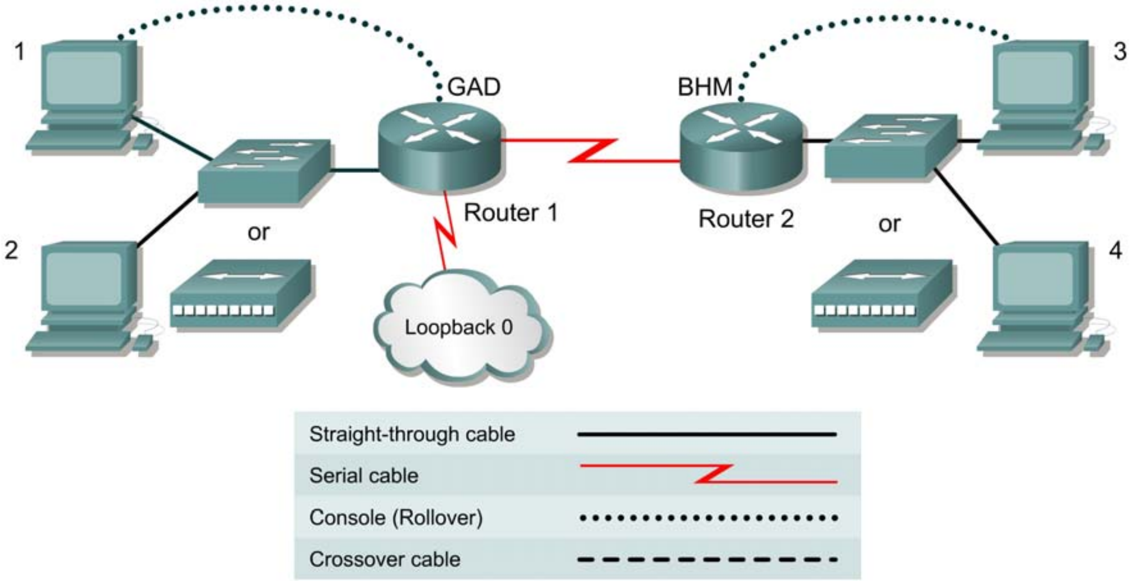
CISCO SYSTEMS

CISCO NETWORKING ACADEMY PROGRAM

Lab 11.2.1b Standard ACLs



Router Name	FA0/0 Address	Interface Type S0/0	S0/0 Address	LO0 Address	Routing	Enable password	VTY password
GAD	192.168.1.1 /24	DCE	192.168.2.1 /24	172.16.1.1 /24	RIP	cisco	class
BHM	192.168.3.1 /24	DTE	192.168.2.2 /24	--	RIP	cisco	class

Host	IP Address	Subnet Mask	Gateway
1	192.168.1.2	255.255.255.0	192.168.1.1
2	192.168.1.3	255.255.255.0	192.168.1.1
3	192.168.3.2	255.255.255.0	192.168.3.1
4	192.168.3.3	255.255.255.0	192.168.3.1

Objective

Plan, configure, and apply a standard ACL to permit or deny specific traffic and test the ACL to determine if the desired results were achieved.

Scenario

The company home office in Gadsden (GAD) provides services to branch offices such as the Birmingham (BHM) office. These offices have some minor security and performance concerns. A Standard ACL needs to be implemented as a simple and effective tool to control traffic

Infrastructure

Host #3 represents the kiosk station that needs to have its access limited to the local network.

Host #4 represents another host in the BHM office and the Loopback 0 interface on the GAD router represents the Internet.

Step 1 Basic Router Interconnection

a. Interconnect the routers as shown in the diagram.

Step 2 Basic Configuration

a. The router may contain configurations from a previous use. For this reason, erase the startup configuration and reload the router to remove any residual configurations. Refer to the table on the first page and setup the router and host configurations. Verify reachability by pinging all systems and routers from each system.

b. To simulate the Internet, add the following configuration to the GAD router.

```
GAD(config)#interface loopback0
GAD(config-if)#address 172.16.1.1 255.255.255.0
GAD(config-if)#exit
GAD(config)#router rip
GAD(config-router)#network 172.16.0.0
GAD(config-if)#^z
```

Step 3 Establish Access List Requirements

a. The kiosk station (host 3) needs to have its access limited to the local network. It is determined that a standard access list needs to be created to prevent traffic from this host from reaching any other networks. The access control list should block traffic from this host and not affect other traffic from this network. A standard IP ACL satisfies this requirement as it filters based on the source address to any destination.

What source address of the kiosk? ___________________________

Step 4 Plan the Access List Requirements

a. As with any project, the most important part of the process is the planning. First, define the information needed to create the ACL. Remember that statements are added sequentially to an ACL. Therefore, the order of the statements needs to be planned carefully.

b. It has been determined that this ACL will require 2 logical steps. Each of these steps can be accomplished with one statement each. As a planning tool, a text editor like Notepad can be used to organize the logic and then write the list. In the text editor enter the logic by typing:

```
! stop traffic from host 3

! permit all other traffic
```

c. From this logic the actual ACL will be written. Using the tables below, document the information for each statement.

stop traffic from host 3			
List #	permit or deny	Source address	Wildcard mask

permit all other traffic			
List #	permit or deny	Source address	Wildcard mask

d. What would be the result of not including a statement to permit all other source addresses?

e. What would be the result of reversing the order of the 2 statements in the list?

f. Why are both statements using the same ACL number?

g. The final step in the planning process is to determine the best location for the access list and the direction the list should be applied. Examine the internetwork diagram and choose the appropriate interface and direction. Document this in the table below:

Router	Interface	Direction

Step 5 Write and Apply the ACL

a. Using the previously constructed logic and information of the access list, complete the commands in the text editor. The list syntax should look similar to:

```
! stop traffic from host 3
  access-list # deny address wildcard
! permit all other traffic
   access-list # permit address wildcard
```

b. Add to this text file the configuration statements to apply the list.

The configuration statements take the form of:

```
interface type #/#
ip access-group # {in, out}
```

c. Now the text file configuration needs to be applied to the router. Enter the configuration mode on the appropriate router and copy and paste the configuration. Observe the CLI display to ensure no errors were encountered.

Step 6 Verify the ACL

Now that the ACL is completed, the ACL needs to be confirmed and tested.

a. The first step is to check the list to see if it was configured properly on the router. To check the ACL logic use the **`show access-lists`** command. Record the output.

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b. Next, verify that the access list was applied to the proper interface and in the correct direction. To do this examine the interface with the **`show ip interface`** command. Look at the output from each interface and record the lists applied to the interface.

Interface ____

Outgoing access list is ______________________________________

Inbound access list is ______________________________________

c. Finally, test the functionality of the ACL by trying to send packets from the source host and verify that is to be permitted or denied as appropriate. In this case, ping will be used to test this.

```
[  ] verify that host 3 CAN ping host 4
[  ] verify that host 3 CANNOT ping host 1
[  ] verify that host 3 CANNOT ping host 2
[  ] verify that host 3 CANNOT ping GAD Fa0/0
[  ] verify that host 3 CANNOT ping GAD LO0
[  ] verify that host 4 CAN ping host 1
[  ] verify that host 4 CAN ping host 2
[  ] verify that host 4 CAN ping GAD Fa0/0
[  ] verify that host 4 CAN ping GAD LO0
```

Step 7 Document the ACL

a. As a part of all network management, documentation needs to be created. Using the text file created for the configuration, add additional comments. This file should also contain output from the **`show access-lists`** and the **`show ip interface`** commands.

b. The file should be saved with other network documentation. The file naming convention should reflect the function of the file and the date of implementation.

That should complete the ACL project.

c. Once finished, erase the start-up configuration on routers, remove and store the cables and adapter. Also logoff and turn the router off.