6140 6144 6148 6152 6156 6160 6164 6168 6172 6176 6180 6184 6188 6192 6196 6200 6204 6208 6212 6216 6220 6224 6228 6232 6236 6240 6244 6248 6252 6256 6260 6264 6268 6272 6276 6280 6284 6288 6292 6296 6300 6304 6308 6312 6316 6320 6324 6328 6332 6336 6340 6344 6348 6352 6356 6360 6364 6368 6372 6376 6380 6384 6388 6392 6396 6400 6404 6408 6412 6416 6420 6424 6428 6432 6436 6440 6444 6448 6452 6456 6460 6464 6468 6472 6476 6480 6484 6488 6492 6496 6500 6504 6508 6512 6516 6520 6524 6528 6532 6536 6540 6544 6548 6552 6556 6560 6564 6568 6572 6576 6580 6584 6588 6592 6596 6600 6604 6608 6612 6616 6620 6624 6628 6632 6636 6640 6644 6648 6652 6656 6660 6664 6668 6672 6676 6680 6684 6688 6692 6696 6700 6704 6708 6712 6716 6720 6724 6728 6732 6736 6740 6744 6748 6752 6756 6760 6764 6768 6772 6776 6780 6784 6788 6792 6796 6800 6804 6808 6812 6816 6820 6824 6828 6832 6836 6840 6844 6848 6852 6856 6860 6864 6868 6872 6876 6880 6884 6888 6892 6896 6900 6904 6908 6912 6916 6920 6924 6928 6932 6936 6940 6944 6948 6952 6956 6960 6964 6968 6972 6976 6980 6984 6988 6992 6996 7000 7004 7008 7012 7016 7020 7024 7028 7032 7036 7040 7044 7048 7052 7056 7060 7064 7068 7072 7076 7080 7084 7088 7092 7096 7100 7104 7108 7112 7116 7120 7124 7128 7132 7136 7140 7144 7148 7152 7156 7160 7164 7168 7172 7176 7180 7184 7188 7192 7196 7200 7204 7208 7212 7216 7220 7224 7228 7232 7236 7240 7244 7248 7252 7256 7260 7264 7268 7272 7276 7280 7284 7288 7292 7296 7300 7304 7308 7312 7316 7320 7324 7328 7332 7336 7340 7344 7348 7352 7356 7360 7364 7368 7372 7376 7380 7384 7388 7392 7396 7400 7404 7408 7412 7416 7420 7424 7428 7432 7436 7440 7444 7448 7452 7456 7460 7464 7468 7472 7476 7480 7484 7488 7492 7496 7500 7504 7508 7512 7516 7520 7524 7528 7532 7536 7540 7544 7548 7552 7556 7560 7564 7568 7572 7576 7580 7584 7588 7592 7596 7600 7604 7608 7612 7616 7620 7624 7628 7632 7636 7640 7644 7648 7652 7656 7660 7664 7668 7672 7676 7680 7684 7688 7692 7696 7700 7704 7708 7712 7716 7720 7724 7728 7732 7736 7740 7744 7748 7752 7756 7760 7764 7768 7772 7776 7780 7784 7788 7792 7796 7800 7804 7808 7812 7816 7820 7824 7828 7832 7836 7840 7844 7848 7852 7856 7860 7864 7868 7872 7876 7880 7884 7888 7892 7896 7900 7904 7908 7912 7916 7920 7924 7928 7932 7936 7940 7944 7948 7952 7956 7960 7964 7968 7972 7976 7980 7984 7988 7992 7996 8000 8004 8008 8012 8016 8020 8024 8028 8032 8036 8040 8044 8048 8052 8056 8060 8064 8068 8072 8076 8080 8084 8088 8092 8096 8100 8104 8108 8112 8116 8120 8124 8128 8132 8136 8140 8144 8148 8152 8156 8160 8164 8168 8172 8176 8180 8184 8188 8192 8196 8200 8204 8208 8212 8216 8220 8224 8228 8232 8236 8240 8244 8248 8252 8256 8260 8264 8268 8272 8276 8280 8284 8288 8292 8296 8300 8304 8308 8312 8316 8320 8324 8328 8332 8336 8340 8344 8348 8352 8356 8360 8364 8368 8372 8376 8380 8384 8388 8392 8396 8400 8404 8408 8412 8416 8420 8424 8428 8432 8436 8440 8444 8448 8452 8456 8460 8464 8468 8472 8476 8480 8484 8488 8492 8496 8500 8504 8508 8512 8516 8520 8524 8528 8532 8536 8540 8544 8548 8552 8556 8560 8564 8568 8572 8576 8580 8584 8588 8592 8596 8600 8604 8608 8612 8616 8620 8624 8628 8632 8636 8640 8644 8648 8652 8656 8660 8664 8668 8672 8676 8680 8684 8688 8692 8696 8700 8704 8708 8712 8716 8720 8724 8728 8732 8736 8740 8744 8748 8752 8756 8760 8764 8768 8772 8776 8780 8784 8788 8792 8796 8800 8804 8808 8812 8816 8820 8824 8828 8832 8836 8840 8844 8848 8852 8856 8860 8864 8868 8872 8876 8880 8884 8888 8892 8896 8900 8904 8908 8912 8916 8920 8924 8928 8932 8936 8940 8944 8948 8952 8956 8960 8964 8968 8972 8976 8980 8984 8988 8992 8996 9000 9004 9008 9012 9016 9020 9024 9028 9032 9036 9040 9044 9048 9052 9056 9060 9064 9068 9072 9076 9080 9084 9088 9092 9096 9100 9104 9108 9112 9116 9120 9124 9128 9132 9136 9140 9144 9148 9152 9156 9160 9164 9168 9172 9176 9180 9184 9188 9192 9196 9200 9204 9208 9212 9216 9220 9224 9228 9232 9236 9240 9244 9248 9252 9256 9260 9264 9268 9272 9276 9280 9284 9288 9292 9296 9300 9304 9308 9312 9316 9320 9324 9328 9332 9336 9340 9344 9348 9352 9356 9360 9364 9368 9372 9376 9380 9384 9388 9392 9396 9400 9404 9408 9412 9416 9420 9424 9428 9432 9436 9440 9444 9448 9

## Experiment No.: 2

### Experiment Title: Introduction with Repeater using Cisco Packet Tracer

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#### Objectives:

- To learn what a Repeater is
- How a Repeater works
- Where and why a Repeater is needed

#### Discussion:

Signals traveling a long distance tend to get weak or corrupted. For this we use a repeater to generate the same signal midway.

- A Repeater generates the signal over the same network
- It is a layer 1 (i.e. Physical layer) device
- It does not amplify the signal
- It is a two port device

#### Methodology:

- Create a New Project.
- Create the basic Network topology.
- Configuration of the Network Nodes.
- Choose the Statistics.
- Run the Simulation.
- Analysis of the Results.

#### Working procedure:

##### 1. Connecting two LANs of the same IP scheme with a Router



Fig 2.1: Physical rear view of a repeater

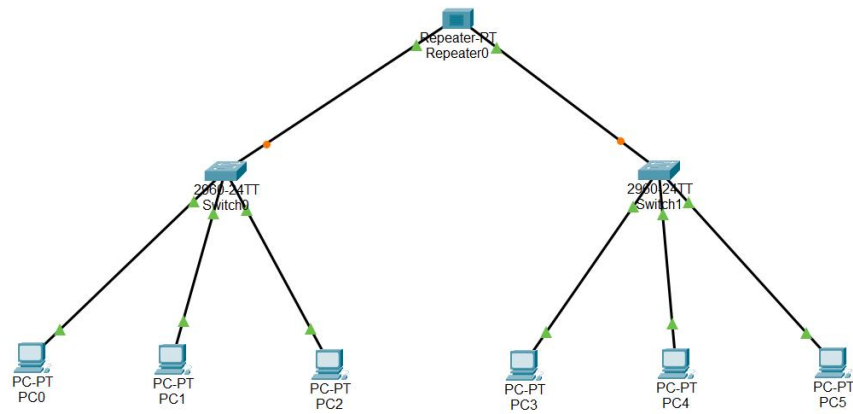


Fig 2.2: Two LANs of same IP schemes connected through a repeater in CPT

### 1.1. Configure PC0, PC1, PC2 with the following IP addresses and Subnet Masks

Host	IP Address	Subnet Mask
PC0	10.0.0.1	255.0.0.0
PC1	10.0.0.2	255.0.0.0
PC2	10.0.0.3	255.0.0.0

### 1.2. Configure PC3, PC4, PC5 with the following IP addresses and Subnet Masks

Host	IP Address	Subnet Mask
PC3	10.0.0.4	255.0.0.0
PC4	10.0.0.5	255.0.0.0
PC5	10.0.0.6	255.0.0.0

### 1.3. Connection tests across PCs in a single LAN

Ping two PCs by there IP addresses from another PC within a LAN, one after another. If connection is there, four replies will come.

Do the same for the second LAN.

```

Command Prompt

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.3

Pinging 10.0.0.3 with 32 bytes of data:

Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time<1ms TTL=128
Reply from 10.0.0.3: bytes=32 time=30ms TTL=128

Ping statistics for 10.0.0.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 30ms, Average = 7ms

C:\>ping 10.0.0.2

Pinging 10.0.0.2 with 32 bytes of data:

Reply from 10.0.0.2: bytes=32 time=1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128
Reply from 10.0.0.2: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:

```

Fig 2.3: Pinging PC2 and PC1 from PC0



1.4. Connecting two LANs via the two switches with straight through Ethernet cables by the two interfaces of the Repeater.

## 2. Sending data across LANs

```
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 10.0.0.5

Pinging 10.0.0.5 with 32 bytes of data:

Reply from 10.0.0.5: bytes=32 time=1ms TTL=128
Reply from 10.0.0.5: bytes=32 time<1ms TTL=128
Reply from 10.0.0.5: bytes=32 time=2ms TTL=128
Reply from 10.0.0.5: bytes=32 time<1ms TTL=128

Ping statistics for 10.0.0.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms

C:\>
```

Fig 2.4: Pinging PC5 from PC0

## 3. Simulation:

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC0	PC5	ICMP		0.000	N	0	(edit)	(delete)

Fig 2.5: Successful packets travel across PCs

PDU Information at Device: Repeater0

OST Model Inbound PDU Details Outbound PDU Details

At Device: Repeater0  
Source: PC0  
Destination: PC5

In Layers	Out Layers
Layer7	Layer7
Layer6	Layer6
Layer5	Layer5
Layer4	Layer4
Layer3	Layer3
Layer2	Layer2
Layer 1: Port Ethernet0	Layer 1: Port(s): Ethernet1

1. Ethernet0 receives the frame.

Challenge Me << Previous Layer Next Layer >>

Fig 2.6: PDU information at Repeater

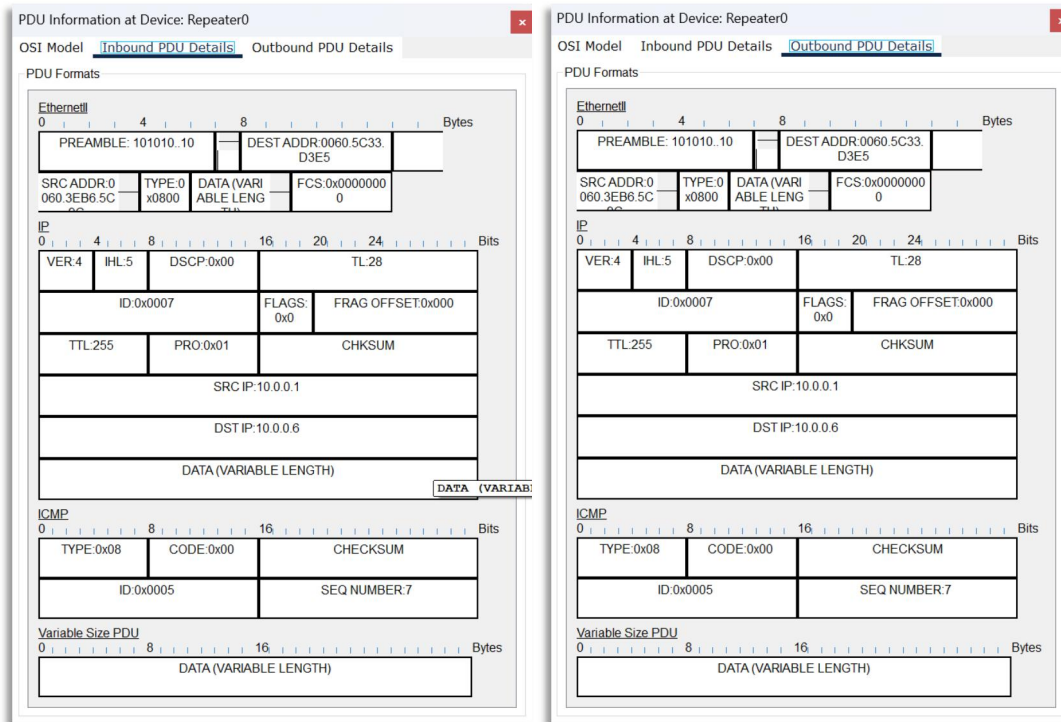


Fig 2.7: Inbound and Outbound PDU details at Repeater

## Conclusion:

- A Router is a layer 1 device
- A Repeater is needed to regenerate signal traveling over long distances.
- A Repeater does not amplify the signal, only regenerates the same signal over the same network.

### **Lab Conclusion:**

From this lab we got to know about,

- The basics of Router
  - A Router is a layer 3 device, therefore, it operates at the Network layer of the OSI model
  - A Router is an intelligent device as it has a memory where it stores the routing table
- The basics of Repeater
  - A Repeater is a layer 1 device. Therefore, it operates at the Physical layer of the OSI model.
  - A Repeater is a 2 port device as it generally has only 2 ports
  - A Repeater only regenerates the received-signal and does not amplify it
  - A repeater works over the same LAN
- Use of Router
  - A Router is used to create an inter-LAN(Local Area Network)
  - A Router can inter-connect two LANs of different IP schemes
- Use of Repeater
  - A repeater is used to regenerate a signal that needs to travel a long distance over the same network; for without it(repeater), the signal may get weak or corrupted.