Sample Configuration for Authentication in OSPF

Contents

This document shows sample configurations for OSPF authentication. OSPF supports both plain text and MD5 authentication. When you configure authentication, you must configure an entire area with same type of authentication.

Starting in Cisco IOS® 12.0.8, authentication is supported on a per-interface basis, as mentioned in RFC 2328, Appendix D. This feature was added in bug CSCdk33792. If you are a registered CCO user and you have logged in, you can view the bug details:

Let's take the following network as an example.

Network Diagram

Configurations for Plain Text Authentication

Plain text authentication is useful in performing OSPF re-configuration, rather than for security. Plain text authentication passwords don't have to be the same throughout an area, but they must be same between neighbors.

R4-4K	R1-7010
interface Loopback0 ip address 70.70.70.70 255.255.255.255 ! interface Serial2 ip address 192.16.64.2 255.255.255.0 **ip ospf authentication-key kal** ! router ospf 10 network 192.16.64.0 0.0.0.255 area 0 network 70.0.0.0 0.255.255.255 area 0 **area 0 authentication**	interface Loopback0 ip address 17 2.16.10.36 255.255.255.240 ! interface Serial1/0 ip address 192.16.64.1 255.255.255.0 **ip ospf authentication-key kal** ! router ospf 10 network 172.16.0.0 0.0.255.255 area 0 network 192.16.64.0 0.0.0.255 area 0 **area 0 authentication**

Debug and Verification Tips

Here's debug output for R1-7010:

```
R1-7010#debug ip ospf adj

    OSPF: Receive dbd from 70.70.70.70 seq 0x14B
    OSPF: 2 Way Communication to neighbor 70.70.70.70
    OSPF: send DBD packet to 192.16.64.2 seq 0x1797
    OSPF: Receive dbd from 70.70.70.70 seq 0x1797
    OSPF: NBR Negotiation Done  We are the MASTER
    OSPF: send DBD packet to 192.16.64.2 seq 0x1798
    OSPF: Database request to 70.70.70.70
    OSPF: sent LS REQ packet to 192.16.64.2, length 12
```

```
OSPF: Receive dbd from 70.70.70.70 seq 0x1798
OSPF: send DBD packet to 192.16.64.2 seq 0x1799
OSPF: Receive dbd from 70.70.70.70 seq 0x1799
OSPF: Exchange Done with neighbor 70.70.70.70
OSPF: Synchronized with neighbor 70.70.70.70, state:FULL
OSPF: Build router LSA, router ID 172.16.13.1
```

```
R1-7010#show ip ospf neighbor

     Neighbor ID     Pri   State           Dead Time   Address         Interface
     70.70.70.70       1   FULL/  -        00:00:36     192.16.64.2     Serial1/0

R1-7010#show ip route

     O    70.70.70.70 [110/65] via 192.16.64.2, 00:01:27, Serial1/0
     C    192.16.64.0/24 is directly connected, Serial1/0
```

Configurations for MD5 Authentication

Message Digest 5 (MD5) authentication provides higher security than plain text authentication. Like plain text authentication, passwords don't have to be the same throughout an area, but they do need to be same between neighbors. MD5 authentication uses a key ID that allows the router to reference multiple passwords, making password migration easier and more secure. For example, to migrate from one password to another, configure a password under a different key ID and then remove the first key.

R4-4K	R1-7010
interface Loopback0 ip address 70.70.70.70 255.255.255.255 ! interface Serial2 ip address 192.16.64.2 255.255.255.0 **ip ospf message-digest-key 1 md5 kal** ! router ospf 10 network 192.16.64.0 0.0.0.255 area 0 network 70.0.0.0 0.255.255.255 area 0 **area 0 authentication message-digest**	interface Loopback0 ip address 172.16.10.36 255.255.255.240 ! interface Serial1/0 ip address 192.16.64.1 255.255.255.0 **ip ospf message-digest-key 1 md5 ka**l ! router ospf 10 network 172.16.0.0 0.0.255.255 area 0 network 192.16.64.0 0.0.0.255 area 0 **area 0 authentication message-digest**

Debug and Verification Tips

```
R1-7010#debug ip ospf adj

     OSPF: Send with youngest Key 1
     OSPF: Receive dbd from 70.70.70.70 seq 0xEDC
     OSPF: 2 Way Communication to neighbor 70.70.70.70
     OSPF: send DBD packet to 192.16.64.2 seq 0x9A3
     OSPF: Send with youngest Key 1
     OSPF: Receive dbd from 70.70.70.70 seq 0x9A3
     OSPF: NBR Negotiation Done  We are the MASTER
     OSPF: send DBD packet to 192.16.64.2 seq 0x9A4
     OSPF: Send with youngest Key 1
     OSPF: Send with youngest Key 1
     OSPF: Database request to 70.70.70.70
     OSPF: sent LS REQ packet to 192.16.64.2, length 12
     OSPF: Receive dbd from 70.70.70.70 seq 0x9A4
     OSPF: send DBD packet to 192.16.64.2 seq 0x9A5
     OSPF: Send with youngest Key 1
     OSPF: Send with youngest Key 1
     OSPF: Receive dbd from 70.70.70.70 seq 0x9A5
     OSPF: Exchange Done with neighbor 70.70.70.70
     OSPF: Synchronized with neighbor 70.70.70.70, state:FULL
     OSPF: Build router LSA, router ID 172.16.13.1
```

```
R1-7010#show ip ospf neighbor
     Neighbor ID     Pri   State           Dead Time   Address         Interface
     70.70.70.70       1   FULL/  -        00:00:38     192.16.64.2     Serial1/0

R1-7010#show ip route
     O       70.70.70.70 [110/65] via 192.16.64.2, 00:00:59, Serial1/0
     C    192.16.64.0/24 is directly connected, Serial1/0
```

Related Information

- **IP Routing Top Issues**
- **OSPF Support Page**
- **More OSPF Technical Tips**
- **More Routing Protocol Technical Tips**

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