NetSim®
NETWORK SIMULATOR®

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NetSim® NETWORK SIMULATOR®

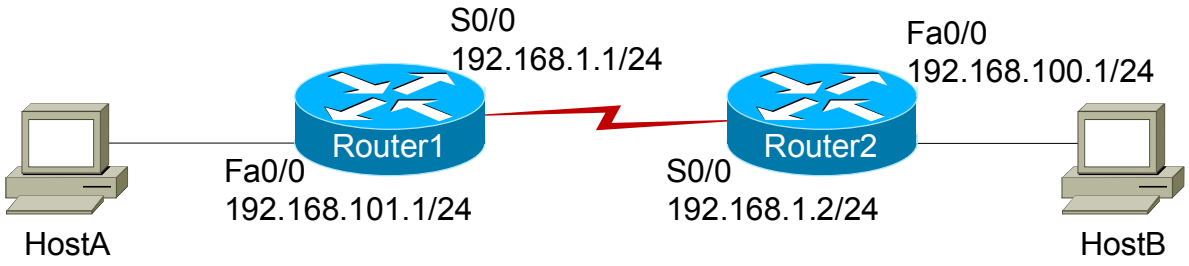
Scenario Lab: Static Routes II

Objective

Build a lab network to test new configurations that will be rolled out to a production network. Configure Router1 and Router2 with static routes so that all devices can ping any other device.

Lab Topology

The topology diagram below represents the NetMap in the Simulator.



Command Summary

Command	Description
clock rate *clock-rate*	sets the clock rate for a Data Communications Equipment (DCE) interface
configure terminal	enters global configuration mode from privileged EXEC mode
enable	enters privileged EXEC mode
end	ends and exits configuration mode
exit	exits one level in the menu structure
hostname *host-name*	sets the device name
interface *type number*	changes from global configuration mode to interface configuration mode
ip address *ip-address subnet-mask*	assigns an IP address to an interface
ipconfig /ip *ip-address subnet-mask*	is used in NetSim to assign an IP address and subnet mask to a workstation interface
ipconfig /dg *ip-address*	is used in NetSim to assign a default gateway IP address to a workstation interface
ip route *destination-prefix destination-prefix-mask* {*ip-address* | *interface-type* [*ip-address*]}	establishes a static route
no shutdown	enables an interface
ping *ip-address*	sends an Internet Control Message Protocol (ICMP) echo request to the specified address
show ip route	displays the IP routing table
show running-config	displays the active configuration file

The IP addresses and subnet masks used in this lab are shown in the tables below:

IP Addresses

Device	Interface	IP Address	Subnet Mask
Router1	FastEthernet 0/0	192.168.101.1	255.255.255.0
	Serial 0/0	192.168.1.1	255.255.255.0
Router2	FastEthernet 0/0	192.168.100.1	255.255.255.0
	Serial 0/0	192.168.1.2	255.255.255.0

Device	IP Address	Subnet Mask	Default Gateway
HostA	192.168.101.2	255.255.255.0	192.168.101.1
HostB	192.168.100.2	255.255.255.0	192.168.100.1

Lab Tasks

1. Configure Router1 with a host name of **Router1**. Configure the appropriate IP addresses on the interfaces; refer to the IP Addresses table. A DCE cable is connected to Router1. The Serial link should have a speed of 64 kilobits per second (Kbps). Enable the interfaces.

2. On Router1, configure a static route so that all devices can ping any other device.

3. Configure Router2 with a host name of **Router2**. Configure the appropriate IP addresses on the interfaces; refer to the IP Addresses table. Enable the interfaces.

4. On Router2, configure a static route so that all devices can ping any other device.

5. On HostA and HostB, configure the appropriate IP address and default gateway; refer to the IP Addresses table.

6. On HostA and HostB, configure the appropriate IP address and default gateway; refer to the IP Addresses table.

7. On Router1 and Router2, display the routing table. You should see the static routes you added.

8. Verify your configuration by pinging from HostA to HostB (192.168.100.2). The ping should be successful.

Lab Solutions

1. On Router1, issue the following commands to configure a host name, to configure the appropriate IP addresses on the interfaces, to configure a clock rate on the Serial 0/0 interface, and to enable the interfaces:

```
Router>enable
Router#configure terminal
Router(config)#hostname Router1
Router1(config)#interface fastethernet 0/0
Router1(config-if)#ip address 192.168.101.1 255.255.255.0
Router1(config-if)#no shutdown
Router1(config-if)#interface serial 0/0
Router1(config-if)#ip address 192.168.1.1 255.255.255.0
Router1(config-if)#clock rate 64000
Router1(config-if)#no shutdown
```

2. On Router1, issue the following commands to configure a static route so that all devices can ping any other device:

```
Router1(config-if)#exit
Router1(config)#ip route 192.168.100.0 255.255.255.0 192.168.1.2
```

3. On Router2, issue the following commands to configure a host name, to configure the appropriate IP addresses, and to enable the interfaces:

```
Router>enable
Router#configure terminal
Router(config)#hostname Router2
Router2(config)#interface fastethernet 0/0
Router2(config-if)#ip address 192.168.100.1 255.255.255.0
Router2(config-if)#no shutdown
Router2(config-if)#interface serial 0/0
Router2(config-if)#ip address 192.168.1.2 255.255.255.0
Router2(config-if)#no shutdown
```

4. On Router2, issue the following commands to configure a static route so that all devices can ping any other device:

```
Router2(config-if)#exit
Router2(config)#ip route 192.168.101.0 255.255.255.0 192.168.1.1
```

5. On HostA, issue the following commands to configure the appropriate IP address and default gateway:

```
C:>ipconfig /ip 192.168.101.2 255.255.255.0
C:>ipconfig /dg 192.168.101.1
```

6. On HostB, issue the following commands to configure the appropriate IP address and default gateway:

```
C:>ipconfig /ip 192.168.100.2 255.255.255.0
C:>ipconfig /dg 192.168.100.1
```

7. Issue the **show ip route** command on Router1 and Router2 to display the static routes you added. The following is sample output:

```
Router1(config)#end
Router1#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - candidate default
       U - per-user static route

Gateway of last resort is not set

C    192.168.101.0 is directly connected, FastEthernet0/0
C    192.168.1.0 is directly connected, Serial0/0
S    192.168.100.0 [1/0] via 192.168.1.2


Router2(config)#end
Router2#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, * - candidate default
       U - per-user static route

Gateway of last resort is not set

C    192.168.100.0 is directly connected, FastEthernet0/0
C    192.168.1.0 is directly connected, Serial0/0
S    192.168.101.0 [1/0] via 192.168.1.1
```

8. Verify your configuration by pinging from HostA to HostB (192.168.100.2). The ping should be successful.

Sample Configuration Script

Router1

```
Router1#show running-config
Building configuration...
Current configuration : 743 bytes
!
Version 12.3
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Router1
!
ip subnet-zero
!
ip cef
no ip domain-lookup
!
interface Serial0/0
 ip address 192.168.1.1 255.255.255.0
 no ip directed-broadcast
 clock rate 64000
!
interface Serial0/1
 no ip address
 no ip directed-broadcast
 shutdown
!
interface FastEthernet0/0
 ip address 192.168.101.1 255.255.255.0
 no ip directed-broadcast
!
interface FastEthernet0/1
 no ip address
 no ip directed-broadcast
 shutdown
!
ip classless
no ip http server
!
ip route 192.168.100.0 255.255.255.0
192.168.1.2
!
line con 0
line aux 0
line vty 0 4
!
no scheduler allocate
end
```