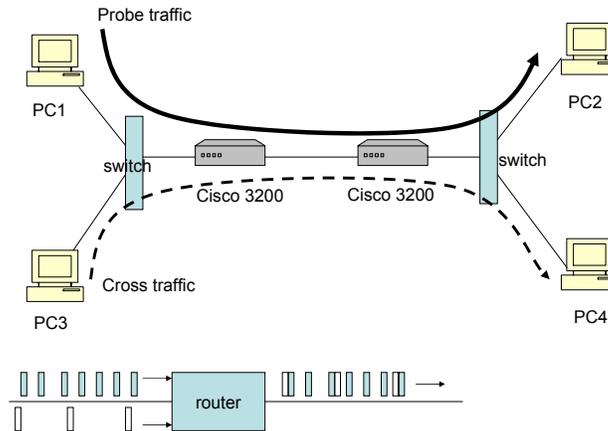


CSE398 Lab#2 Part I: Connecting Two LANs with Routers and Switches

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Purpose: In this lab, we will learn how to create two LANs and connect them with Cisco routers and switches. Basic commands for Cisco devices are demonstrated in this lab. Upon completing the Lab, students should know how to create a small office wide network.

Devices: Two Cisco routers (Cisco 3600), two switches (Cisco Catalyst 2900XL), and two PCs (running Windows XP) are used in this Lab. The basic network typology is shown below:

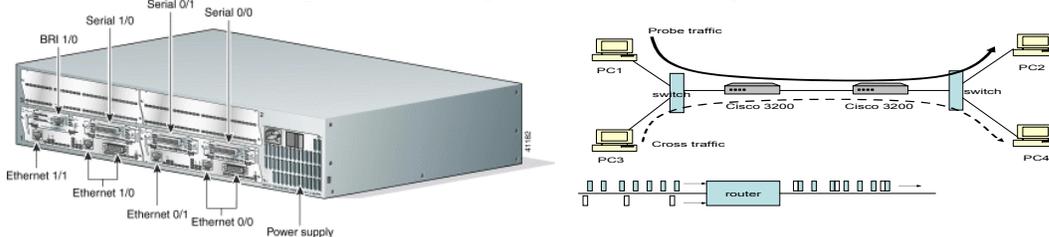


Two Cisco 3200 routers are connected back-to-back using a DCE/DTE Cable. There are many ways to connect two routers back-to-back. 1: **Connect through Ethernet ports:** use a crossover cable to directly connect the routers together through two Ethernet ports. 2: **Connect through serial ports:** use a DCE/DTE cable to connect the serial ports. 3: **Connect through auxiliary user interface (AUI) ports:** connect two routers through AUX (AUI speed up to 115.2 k bps). 4: **Connect through Network Modules:** e.g. using network module NM-1HSSI High-Speed Serial Interface (HSSI) card (speed is up to 44.736M bps). 5: **Connect through WICs (WAN Interface Cards):** e.g. in our Lab, we connect two routers using two WAN Interface cards (WIC-1T). WIC-1T is a fast serial interface card, and the speed is up to 1.544 M. Configuration commands are the same as the serial connection (category #2 discussed above).

For more detailed discussion, please visit: <http://www.cs.virginia.edu/~itlab/workshop/Connections.pdf>

Background information: Cisco online documents for 3600 routers can be found at: http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/cis3600/index.htm

Cisco 3200 interface numbering: a common configuration and our lab configuration.



Commands on Router 1

1. Run HyperTerminal (start->all programs->accessories->communications->hyper terminal)
 2. Name the connection as cse401
 3. Connect using COM1
 4. In port setting, choose 9600 bps, 8 data bits, 1 stop bit, and no parity and no flow control
 5. Power on the Cisco router 3200s and catalyst.
 6. Would you like to enter the initial configuration dialog? [yes/no]: yes
 7. Would you like to enter basic management setup? [yes/no]: no
 8. First, would you like to see the current interface summary? [yes]: yes
 9. Enter host name [Router]: cisco1
 10. Enter enable secret: cisco
 11. Enter enable password: test
 12. Enter virtual terminal password: test
 13. Configure SNMP Network Management? [yes]: no
 14. Configure IP? [yes]: yes
 15. Configure IGRP routing? [yes]: no
 16. Configure RIP routing? [no]: no
 17. Configure bridging? [no]: no
 18. Configure Async lines? [yes]: no
- Configuring FastEthernet0/0 interface**
19. Do you want to configure FastEthernet0/0 interface? [yes]: yes
 20. Use the 100 Base-TX (RJ-45) connector? [yes]: yes
 21. Operate in full-duplex mode? [no]: yes
 22. Configure IP on this interface? [yes]: yes
 23. IP address for this interface: 192.168.0.1
 24. Subnet mask for this interface [255.255.255.0] : 255.255.255.0
Class C network is 192.168.0.0, 24 subnet bits; mask is /24
 25. Do you want to configure Serial0/0 interface? [yes]: no
 26. Do you want to configure FastEthernet0/1 interface? [yes]: no
 27. Enter your selection [2] Save this configuration to nvram and exit.: 2
 28. return and observe the name of the router
 29. enable
 30. password: cisco
 31. show run
 32. observe (1) the interface configuration and (2) difference between the secret password, general password and also password in the vty line connection
- Configure serial interface using command line**
33. cisco1 (config)#conf t
 34. cisco1 (config)#interface serial0/0
 35. cisco1(config-if)#ip address 10.10.10.1 255.255.255.252
 36. cisco1(config-if)#no shutdown
 37. cisco1(config-if)# ctrl-z
 38. cisco1(config-if)#show interface serial0/0
- Assign static routes**
39. cisco1#conf t
 40. cisco1 (config)#ip route 0.0.0.0 0.0.0.0 10.10.10.2
what the meaning of above command?
 41. cisco1 (config)#ctrl-z
 42. cisco1#show ip route
 43. cisco1#ping 10.10.10.1
- Wait until the second router is ready. Observe the lights on FastEthernet0/0 and Serial0/0 are on.**
44. cisco1#ping 10.10.10.2
 45. cisco1#ping 172.16.3.1
 46. repeat ping 172.16.3.10 192.168.0.10 on the PC (192.168.0.10) attached to switch 1.
- Save your configuration**
47. cisco1#show running-config
 48. cisco1#show startup-config
 49. cisco1#copy running-config startup-config
- Erase startup configuration and power off the devices**
50. cisco1#erase startup-config

Commands on Router 2

51. Run HyperTerminal (start->all programs->accessories->communications->hyper terminal)
52. Name the connection as cse401
53. Connect using COM1
54. In port setting, choose 9600 bps, 8 data bits, 1 stop bit, and no parity and no flow control
55. Power on the Cisco router 3200s and catalyst.
56. Would you like to enter the initial configuration dialog? [yes/no]: yes
57. Would you like to enter basic management setup? [yes/no]: no
58. First, would you like to see the current interface summary? [yes]: yes
59. Enter host name [Router]: **cisco2**
60. Enter enable secret: cisco
61. Enter enable password: test
62. Enter virtual terminal password: test
63. Configure SNMP Network Management? [yes]: no
64. Configure IP? [yes]: yes
65. Configure IGRP routing? [yes]: no
66. Configure RIP routing? [no]: no
67. Configure bridging? [no]: no
68. Configure Async lines? [yes]: no
- Configuring FastEthernet0/0 interface**
69. Do you want to configure FastEthernet0/0 interface? [yes]: yes
70. Use the 100 Base-TX (RJ-45) connector? [yes]: yes
71. Operate in full-duplex mode? [no]: yes
72. Configure IP on this interface? [yes]: yes
73. IP address for this interface: **172.16.3.1**
74. Subnet mask for this interface [255.255.255.0] : 255.255.255.0
Class C network is 172.16.0.0, 24 subnet bits; mask is /24
75. Do you want to configure Serial0/0 interface? [yes]: no
76. Do you want to configure FastEthernet0/1 interface? [yes]: no
77. Enter your selection [2] Save this configuration to nvram and exit.: 2
78. return and observe the name of the router
79. enable
80. password: cisco
81. show run
82. observe (1) the interface configuration and (2) difference between the secret password, general password and also password in the vty line connection
- Configure serial interface using command line**
83. cisco2 (config)#conf t
84. cisco2 (config)#interface serial0/0
85. cisco2(config-if)#ip address **10.10.10.2** 255.255.255.252
- 86. cisco2(config-if)#clock rate 64000**
87. cisco2(config-if)#no shutdown
88. cisco2(config-if)# ctrl-z
89. cisco2(config-if)#show interface serial0/0
- Assign static routes**
90. cisco1#conf t
91. cisco1 (config)#**ip route 0.0.0.0 0.0.0.0 10.10.10.1**
what the meaning of above command?
92. cisco1 (config)#ctrl-z
93. cisco1#show ip route
94. cisco1#ping 10.10.10.2
- Wait until the second router is ready. Observe the lights on FastEthernet0/0 and Serial0/0 are on.**
95. cisco1#ping 10.10.10.1
96. cisco1#ping 192.168.0.1
97. ping 192.168.0.10 on the PC (172.16.3.10) attached to switch 2.
- Save your configuration**
98. cisco1#show running-config
99. cisco1#show startup-config
100. cisco1#copy running-config startup-config
- Erase startup configuration and power off the devices**
101. cisco1#erase startup-config