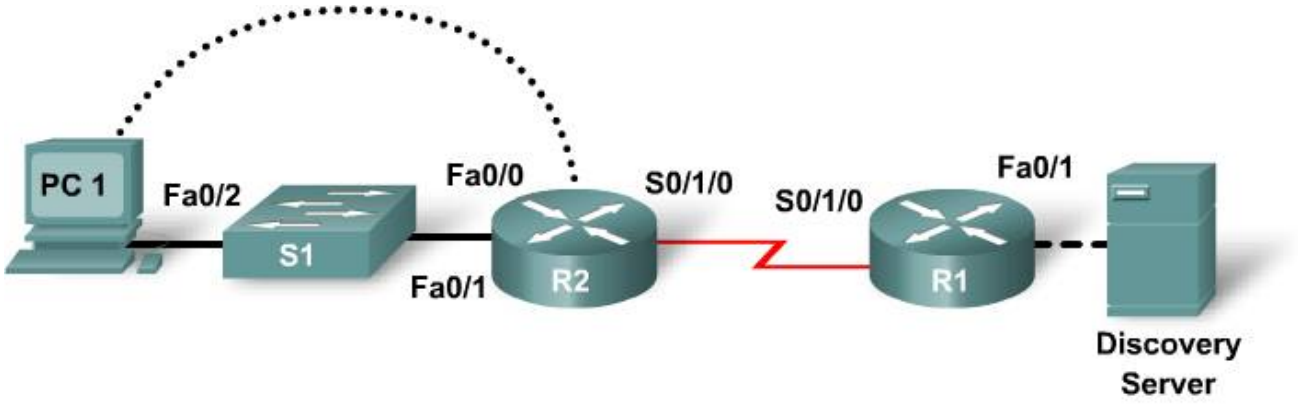
Lab 4.4.4 Investigating Video Traffic Impact on a Network



Device Designation	Device Name	Address	Subnet Mask
Discovery Server	Network Services	172.17.1.1	255.255.0.0
R1	ISP	Fa0/1 172.17.0.1 S0/1/0 10.10.0.1	255.255.0.0 255.255.255.252
R2	FC-CPE-1	Fa0/0 10.0.0.1 S0/1/0 10.10.0.2	255.255.255.0 255.255.255.252
S1	FC-ASW-1	—	—
PC1	Host1	10.0.0.200	255.255.255.0

Objective

- Explain how voice and video traffic impacts the network design.

640-802 CCNA Exam Objectives

This lab contains skills that relate to the following CCNA exam objectives:

- Select the components required to meet a network specification.
- Describe common networked applications, including web applications.
- Describe the impact of applications (Voice over IP and Video over IP) on a network.

Expected Results and Success Criteria

Before starting this lab, read through the tasks that you are expected to perform. What do you expect the result of performing these tasks will be?

_____

_____

_____

How could streaming video data affect the network performance?

_____

_____

_____

What possible actions could a network administrator take if network performance was noted to be deteriorating due to video?

_____

_____

_____

Background / Preparation

FilmCompany is an expanding advertising company moving into interactive advertising media, including video presentations. This company has just been awarded a large big video support contract by the StadiumCompany. With this new contract, FilmCompany expects to see their business grow approximately 70 percent.

The required network upgrade to support this growth in business will need to be able to carry video data traffic from remote sites without degrading the performance of the network for other users.

In this lab, you will observe video streaming from Discovery Server across a serial connection and note the impact on other data traffic.

Step 1: Cable and configure the network

NOTE: If the PC used in this lab is also connected to your Academy LAN or to the Internet, ensure that you record the cable connections and TCP/IP settings so that these can be restored at the conclusion of the lab.

a. Connect and configure the devices in accordance with the given topology and configuration.

   1) Set clock rate on the serial link to 56000.

   2) Routing will have to be configured across the serial WAN link to establish data communications.

   NOTE: Your instructor may substitute for Discovery Server an equivalent server for this lab.

b. Ping between Host1 and Discovery Server to confirm network connectivity. Troubleshoot and establish connectivity if the pings fail.

Step 2: Observe data traffic

In this step, you will generate concurrent data traffic and observe the time the flows take.

a. From Host1 command line, issue the command **`ping 172.17.1 1 –n 500`** to generate a large number of pings to Discovery Server.

b. While the pings are being generated on Host1, launch a web browser and enter the URL **`http://server.discovery.ccna`** or **`http://172.17.1.1`** to access the web services configured on the server.

c. Use FTP to download a file. On Host1, launch a new web browser window and enter the URL **ftp://server.discovery.ccna**, or issue **ftp server.discovery.ccna** from the command line.

d. Download a large file from the server; for example, a Wireshark or Thunderbird setup program file.

Note the total time taken to complete the pings, access the web page, and download the file.

_____

Step 3: Stream the video file

Launch the browser on Host1 and access the video file Mind Wide Open video from Discovery Server.

Note rate at which it plays back and the video and sound quality.

Video Quality _____

Sound Quality _____

Step 4: Observe both video and data traffic

a. From Host1 command line, issue the command **ping 172.17.1 1 –n 500** to generate a large number of pings to Discovery Server.

b. While the pings are being generated, launch the browser on Host1 and access the video file Mind Wide Open video.

c. While the video is being played, launch a new web browser window on Host1 and enter the URL **http://server.discovery.ccna** or **http://172.17.1.1** to access the web services configured on the server.

d. On Host1, launch another web browser window and enter the URL **ftp://server.discovery.ccna**, or issue **ftp server.discovery.ccna** from the command line.

e. Download a large file from the server; for example, a Wireshark or Thunderbird setup program file.

Note the total time taken to complete the pings, access the web page, and download the file.

_____

Note rate at which it plays back and the video and sound quality.

Video Quality _____

Sound Quality _____

Step 5: Observe the data flows with a different serial link clock rate

a. Change the serial link clock rate to 250000 on the router with the DCE interface.

b. Repeat Step 4 and record your observations.

Note the total time taken to complete the pings, access the web page, and download the file.

_____

Note rate at which it plays back and the video and sound quality.

Video Quality _____

Sound Quality _____

c. Change the serial link clock rate to 2000000 on the router with the DCE interface.

d. Repeat Step 4 and record your observations.

Note the total time taken to complete the pings, access the web page, and download the file.

_____

Note rate at which it plays back and the video and sound quality.

Video Quality _____

Sound Quality _____

Step 6: Record your general observations

Compare the different download times and video quality.

_____

_____

_____

_____

_____

_____

_____

_____

Step 7: Clean up

Erase the configurations and reload the routers and switches. Disconnect and store the cabling. For PC hosts that are normally connected to other networks (such as the school LAN or to the Internet), reconnect the appropriate cabling and restore the TCP/IP settings.

Step 8: Reflection

Consider and discuss how video and other data traffic can share network resources while maintaining acceptable performance.

_____

_____

_____

_____

_____

_____