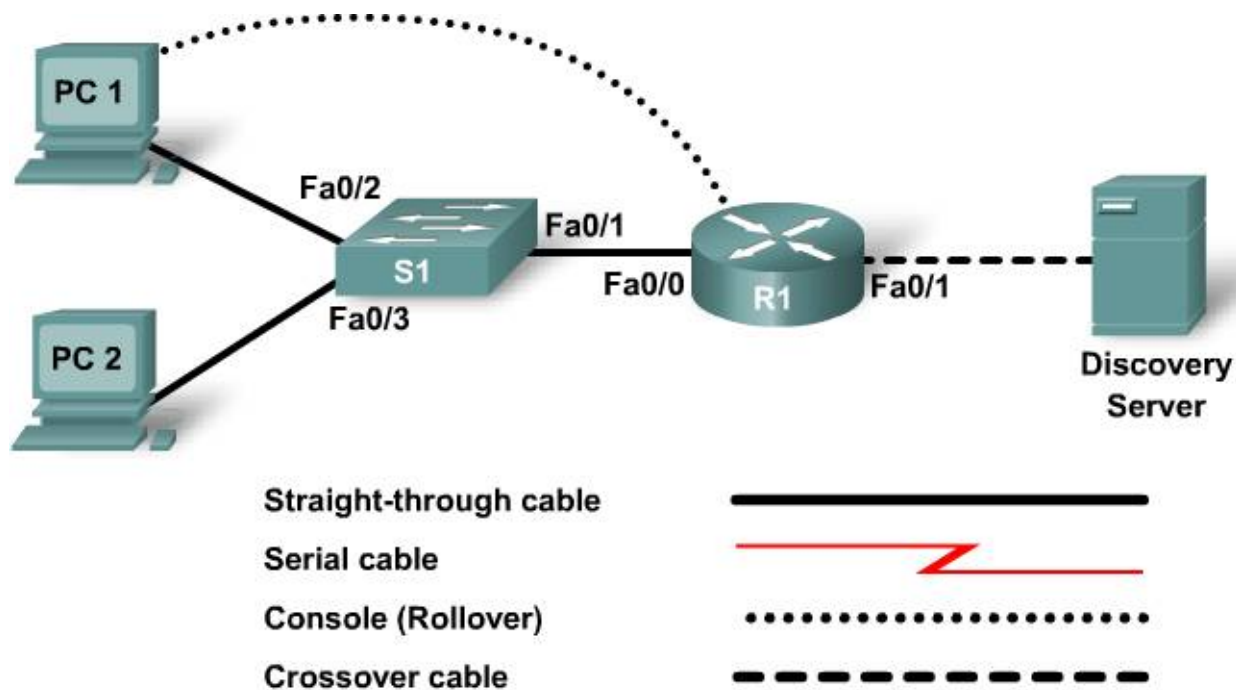


## Lab 4.5.2 Diagramming Intranet Traffic Flows



Device Designation	Device Name	Address	Subnet Mask
Discovery Server	Business Services	172.17.1.1	255.255.0.0
R1	FC-CPE-1	Fa0/1 172.17.0.1 Fa0/0 10.0.0.1	255.255.0.0 255.255.255.0
S1	FC-ASW-1	—	—
PC1	Host1	10.0.0.200	255.255.255.0
PC2	Host2	10.0.0.201	255.255.255.0

### Objective

- Diagram the flow of traffic to and from hosts and servers within the LAN.

### 640-802 CCNA Exam Objective

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

- Use the OSI and TCP/IP models and their associated protocols to explain how data flows in 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?

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Why is diagramming traffic flow useful in network administration?

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What can be expected from diagramming traffic flows in a network?

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## 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.

To facilitate this expansion, the state of data flow across the current network has to be established so that the network upgrade can be planned and implemented.

Developing a diagram of applications, devices, and traffic flow enables the designer to analyze the proposed design and identify where the network can be improved. The logical topology diagram shows that the servers are identified with the applications that will be used. Areas that require redundancy or increased security are also easier to identify. Redundant paths to the server and security measures, such as a hardware firewall, can be marked on the diagram. The logical design for the network must be aligned with the initial business goals and technical requirements of the customer. The diagram gives the designer and customer a visual idea of what is already on the network and helps to get a better view of what is still required.

In this lab, you will use NetFlow to diagram the flow of traffic from host to host and from host to server within a LAN segment of FilmCompany. Preparing this diagram requires you to identify the hardware (hosts, servers, etc.) and determine the traffic generated across the network from the hosts and from the server.

## Step 1: Cable and configure the current 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.

- Referring to the topology diagram, connect the console (or rollover) cable to the console port on the router and the other cable end to the PC1 computer with a DB-9 or DB-25 adapter to the COM 1 port. Ensure that power has been applied to both the host computer and router.
- Establish a HyperTerminal or other terminal emulation program to the router.
- Ping between Host1 and Host2 and between the hosts and Discovery Server to confirm network connectivity. Troubleshoot and establish connectivity if the pings fail.

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

## Step 2: Configure NetFlow on the interfaces

From the global configuration mode, issue the following commands to configure NetFlow:

```
FC-CPE-1(config)#interface fastethernet 0/0
FC-CPE-1(config-if)#ip flow egress
FC-CPE-1(config-if)#ip flow ingress
FC-CPE-1(config-if)#interface fastethernet 0/1
FC-CPE-1(config-if)#ip flow ingress
FC-CPE-1(config-if)#ip flow egress
FC-CPE-1(config-if)#end
```

## Step 3: Verify the NetFlow configuration

- a. From the privileged EXEC mode, issue the **show ip flow interface** command.

```
FC-CPE-1#show ip flow interface
FastEthernet0/0
  ip flow ingress
  ip flow egress
FastEthernet0/1
  ip flow ingress
  ip flow egress
```

Confirm that the output shown above is displayed. Troubleshoot your configuration if this output is not displayed.

- b. From the privileged EXEC mode, issue the following command to ensure that flow cache statistics are reset:

```
FC-CPE-1#clear ip flow stats
```

## Step 4: Create network data traffic

A range of network application data flows between the Host1, Host2, and the server is to be generated and captured. Generate as many of the data flows shown below as is possible in your lab. Your instructor will advise you of the particular applications that are available to be used in this lab.

- a. On Host1, launch a web browser and enter the URL <http://server.discovery.ccna>

If Discovery Server is not being used, then use **http://172.17.1.1** to access the web services configured on that server.

- b. On Host2, launch a web browser and enter the URL **http://server.discovery.ccna**

If Discovery Server is not being used, then use **http://172.17.1.1** to access the web services configured on that server.

- c. Use FTP to download a file.

On Host1 and Host2, launch a web browser and enter the URL **ftp://server.discovery.ccna**, or issue **ftp server.discovery.ccna** from the command line. If DNS is not configured, use the IP address 172.17.1.1 instead of the domain name.

Download a file from the server.

- d. If email accounts have been configured using the POP3 and SMTP services on Discovery Server, send two emails between users on Host1 and Host2 using these accounts.
- e. Set up Windows file sharing between Host1 and Host2 and copy a file from one to the other.

### Step 5: View the data flows

At the conclusion of the data flow, view the details by issuing the **show ip cache verbose flow** command from privileged EXEC mode.

```
FC-CPE-1#show ip cache verbose flow
```

Examine the output and record the different data flows.

Application Type	Source	Destination	Comments

### Step 6: 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.

### Challenge

This lab simulates LAN data traffic. The LAN data flows of a production network would be much more extensive and recorded over a greater period of time, perhaps a full working week.

- On the FilmCompany initial current network topology shown on the next page, add PC host and printer icons as listed for each VLAN. Draw a circle that encloses the local LAN segments.
- Then, using the data flows recorded in this lab as a starting point, use different colors to mark the different LAN data flows between hosts and the server.

### FilmCompany Branch Layout

