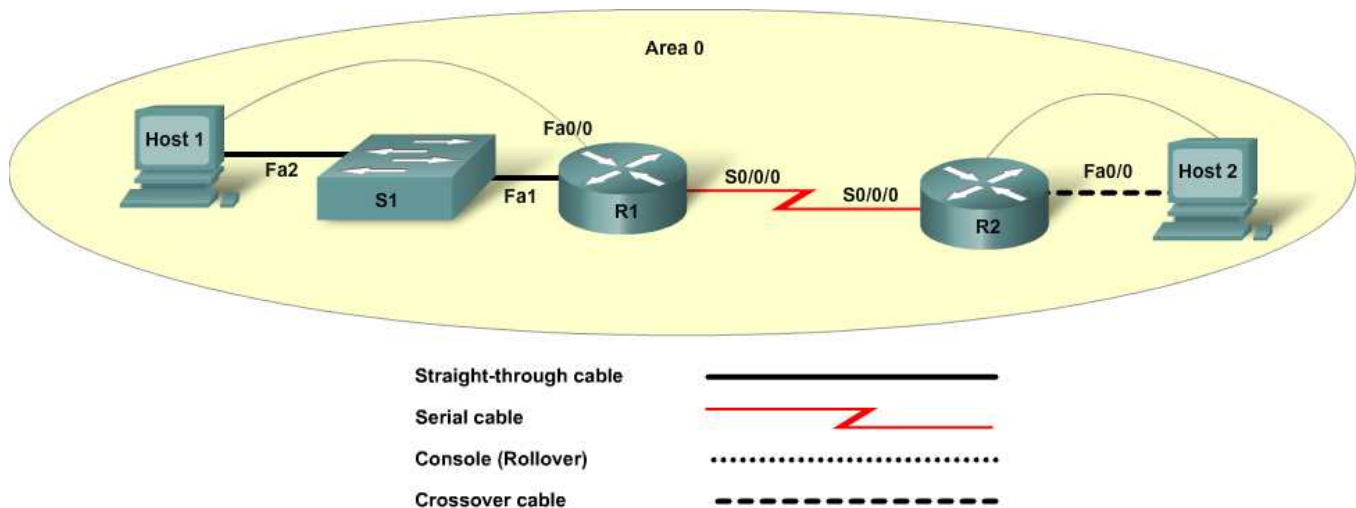


## Lab 6.2.2 Configuring OSPF Authentication



Device	Host Name	Fast Ethernet 0/0 / NIC Address	Serial 0/0/0 Address	Serial 0/0/0 Interface Type	Enable Secret Password	Enable, vty, and Console Password
Router 1	R1	192.168.0.1/24	192.168.2.1/30	DCE	cisco	class
Router 2	R2	192.168.1.1/24	192.168.2.2/30	DTE	cisco	class
Switch 1	S1				cisco	class
Host 1		192.168.0.10				
Host 2		192.168.1.10				

### Objectives

- Perform basic router configuration.
- Perform basic single area OSPF configuration.
- Configure OSPF authentication.
- Verify OSPF authentication.

### Background / Preparation

In this lab, you will cable a network similar to the one shown in the diagram. Any router that meets the interface requirements displayed in the addressing table may be used. For example, router series 800, 1600, 1700, 1800, 2500, 2600, or any combination can be used.

The information in this lab applies to 1841 routers. Other routers may be used; however, command syntax may vary. Depending on the router model, the interfaces may differ. For example, on some routers Serial 0 may be Serial 0/0 or Serial 0/0/0 and Ethernet 0 may be FastEthernet 0/0. The Cisco Catalyst 2960 switch comes preconfigured and only needs to be assigned basic security information before being connected to a network.

The following resources are required:

- One Cisco 2960 switch or other comparable switch
- Two routers. each with a serial connection and an Ethernet interface
- Two Windows-based PCs, each with a terminal emulation program, and each set up as a host
- At least one RJ-45-to-DB-9 connector console cable to configure the routers and switch
- Two straight-through Ethernet cables
- One crossover Ethernet cable
- One 2-part (DTE/DCE) serial cable

**NOTE:** Make sure that the routers and the switches have been erased and have no startup configurations. Instructions for erasing both switch and router are provided in the Lab Manual, located on Academy Connection in the Tools section.

**NOTE: SDM Enabled Routers** – If the startup-config is erased in an SDM enabled router, SDM will no longer come up by default when the router is restarted. It will be necessary to build a basic router configuration using IOS commands. The steps provided in this lab use IOS commands and do not require the use of SDM. If you wish to use SDM, refer to the instructions in the Lab Manual, located on the Academy Connection in the Tools section or contact your instructor if necessary.

### Step 1: Connect the equipment

- Connect Router 1 Serial 0/0/0 interface to Router 2 Serial 0/0/0 interface using a serial cable.
- Connect Router 1 Fa0/0 interface to Switch 1 Fa0/1 port using a straight-through cable.
- Connect each PC with a console cable to perform configurations on the router and switches.
- Connect Host 1 to the Switch 1 Fa0/2 port using a straight-through cable.
- Connect a crossover cable between Host 2 and the Fa0/0 interface of Router 2.

### Step 2: Perform basic configuration on the routers

- Connect a PC to the console port of the routers to perform configurations using a terminal emulation program.
- Configure Router 1 with a hostname, console, Telnet, and privileged passwords according to the table diagram.
- Configure Router 2 with a hostname, console, Telnet, and privileged passwords according to the table diagram.

### Step 3: Configure and verify OSPF on the routers

- Configure single area OSPF on R1 and R2. All interfaces will belong to Area 0.

```
R1(config)#router ospf 1
R1(config-router)#network 192.168.0.0 0.0.0.255 area 0
R1(config-router)#network 192.168.2.0 0.0.0.3 area 0
R1(config-router)#end
```

```
R2(config)#router ospf 1
R2(config-router)#network 192.168.1.0 0.0.0.255 area 0
R2(config-router)#network 192.168.2.0 0.0.0.3 area 0
R2(config-router)#end
```

- b. Verify the OSPF configuration using the **show ip route** command on both routers.

```
R1#show ip route
```

```
R2#show ip route
```

Does the 192.168.1.0/24 network appear in the routing table of R1? \_\_\_\_\_

Does the 192.168.0.0/24 network appear in the routing table of R2? \_\_\_\_\_

#### Step 4: Configure and verify OSPF authentication

OSPF allows for both plain text authentication and encrypted authentication. Because plain text authentication is as insecure as having no authentication, Message Digest 5 (MD5) authentication is used.

Configuring OSPF authentication is a two-step process. First, it is enabled on a router for an area, and then it is configured on the interfaces in that area.

- a. Enable MD5 authentication in Area 0 on both routers.

```
R1(config)#router ospf 1
```

```
R1(config-router)#area 0 authentication message-digest
```

```
R2(config)#router ospf 1
```

```
R2(config-router)#area 0 authentication message-digest
```

- b. Enable OSPF authentication on S0/0/0 of R1.

```
R1(config)#interface s0/0/0
```

```
R1(config-if)#ip ospf message-digest-key 10 md5 secretpassword
```

- c. Using the **show ip ospf neighbor** command, view the neighbors known to R1.

```
R1#show ip ospf neighbor
```

Does R1 show any OSPF neighbors?

\_\_\_\_\_

Why or why not?

- d. Watch the terminal output from R1 for several seconds.

What OSPF message was displayed when the MD5 authentication was set on R1 S0/0/0?

- e. Enable OSPF authentication on S0/0/0 of R2.

```
R2(config)#interface s0/0/0
```

```
R2(config-if)#ip ospf message-digest-key 10 md5 secretpassword
```

- f. Now, recheck the neighbour status between R1 and R2.

```
R1#show ip ospf neighbor
```

Do R1 and R2 have a neighbor relationship established now? \_\_\_\_\_

What OSPF console message did you see after the MD5 authentication was set on R2 S0/0/0?

- g. Ping from Host 1 to Host 2 to verify connectivity.

Can Host 1 ping Host 2? \_\_\_\_\_

**Step 5: Reflection**

- a. Why would OSPF authentication be configured in a network?

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- b. Can one OSPF area have different OSPF configuration parameters than another area?

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- c. Can a single OSPF router have multiple authentication passwords configured?

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