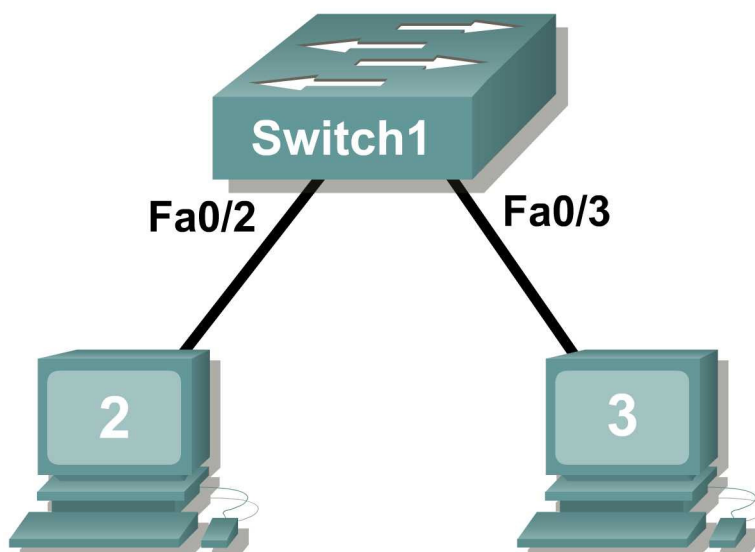


Lab 11.5.3: Configure Host Computers for IP Networking

Topology Diagram



Learning Objectives

Upon completion of this lab, you will be able to:

- Design the logical lab topology.
- Configure the physical lab topology.
- Configure the logical LAN topology.
- Verify LAN connectivity.

Background

Hardware	Qty	Description
Cisco Router	1	Part of CCNA Lab bundle
Cisco Switch	1	Part of CCNA Lab bundle
*Computer (Host)	3	Lab computer
CAT-5 or better straight-through UTP cables	3	Connects Router1 and computers Host1 and Host2 to switch1

Table 1. Equipment and Hardware for this Lab

Gather the necessary equipment and cables. To configure the lab, make sure the equipment listed in Table 1 is available.

Scenario

In this lab students will create a small network that requires connecting network devices and configuring host computers for basic network connectivity. The Appendix is a reference for configuring the logical network.

Task 1: Design the Logical Lab Topology.

- Given an IP address of 192.168.254.0/24, and 5 bits used for subnets, fill in the following information:

Maximum number of usable subnets (including the 0th subnet): _____

Number of usable Hosts per subnet: _____

IP Address: 192.168.254.0		Subnet mask:		
#	Subnet	First Host address	Last Host address	Broadcast
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

- Before proceeding, verify your addresses with the instructor. The instructor will assign one subnetwork per student or team.

Task 2: Configure the Physical Lab Topology.

Step 1: Physically connect devices.

1. Cable the network devices as shown in Figure 1.

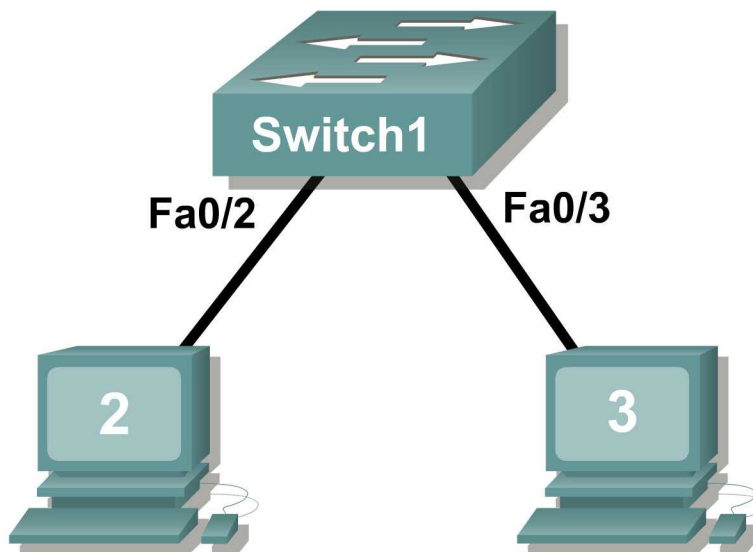


Figure 1. Cabling the Network

Is a crossover cable needed to connect Host computers to the switch? Why or why not?

If not already enabled, turn power on to all devices.

Step 2: Visually inspect network connections.

After cabling the network devices, take a moment to verify the connections. Attention to detail now will minimize the time required to troubleshoot network connectivity issues later.

Task 3: Configure the Logical Topology.

Step 1: Document logical network settings.

1. Host computers will use the first two IP addresses in the subnetwork. Write down the IP address information for each device:

Device	Subnetwork	IP address	Mask
Host1			
Host2			

Figure 2. Logical Topology

- From the information given in Figure 2, write down the IP network addressing for each computer:

Host 1	
IP Address	
IP Mask	

Host 2	
IP Address	
IP Mask	

Step 2: Configure Host1 computer.

- On Computer1, click **Start > Control Panel > Network Connections**. Right-click the LAN icon, and choose **Properties**. On the **General** tab, select **Internet Protocol (TCP/IP)**, and then click the **Properties** button.

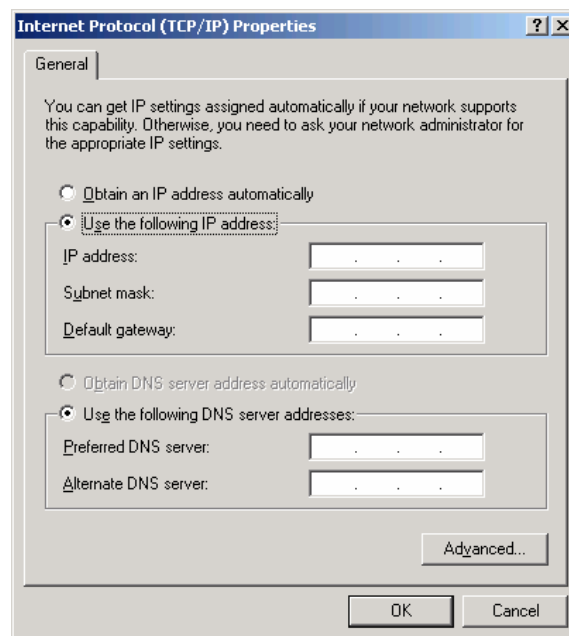


Figure 3. Host1 IP Address and Gateway Settings

- Refer to Figure 3 for Host1 IP address and gateway settings.
- When finished, click **OK**, then click **Close**. The computer may require a reboot for changes to be effective.
- Verify proper configuration of Host1 with the `ipconfig /all` command.

5. Record the output below:

Setting	Value
Ethernet device	
Physical Address	
IP Address	
Subnet Mask	
Default Gateway	

Step 3: Configure Host2.

1. Repeat Step 2 for Host2, using IP address information from the table filled out in Step 1.
2. Verify proper configuration of Host1 with the `ipconfig /all` command.
3. Record the output below:

Setting	Value
Ethernet device	
Physical Address	
IP Address	
Subnet Mask	
Default Gateway	

Task 4: Verify Network Connectivity.

Network connectivity can be verified with the Windows `ping` command.

1. Use the following table to methodically verify connectivity with each network device:

From	To	IP Address	Ping results
Host1	Host2		
Host2	Host1		

2. Take corrective action to establish connectivity if a test fails.

Note: If pings to host computers fail, temporarily disable the computer firewall and retest. To disable a Windows firewall, click **Start > Control Panel > Windows Firewall**, choose **Off**, and then click **OK**.

Task 5: Reflection

Review any physical or logical configuration problems encountered during this lab. Make sure you have a thorough understanding of the procedures used to configure a Windows host computer.

Task 6: Challenge

Ask your instructor or another student to introduce one or two problems in your network when you aren't looking or are out of the lab room. Problems can be either physical (wrong UTP cable) or logical (wrong IP address). To fix the problems:

1. Perform a good visual inspection. Look for green link lights on Switch1.
2. Use the table provided in Task 3, above, to identify failed connectivity. List the problems:

3. Write down your proposed solution(s):

4. Test your solution. If the solution fixed the problem, document the solution. If the solution did not fix the problem, continue troubleshooting.

Task 7: Clean Up

Unless directed otherwise by the instructor, restore host computer network connectivity, and then turn off power to the host computers. Remove anything that was brought into the lab, and leave the room ready for the next class.

Appendix

Subnet addressing for last octet						East Carolina University					
0	128	64	32	16	8	4	2	1	0	0	0
4	128	64	32	16	8	4	2	1	0	0	0
8	128	64	32	16	8	4	2	1	0	0	0
12	128	64	32	16	8	4	2	1	0	0	0
16	128	64	32	16	8	4	2	1	0	0	0
20	128	64	32	16	8	4	2	1	0	0	0
24	128	64	32	16	8	4	2	1	0	0	0
28	128	64	32	16	8	4	2	1	0	0	0
32	128	64	32	16	8	4	2	1	0	0	0
36	128	64	32	16	8	4	2	1	0	0	0
40	128	64	32	16	8	4	2	1	0	0	0
44	128	64	32	16	8	4	2	1	0	0	0
48	128	64	32	16	8	4	2	1	0	0	0
52	128	64	32	16	8	4	2	1	0	0	0
56	128	64	32	16	8	4	2	1	0	0	0
60	128	64	32	16	8	4	2	1	0	0	0
64	128	64	32	16	8	4	2	1	0	0	0
68	128	64	32	16	8	4	2	1	0	0	0
72	128	64	32	16	8	4	2	1	0	0	0
76	128	64	32	16	8	4	2	1	0	0	0
80	128	64	32	16	8	4	2	1	0	0	0
84	128	64	32	16	8	4	2	1	0	0	0
88	128	64	32	16	8	4	2	1	0	0	0
92	128	64	32	16	8	4	2	1	0	0	0
96	128	64	32	16	8	4	2	1	0	0	0
100	128	64	32	16	8	4	2	1	0	0	0
104	128	64	32	16	8	4	2	1	0	0	0
108	128	64	32	16	8	4	2	1	0	0	0
112	128	64	32	16	8	4	2	1	0	0	0
116	128	64	32	16	8	4	2	1	0	0	0
120	128	64	32	16	8	4	2	1	0	0	0
124	128	64	32	16	8	4	2	1	0	0	0
128	128	64	32	16	8	4	2	1	0	0	0
132	128	64	32	16	8	4	2	1	0	0	0
136	128	64	32	16	8	4	2	1	0	0	0
140	128	64	32	16	8	4	2	1	0	0	0
144	128	64	32	16	8	4	2	1	0	0	0
148	128	64	32	16	8	4	2	1	0	0	0
152	128	64	32	16	8	4	2	1	0	0	0
156	128	64	32	16	8	4	2	1	0	0	0
160	128	64	32	16	8	4	2	1	0	0	0
164	128	64	32	16	8	4	2	1	0	0	0
168	128	64	32	16	8	4	2	1	0	0	0
172	128	64	32	16	8	4	2	1	0	0	0
176	128	64	32	16	8	4	2	1	0	0	0
180	128	64	32	16	8	4	2	1	0	0	0
184	128	64	32	16	8	4	2	1	0	0	0
188	128	64	32	16	8	4	2	1	0	0	0
192	128	64	32	16	8	4	2	1	0	0	0
196	128	64	32	16	8	4	2	1	0	0	0
200	128	64	32	16	8	4	2	1	0	0	0
204	128	64	32	16	8	4	2	1	0	0	0
208	128	64	32	16	8	4	2	1	0	0	0
212	128	64	32	16	8	4	2	1	0	0	0
216	128	64	32	16	8	4	2	1	0	0	0
220	128	64	32	16	8	4	2	1	0	0	0
224	128	64	32	16	8	4	2	1	0	0	0
228	128	64	32	16	8	4	2	1	0	0	0
232	128	64	32	16	8	4	2	1	0	0	0
236	128	64	32	16	8	4	2	1	0	0	0
240	128	64	32	16	8	4	2	1	0	0	0
244	128	64	32	16	8	4	2	1	0	0	0
248	128	64	32	16	8	4	2	1	0	0	0
252	128	64	32	16	8	4	2	1	0	0	0
(1 bit) 10000000						(6 bits) 11111100					
1 subnet, 128 hosts						63 subnets, 2 hosts					
Mask = 128.0						Mask = 252.0					
(2 bits) 11000000						(5 bits) 11111000					
3 subnets, 62 hosts						31 subnets, 8 hosts					
Mask = 192.0						Mask = 248.0					
(3 bits) 11100000						(4 bits) 11110000					
7 subnets, 30 hosts						15 subnets, 14 hosts					
Mask = 224.0						Mask = 240.0					
(4 bits) 11110000						(5 bits) 11111000					
15 subnets, 14 hosts						31 subnets, 8 hosts					
Mask = 240.0						Mask = 248.0					