

OSPF的初始配置在非广播连接

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Introduction

本文为在非广播连接的开放最短路径优先(OSPF)提供初始配置。在非广播介质 (例如，帧中继、X.25、ATM 和交换式多兆位数据服务 (SMDS)) 上，OSPF 可以在两种模式下运行：

- 非广播多重接入(NBMA)：由指定路由器(DR)和一个备份指定路由模拟广播模型(BDR)的选择。有两种方式模拟在NBMA网络的一个广播模型：使用**router ospf**命令，定义网络类型成广播用**ip ospf network broadcast**接口子命令或配置邻居声明。
- 点到多点：对待非广播网络作为点到点链路的一集由配置[ip ospf network point-to-multipoint](#)命令。

您必须定义在非广播网络的网络类型为了避免邻居声明的配置。本文为基于非广播型链路的OSPF提供配置示例。请使用**show ip ospf interface**命令为了检查运行OSPF，并且[show ip ospf neighbor](#)命令用于认识邻接路由器的状态接口的网络类型。

Prerequisites

Requirements

Cisco建议您了解[OSPF](#)路由协议的基本配置。

Components Used

本文档中的信息基于以下软件和硬件版本：

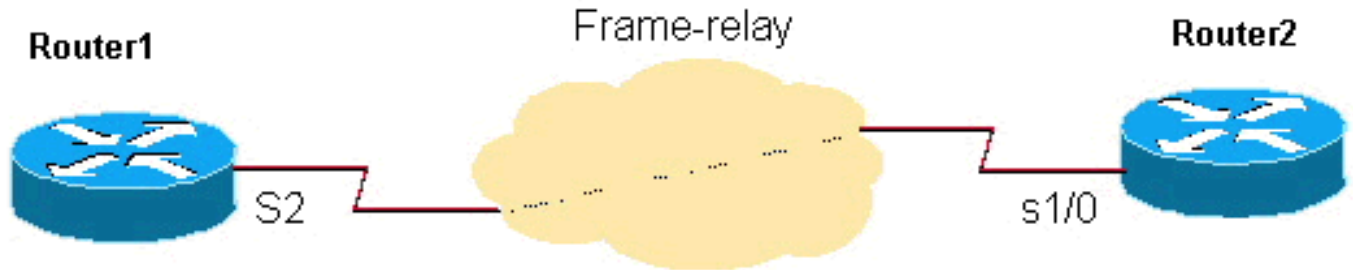
- Cisco 2500路由器
- 在路由器运行的Cisco IOS软件版本12.2(24a)

本文档中的信息都是基于特定实验室环境中的设备创建的。All of the devices used in this document started with a cleared (default) configuration.If your network is live, make sure that you understand

the potential impact of any command.

Network Diagram

这是用于在本文的配置示例的网络图。



NBMA (使用网络类型广播)的配置

Router1

```
interface Loopback0
  ip address 3.3.3.3 255.255.255.255
  !
  !
interface Serial2
  ip address 1.1.1.2 255.255.255.0
  encapsulation frame-relay
  ip ospf network broadcast
  no keepalive
  frame-relay map ip 1.1.1.1 16 broadcast
  !
  !
router ospf 1
  network 1.1.1.0 0.0.0.255 area 0
```

Router2

```
interface Loopback0
  ip address 2.2.2.2 255.255.255.255
  !
interface Serial1/0
  ip address 1.1.1.1 255.255.255.0
  encapsulation frame-relay
  ip ospf network broadcast
  no keepalive
  clockrate 2000000
  frame-relay map ip 1.1.1.2 16 broadcast
  !
router ospf 1
  network 1.1.1.0 0.0.0.255 area 0
  !
```

验证提示

这是Router1的show命令输出。

```
Router1# show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
2.2.2.2	1	FULL/BDR	00:00:37	1.1.1.1	Serial2

```
Router1# show ip ospf interface s2
```

```
Serial2 is up, line protocol is up
Internet Address 1.1.1.2/24, Area 0
Process ID 1, Router ID 3.3.3.3, Network Type BROADCAST, Cost: 64
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 3.3.3.3, Interface address 1.1.1.2
Backup Designated router (ID) 2.2.2.2, Interface address 1.1.1.1
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:00
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 2
Last flood scan time is 0 msec, maximum is 4 msec
Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 2.2.2.2 (Backup Designated Router)
Suppress hello for 0 neighbor(s)
```

并且Router2的输出如下。

```
Router2# show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
3.3.3.3	1	FULL/DR	00:00:38	1.1.1.2	Serial1/0

```
Router2# show ip ospf interface s1/0
```

```
Serial1/0 is up, line protocol is up
Internet Address 1.1.1.1/24, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type BROADCAST, Cost: 64
Transmit Delay is 1 sec, State BDR, Priority 1
Designated Router (ID) 3.3.3.3, Interface address 1.1.1.2
Backup Designated router (ID) 2.2.2.2, Interface address 1.1.1.1
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:03
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 2
Last flood scan time is 0 msec, maximum is 4 msec
Neighbor Count is 1, Adjacent neighbor count is 1
Adjacent with neighbor 3.3.3.3 (Designated Router)
Suppress hello for 0 neighbor(s)
```

NBMA (使用邻居声明)的配置

Router1

```
interface Loopback0
 ip address 3.3.3.3 255.255.255.255
!
interface Serial2
 ip address 1.1.1.2 255.255.255.0
 encapsulation frame-relay
 ip ospf priority 2
 no keepalive
 frame-relay map ip 1.1.1.1 16
!
router ospf 1
```

```

network 1.1.1.0 0.0.0.255 area 0
neighbor 1.1.1.1
!

```

Router2

```

interface Loopback0
 ip address 2.2.2.2 255.255.255.255
!
interface Serial1/0
 ip address 1.1.1.1 255.255.255.0
 encapsulation frame-relay
 no keepalive
 clockrate 2000000
 frame-relay map ip 1.1.1.2 16
!
router ospf 1
 network 1.1.1.0 0.0.0.255 area 0
 neighbor 1.1.1.2
!

```

Note: 在显示的配置中，[ip ospf priority 2命令](#)在Router1比默认优先级值设置一个更高的接口优先级为1，做它DR和Router2 NBMA网络的BDR。若需要，您不能设置优先级值为0为了配置路由器成为DR/BDR。这是必要的在应该配置成为DR，作为spoke不应该是DR和BDR集线器的星型网网络。虽则邻居声明的配置关于一端的是满足形成邻接，它是一种好习惯安排它被配置在两个末端如显示。并且，因为OSPF信息包是与邻居声明的单播的帧中继映射命令不需要有广播参数。

验证提示

这是Router1的show命令输出。

```
Router1# show ip ospf neighbors
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
2.2.2.2	1	FULL/BDR	00:01:39	1.1.1.1	Serial2

```
Router1# show ip ospf interface s2
```

```

Serial2 is up, line protocol is up
 Internet Address 1.1.1.2/24, Area 0
 Process ID 1, Router ID 3.3.3.3, Network Type NON_BROADCAST, Cost: 64
 Transmit Delay is 1 sec, State DR, Priority 1
 Designated Router (ID) 3.3.3.3, Interface address 1.1.1.2
 Backup Designated router (ID) 2.2.2.2, Interface address 1.1.1.1
 Timer intervals configured, Hello 30, Dead 120, Wait 120, Retransmit 5
 Hello due in 00:00:19
 Index 1/1, flood queue length 0
 Next 0x0(0)/0x0(0)
 Last flood scan length is 2, maximum is 2
 Last flood scan time is 0 msec, maximum is 0 msec
 Neighbor Count is 1, Adjacent neighbor count is 1
 Adjacent with neighbor 2.2.2.2 (Backup Designated Router)
 Suppress hello for 0 neighbor(s)

```

并且Router2的输出如下。

```
Router2# show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
-------------	-----	-------	-----------	---------	-----------

```
3.3.3.3          1    FULL/DR          00:01:49          1.1.1.2          Serial1/0
```

```
Router2# show ip ospf interface s1/0
Serial1/0 is up, line protocol is up
Internet Address 1.1.1.1/24, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type NON_BROADCAST, Cost: 64
Transmit Delay is 1 sec, State BDR, Priority 1
Designated Router (ID) 3.3.3.3, Interface address 1.1.1.2
Backup Designated router (ID) 2.2.2.2, Interface address 1.1.1.1
Timer intervals configured, Hello 30, Dead 120, Wait 120, Retransmit 5
  Hello due in 00:00:01
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 2, maximum is 2
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
  Adjacent with neighbor 3.3.3.3 (Designated Router)
Suppress hello for 0 neighbor(s)
```

点对多点的配置

Router1

```
interface Loopback0
  ip address 3.3.3.3 255.255.255.255
!
interface Serial2
  ip address 1.1.1.2 255.255.255.0
  encapsulation frame-relay
  ip ospf network point-to-multipoint
  no keepalive
  frame-relay map ip 1.1.1.1 16 broadcast
!
router ospf 1
  network 1.1.1.0 0.0.0.255 area 0
!
```

Router2

```
interface Loopback0
  ip address 2.2.2.2 255.255.255.255
!
interface Serial1/0
  ip address 1.1.1.1 255.255.255.0
  encapsulation frame-relay
  ip ospf network point-to-multipoint
  no keepalive
  clockrate 2000000
  frame-relay map ip 1.1.1.2 16 broadcast
!
router ospf 1
  network 1.1.1.0 0.0.0.255 area 0
```

验证提示

这是Router1的show命令输出。

```
Router1# show ip ospf neighbors
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
2.2.2.2	1	FULL/ -	00:01:53	1.1.1.1	Serial2

Router1# **show ip ospf interface s2**

```
Serial2 is up, line protocol is up
Internet Address 1.1.1.2/24, Area 0
Process ID 1, Router ID 3.3.3.3, Network Type POINT_TO_MULTIPOINT, Cost: 64
Transmit Delay is 1 sec, State POINT_TO_MULTIPOINT,
Timer intervals configured, Hello 30, Dead 120, Wait 120, Retransmit 5
  Hello due in 00:00:18
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
  Adjacent with neighbor 2.2.2.2
Suppress hello for 0 neighbor(s)
```

并且Router2的输出如下。

Router2# **show ip ospf neighbor**

Neighbor ID	Pri	State	Dead Time	Address	Interface
3.3.3.3	1	FULL/ -	00:01:58	1.1.1.2	Serial1/0

Router2# **show ip ospf interface s1/0**

```
Serial1/0 is up, line protocol is up
Internet Address 1.1.1.1/24, Area 0
Process ID 1, Router ID 2.2.2.2, Network Type POINT_TO_MULTIPOINT, Cost: 64
Transmit Delay is 1 sec, State POINT_TO_MULTIPOINT,
Timer intervals configured, Hello 30, Dead 120, Wait 120, Retransmit 5
  Hello due in 00:00:18
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
  Adjacent with neighbor 3.3.3.3
Suppress hello for 0 neighbor(s)
```

Note: 没有DR和BDR选择如输出所显示时，当NBMA网络被配置作为点对多点，因为对待点到点链路的一集。

欲知更多信息，请参阅[配置OSPF](#)。

Related Information

- [OSPF 支持页](#)
- [IP路由协议支持页面](#)
- [Technical Support & Documentation - Cisco Systems](#)