排除故障普通的EIGRP问题

目录

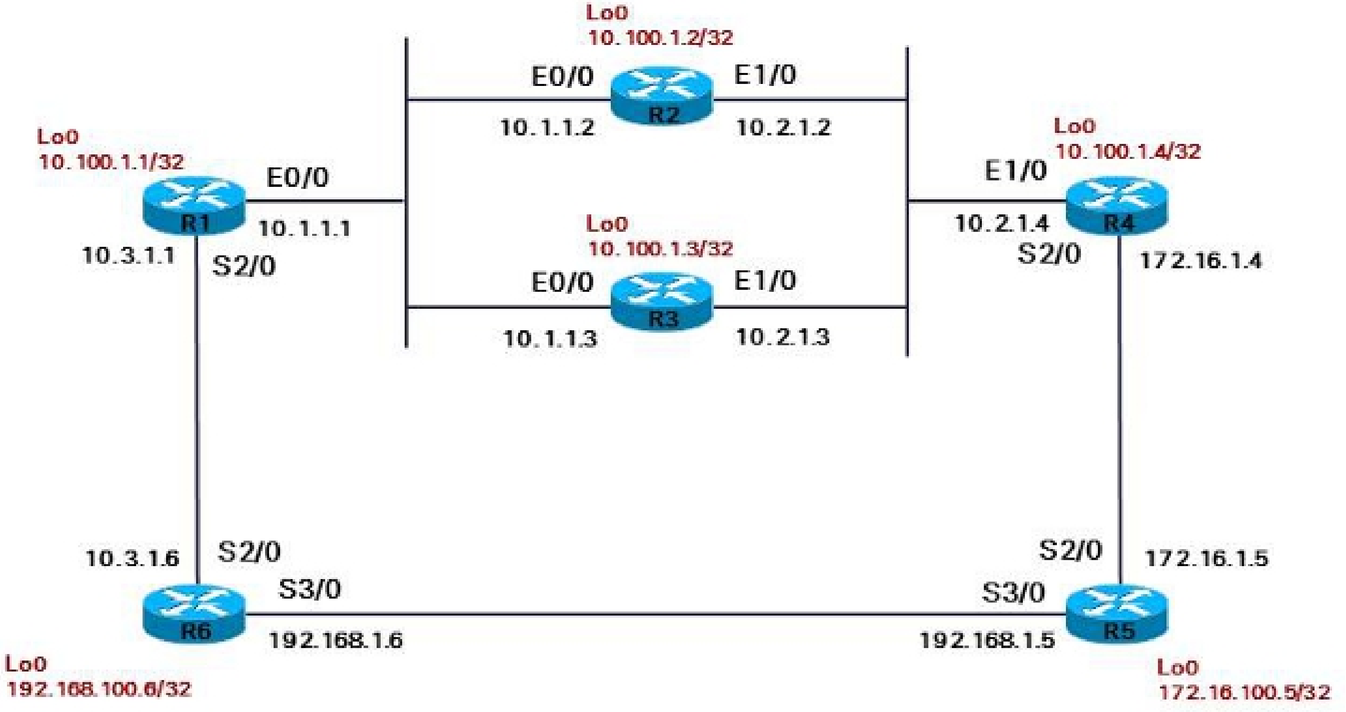
简介

本文描述如何排除故障最普通的增强的内部网关路由选择协议(EIGRP)问题。

> **注意**：本文在Cisco IOS使用示例和实施为了说明可以遇到的多种行为。

背景信息

这是使用本文的拓扑：



跟随的部分描述一些最普通的EIGRP问题和一些提示关于如何排除故障问题。

邻接飘荡

单个遇到与使用EIGRP的多数常见问题是不适当地设立结邻。有此的几个可能的原因：

- 最大传输单元(MTU)问题
- 单向通信(单向链路)
- 有在链路的一个组播问题

- 单播问题
- 林克质量问题
- 验证问题
- 误配置问题

如果不收到EIGRP Hello消息，您看不到邻接列表的邻居。输入**show ip eigrp neighbors命令**为了查看EIGRP邻居信息和识别问题：

```
R2#show ip eigrp neighbors

IP-EIGRP neighbors for process 1
H   Address   Interface Hold Uptime    SRTT   RTO  Q  Seq
                        (sec)          (ms)       Cnt Num
3   10.1.1.1  Et0/0      12 00:00:48    1  5000  1  0
2   10.1.1.3  Et0/0      12 02:47:13   22   200  0  339
1   10.2.1.4  Et1/0      12 02:47:13   24   200  0  318
0   10.2.1.3  Et1/0      12 02:47:13   20   200  0  338 13   20   200  0  338
```

如果认为结邻形成了，但是您没有您应该从该邻居了解的前缀，请检查前面的命令的输出：如果问*计数*总是非零，它可能能是暗示同样EIGRP数据包连续重新传输。输入**detail命令的show ip eigrp neighbors**为了验证同一数据包是否总是发送。如果第一数据包的序号总是相同的，则同一数据包无限地被重传：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime    SRTT   RTO  Q  Seq
                                           (sec)          (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

您在输出中能看到第一个邻居有一问题，并且*正常运行*重置。

重要的是您验证进程router eigrp是否有**eigrp log-neighbor-changes命令**。默认情况下然而，这从Cisco Bug ID CSCdx67706包括，因此没在配置里出现在那种情况下。检查在日志的条目两个链路的在每一侧的EIGRP邻居。在其中至少一本日志中，应该有一个有意义的条目。

这是所有EIGRP结邻更改和他们的日志条目的可能的来源：

- 在保持时间，EIGRP数据包未接收：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime    SRTT   RTO  Q  Seq
                                           (sec)          (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
```

```
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- EIGRP可靠数据包未在重试次数限制内确认：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                           (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- EIGRP在*故障状*态看到接口：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                           (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- 路由器接收一最初的更新数据包并且重新启动结邻：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                           (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- 路由器接收一最初的更新数据包并且形成了一新的邻接：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                           (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
```

```
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- **清楚ip eigrp neighbor命令**被输入，导致*手工的结算*：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                           (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- 在接口的IP地址更改：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                           (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- 有延迟/带宽更改在接口：**注意**：这在更旧的代码版本只发生。没有邻接摆动从Cisco Bug ID CSCdp08764。R2#**show ip eigrp neighbors detail**

```
IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                           (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- K-values是不正确的配置的或*从容关机发生*：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                           (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
```

```
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- 从容关机发生：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- **ip认证模式eigrp 1 md5**命令在接口配置：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- 优美的重新启动/Non-Stop Forwarding (NSF)发生：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

- 有查询被发送没有接收的回复清除的邻居：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

网络问题

这五个问题指示一个网络问题：

- Stuck-in-active (SIA)状态
- 一个已到期保持计时器
- 一超过的重试次数限制
- 一重新启动的对等体
- 一次最初的更新在Hello数据包前被发送

SIA

参考本文的SIA部分。

已到期保持计时器

一个已到期保持计时器表明路由器没有收到任何EIGRP数据包(即EIGRP Hello或任何其他EIGRP数据包)在hold-time间隔期间。可能更比在链路的一问题有在这种情况下。

检查路由器收到在此链路的EIGRP Hello信息包，并且另一侧发送他们。为了验证此，请输入**debug eigrp packet Hello**命令。

作为对使用的一替代方案debug命令，您是否能ping IP地址224.0.0.10和验证该邻接回复。

如果中间交换机阻塞EIGRP Hello信息包，组播问题的可能的原因在链路就该建立接口问题，例如。

您可执行的另一快速测验是尝试使用另一组播IP地址的另一份协议。例如，您能配置使用组播IP地址224.0.0.9的路由信息协议(RIP)版本2。

超过的重试次数限制

一超过的重试次数限制表明EIGRP可靠数据包未多次确认。EIGRP可靠数据包是数据包的这五种类型之一：

- 更新
- 查询
- 回复
- SIA查询

- SIA回复

可靠EIGRP数据包被重新传输至少16次。数据包是被重新传输的每重新传输时间(RTO)。最低的RTO是200毫秒，并且最大数量是5,000毫秒。RTO通过时差的观察时间之间的动态地增加或减小可靠EIGRP数据包发送和时间确认接收。当可靠数据包没有确认时， RTO增加。如果这仍然存在，则RTO快速增加五秒，因此重试次数限制能到达16 x 5秒= 80秒。然而，如果EIGRP保持时间大于80秒，结邻不断开，直到保持时间超时。这在，例如，默认保持时间是180秒的慢速广域网链路能发生。

对于与保持时间的链路比80秒，这有效意味着请降低，如果保持时间不超时，由EIGRP Hello信息包跟上。重试次数限制可能然后超过。这表明有MTU问题或单播问题。EIGRP Hello信息包小;(第一) EIGRP更新数据包可以是至全双工MTU。如果有填装更新的足够的前缀它将是全双工MTU大小。邻居可以通过EIGRP Hello信息包的接收了解，但是完全邻接也许不成功，如果EIGRP更新数据包没有确认。

一般，这是出现的输出：

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

> **注意**：自Cisco Bug ID CSCsc72090， EIGRP也使用接口的*IP MTU*设置。在此修正应用前，EIGRP数据包将成为分段，如果IP MTU配置与比1,500更低的值。此问题在动态多点VPN (DMVPN)网络能典型地出现。

第二种可能性是EIGRP Hello信息包做它，因为他们组播到IP地址224.0.0.10。一些EIGRP更新数据包也许做它，可以组播他们。然而，被重传的EIGRP可靠数据包总是单播。如果邻居的单播数据路径是残破的，被重传的可靠数据包不适当地处理。ping EIGRP邻居单播IP地址(与ping集的大小对链路的全双工MTU大小的和与请勿分段位(Df-bit)集)为了验证。

单向链路能引起此问题。EIGRP路由器也许收到EIGRP Hello信息包，但是从此邻居被发送的数据包不在链路间做它。如果Hello数据包不做它，路由器是没有察觉的，因为Hello数据包不可靠被发送。被发送的EIGRP更新数据包不会确认。

EIGRP可靠数据包或确认能成为损坏。一快速测验是发送与启用的回复验证的ping ：

```
R1#ping
Protocol [ip]:
Target IP address: 10.1.1.2
Repeat count [5]: 10
Datagram size [100]:
Timeout in seconds [2]:
Extended commands [n]: y
Source address or interface:
Type of service [0]:
Set DF bit in IP header? [no]:
Validate reply data? [no]: yes
```

```
Data pattern [0xABCD]:
Loose, Strict, Record, Timestamp, Verbose[none]:
Sweep range of sizes [n]:
Type escape sequence to abort.
Sending 10, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
Reply data will be validated
!!!!!!!!!!
Success rate is 100 percent (10/10), round-trip min/avg/max = 1/24/152 ms
```

启用**debug eigrp packets命令**为了验证EIGRP Hello信息包和EIGRP更新数据包的发射和接收在最低：

```
R1#debug eigrp packets ?

 SIAquery  EIGRP SIA-Query packets
 SIAreply  EIGRP SIA-Reply packets
 ack       EIGRP ack packets
 hello     EIGRP hello packets
 ipxsap    EIGRP ipxsap packets
 probe     EIGRP probe packets
 query     EIGRP query packets
 reply     EIGRP reply packets
 request   EIGRP request packets
 retry     EIGRP retransmissions
 stub      EIGRP stub packets
 terse     Display all EIGRP packets except Hellos
 update    EIGRP update packets
 verbose   Display all EIGRP packets
```

这是*重试次数限制超出的*问题的一典型的示例：

```
R2#show ip eigrp neighbors

IP-EIGRP neighbors for process 1
H   Address   Interface Hold Uptime   SRTT   RTO  Q  Seq
                        (sec)         (ms)       Cnt Num
3   10.1.1.1  Et0/0      12 00:00:48    1  5000  1  0
2   10.1.1.3  Et0/0      12 02:47:13   22   200  0  339
1   10.2.1.4  Et1/0      12 02:47:13   24   200  0  318
0   10.2.1.3  Et1/0      12 02:47:13   20   200  0  338 13   20   200  0  338
```

注意：总是有在队列(**问CNT**)的一个或更多数据包。

```
R2#show ip eigrp neighbors detail

IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                           (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             10 00:00:59    1  5000  1  0
  Version 12.4/1.2, Retrans: 12, Retries: 12, Waiting for Init, Waiting for Init Ack
   UPDATE seq 349 ser 0-0 Sent 59472 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:23   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             11 02:47:23   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             10 02:47:23   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

如输出所显示， R2等候第一更新数据包(设置的init位)从邻居在IP地址10.1.1.1。

在此下输出中， R2等候第一更新数据包(设置的init位的)确认从邻居在IP地址10.1.1.1。

注意：RTO在其最多5,000毫秒，表明EIGRP可靠数据包没有确认在五秒以内。

R2#**show ip eigrp neighbors detail**

```
IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:01:17    1  5000  1  0
  Version 12.4/1.2, Retrans: 16, Retries: 16, Waiting for Init, Waiting for Init Ack
   UPDATE seq 349 ser 0-0 Sent 77844 Init Sequenced
2   10.1.1.3                Et0/0             12 02:47:42   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:42   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:42   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

重新传输数量稳步上升。它总是在队列(**顺序349**)的同一数据包。在R2发送此同样数据包16次后，结邻断开：

R2#**show ip eigrp neighbors detail**


```
IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:01:17    1  5000  1  0
  Version 12.4/1.2, Retrans: 16, Retries: 16, Waiting for Init, Waiting for Init Ack
   UPDATE seq 349 ser 0-0 Sent 77844 Init Sequenced
2   10.1.1.3                Et0/0             12 02:47:42   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:42   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:42   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```


进程再次开始：

R2#**show ip eigrp neighbors detail**

```
IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
3   10.1.1.1                Et0/0             11 00:00:08    1  4500  1  0
  Version 12.4/1.2, Retrans: 2, Retries: 2, Waiting for Init, Waiting for Init Ack
   UPDATE seq 350 ser 0-0 Sent 8040 Init Sequenced
2   10.1.1.3                Et0/0             11 02:47:56   22   200  0  339
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 10
1   10.2.1.4                Et1/0             10 02:47:56   24   200  0  318
  Version 12.4/1.2, Retrans: 10, Retries: 0, Prefixes: 8
0   10.2.1.3                Et1/0             11 02:47:56   20   200  0  338
  Version 12.4/1.2, Retrans: 11, Retries: 0, Prefixes: 2
```

debug eigrp packets简洁命令的输出显示R2发送多次同一数据包：

> **注意**：**重试值**增加，**标志**值是**0x1**，并且*Init位*设置。

R2#**debug eigrp packets terse**

```
EIGRP Packets debugging is on
   (UPDATE, REQUEST, QUERY, REPLY, IPXSAP, PROBE, ACK, STUB, SIAQUERY, SIAREPLY)

R2#
EIGRP: Sending UPDATE on Ethernet0/0 nbr 10.1.1.1, retry 14, RTO 5000
AS 1, Flags 0x1, Seq 350/0 idbQ 0/0 iidbQ un/rely 0/0 peerQ un/rely 0/1
EIGRP: Sending UPDATE on Ethernet0/0 nbr 10.1.1.1, retry 15, RTO 5000
```

```
AS 1, Flags 0x1, Seq 350/0 idbQ 0/0 iidbQ un/rely 0/0 peerQ un/rely 0/1
```

因为Hello数据包适当地，被发送并且接收保持时间不超时：

```
R2#debug eigrp packets hello
EIGRP Packets debugging is on
   (HELLO)

EIGRP: Received HELLO on Ethernet0/0 nbr 10.1.1.1
 AS 1, Flags 0x0, Seq 0/0 idbQ 0/0
```

重新启动的对等体

如果观察在一个路由器重复**重新启动的一对等体**，表明路由器收到从其邻居的最初的更新数据包。注意在已接收更新数据包的**标志1**。

```
R2#deb eigrp packets terse

EIGRP Packets debugging is on
   (UPDATE, REQUEST, QUERY, REPLY, IPXSAP, PROBE, ACK, STUB, SIAQUERY, SIAREPLY)

R2#
EIGRP: Received Sequence TLV from 10.1.1.1
      10.1.1.2
      address matched
     clearing CR-mode
EIGRP: Received CR sequence TLV from 10.1.1.1, sequence 479
EIGRP: Received UPDATE on Ethernet0/0 nbr 10.1.1.1
 AS 1, Flags 0xA, Seq 479/0 idbQ 0/0 iidbQ un/rely 0/0 peerQ un/rely 0/0,
not in CR-mode, packet discarded
EIGRP: Received UPDATE on Ethernet0/0 nbr 10.1.1.1
 AS 1, Flags 0x1, Seq 478/0 idbQ 0/0 iidbQ un/rely 0/0 peerQ un/rely 0/0

%DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 10.1.1.1 (Ethernet0/0) is down:
peer restarted
%DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 10.1.1.1 (Ethernet0/0) is up:
new adjacency
EIGRP: Enqueueing UPDATE on Ethernet0/0 nbr 10.1.1.1 iidbQ un/rely 0/1
peerQ un/rely 0/0
```

在Hello前标注姓名起首字母更新

这是最初的更新数据包在Hello数据包前接收的示例：

```
R2#deb eigrp packets terse

EIGRP Packets debugging is on
   (UPDATE, REQUEST, QUERY, REPLY, IPXSAP, PROBE, ACK, STUB, SIAQUERY, SIAREPLY)

R2#
EIGRP: Received Sequence TLV from 10.1.1.1
      10.1.1.2
      address matched
     clearing CR-mode
EIGRP: Received CR sequence TLV from 10.1.1.1, sequence 479
EIGRP: Received UPDATE on Ethernet0/0 nbr 10.1.1.1
 AS 1, Flags 0xA, Seq 479/0 idbQ 0/0 iidbQ un/rely 0/0 peerQ un/rely 0/0,
not in CR-mode, packet discarded
EIGRP: Received UPDATE on Ethernet0/0 nbr 10.1.1.1
 AS 1, Flags 0x1, Seq 478/0 idbQ 0/0 iidbQ un/rely 0/0 peerQ un/rely 0/0
```

```
%DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 10.1.1.1 (Ethernet0/0) is down:
peer restarted
%DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 10.1.1.1 (Ethernet0/0) is up:
new adjacency
EIGRP: Enqueueing UPDATE on Ethernet0/0 nbr 10.1.1.1 iidbQ un/rely 0/1
peerQ un/rely 0/0
```

如果这一次发生，在一邻接摆动后，则此情况不是问题。然而，如果经常体验它，它表明在链路的单播是可操作的，但是在链路的组播是残破的。换句话说，路由器收到单播更新数据包，但是不是Hello数据包。

其他问题

一些其他问题类型包括：

- 配置更改
- 验证问题
- 在主要的和备用IP地址的不匹配
- DMVPN问题

这些问题在跟随的部分较详细地解释。

配置更改

> **注意**：使用在此部分中命令的结果是相同的，如果配置相反的(*no命令*)。

当您配置总结报告(或*auto-summary*)时在接口，您观察此消息在路由器：

```
R2#deb eigrp packets terse

EIGRP Packets debugging is on
   (UPDATE, REQUEST, QUERY, REPLY, IPXSAP, PROBE, ACK, STUB, SIAQUERY, SIAREPLY)

R2#
EIGRP: Received Sequence TLV from 10.1.1.1
      10.1.1.2
      address matched
     clearing CR-mode
EIGRP: Received CR sequence TLV from 10.1.1.1, sequence 479
EIGRP: Received UPDATE on Ethernet0/0 nbr 10.1.1.1
 AS 1, Flags 0xA, Seq 479/0 idbQ 0/0 iidbQ un/rely 0/0 peerQ un/rely 0/0,
not in CR-mode, packet discarded
EIGRP: Received UPDATE on Ethernet0/0 nbr 10.1.1.1
 AS 1, Flags 0x1, Seq 478/0 idbQ 0/0 iidbQ un/rely 0/0 peerQ un/rely 0/0

%DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 10.1.1.1 (Ethernet0/0) is down:
peer restarted
%DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 10.1.1.1 (Ethernet0/0) is up:
new adjacency
EIGRP: Enqueueing UPDATE on Ethernet0/0 nbr 10.1.1.1 iidbQ un/rely 0/1
peerQ un/rely 0/0
```

这是显示一张*全局分布列表*配置EIGRP进程的示例：

```
R1(config-router)#distribute-list 1 out
R1(config-router)#
```

此消息在路由器观察：

> **注意**：当您配置*distribute-list* <>，同样发生。

```
R1(config-router)#distribute-list 1 out
R1(config-router)#
```

当您配置EIGRP进程的时，一个*接口*distribute-list所有EIGRP邻居然后去在下：

```
R1(config-router)#distribute-list 1 out
R1(config-router)#
```

在这种情况下，在此接口的仅EIGRP neighborships重置。

> **注意**：在Cisco Bug ID CSCdy20284以后， neighborships没有为手工更改重置例如汇总和过滤器。

验证

验证可以失踪不正确的配置或。这能造成EIGRP结邻断开由于超过的retry-limit。启用**debug eigrp packets命令**为了确认导致问题的它是消息摘要5 (MD5)验证：

```
R1#debug eigrp packets

EIGRP Packets debugging is on
   (UPDATE, REQUEST, QUERY, REPLY, HELLO, IPXSAP, PROBE, ACK, STUB, SIAQUERY,
SIAREPLY)

EIGRP: Ethernet0/0: ignored packet from 10.1.1.3, opcode = 1 (missing
authentication or key-chain missing)
```

在主要的和备用IP地址的不匹配

EIGRP派出Hello和其他数据包从主IP地址。如果IP原地址落入主IP地址范围或那个在接口的备用IP地址范围数据包从另一个路由器接受。否则，此错误消息(当**eigrp log-neighbor-warnings**启用)时观察：

```
R1#debug eigrp packets

EIGRP Packets debugging is on
   (UPDATE, REQUEST, QUERY, REPLY, HELLO, IPXSAP, PROBE, ACK, STUB, SIAQUERY,
SIAREPLY)

EIGRP: Ethernet0/0: ignored packet from 10.1.1.3, opcode = 1 (missing
authentication or key-chain missing)
```

DMVPN

检查在DMVPN网络的IPSec问题。如果加密不是干净的， IPSec能造成EIGRP摆动：

```
show crypto ipsec sa

  protected vrf:
  local  ident (addr/mask/prot/port):  (10.10.110.1/255.255.255.255/47/0)
  remote ident (addr/mask/prot/port):  (10.10.101.1/255.255.255.255/47/0)
  current_peer: 144.23.252.1:500
    PERMIT, flags={origin_is_acl,}
   #pkts encaps: 190840467, #pkts encrypt: 190840467, #pkts digest 190840467
   #pkts decaps: 158102457, #pkts decrypt: 158102457, #pkts verify 158102457
   #pkts compressed: 0, #pkts decompressed: 0
   #pkts not compressed: 0, #pkts compr. failed: 0
   #pkts not decompressed: 0, #pkts decompress failed: 0
   #send errors 5523, #recv errors 42
```

解释的标志

有EIGRP数据包报头的32位标志字段，并且了解多种标志值的征兆是有用的。

- **标志0x1 Init位**

  此标志在最初的更新数据包设置。
  ```
  show crypto ipsec sa

    protected vrf:
    local  ident (addr/mask/prot/port):  (10.10.110.1/255.255.255.255/47/0)
    remote ident (addr/mask/prot/port):  (10.10.101.1/255.255.255.255/47/0)
    current_peer: 144.23.252.1:500
      PERMIT, flags={origin_is_acl,}
     #pkts encaps: 190840467, #pkts encrypt: 190840467, #pkts digest 190840467
     #pkts decaps: 158102457, #pkts decrypt: 158102457, #pkts verify 158102457
     #pkts compressed: 0, #pkts decompressed: 0
     #pkts not compressed: 0, #pkts compr. failed: 0
     #pkts not decompressed: 0, #pkts decompress failed: 0
     #send errors 5523, #recv errors 42
  ```
- **标志0x2**

  此标志指示有条件的接收模式(CR模式)。这是可靠EIGRP组播进程的部分和用于为了允许在共享链路未确认一上一个可靠数据包追上的邻居。在顺序类型长度值(TLV)的地址是应该丢弃组播信息包的对等体，直到他们通过单播信息包追上。
  ```
  show crypto ipsec sa

    protected vrf:
    local  ident (addr/mask/prot/port):  (10.10.110.1/255.255.255.255/47/0)
    remote ident (addr/mask/prot/port):  (10.10.101.1/255.255.255.255/47/0)
    current_peer: 144.23.252.1:500
      PERMIT, flags={origin_is_acl,}
     #pkts encaps: 190840467, #pkts encrypt: 190840467, #pkts digest 190840467
     #pkts decaps: 158102457, #pkts decrypt: 158102457, #pkts verify 158102457
     #pkts compressed: 0, #pkts decompressed: 0
     #pkts not compressed: 0, #pkts compr. failed: 0
     #pkts not decompressed: 0, #pkts decompress failed: 0
     #send errors 5523, #recv errors 42
  ```
- **标志0x4**

  此标志是重新启动位(RS位)。当NSF发信号时，它在Hello数据包和更新数据包设置。一个NSF意识路由器查看此位为了检测，如果邻接路由器重新启动。检测然后的邻居知道保持EIGRP邻接。重新启动视图此标志为了确定的路由器对等体是否帮助与重新启动。
  ```
  show crypto ipsec sa
  ```

```
protected vrf:
local  ident (addr/mask/prot/port):  (10.10.110.1/255.255.255.255/47/0)
remote ident (addr/mask/prot/port):  (10.10.101.1/255.255.255.255/47/0)
current_peer: 144.23.252.1:500
  PERMIT, flags={origin_is_acl,}
 #pkts encaps: 190840467, #pkts encrypt: 190840467, #pkts digest 190840467
 #pkts decaps: 158102457, #pkts decrypt: 158102457, #pkts verify 158102457
 #pkts compressed: 0, #pkts decompressed: 0
 #pkts not compressed: 0, #pkts compr. failed: 0
 #pkts not decompressed: 0, #pkts decompress failed: 0
 #send errors 5523, #recv errors 42
```

- **标志0x8**

  这是END塔布莱(EOT)位。此位表明完整的路由表发送给邻居。一个NSF有能力路由器查看此位为了确定邻接路由器是否完成其重新启动。一个NSF有能力路由器等待此位，在从重新启动的路由器前删除过时的路由。
  show crypto ipsec sa

```
protected vrf:
local  ident (addr/mask/prot/port):  (10.10.110.1/255.255.255.255/47/0)
remote ident (addr/mask/prot/port):  (10.10.101.1/255.255.255.255/47/0)
current_peer: 144.23.252.1:500
  PERMIT, flags={origin_is_acl,}
 #pkts encaps: 190840467, #pkts encrypt: 190840467, #pkts digest 190840467
 #pkts decaps: 158102457, #pkts decrypt: 158102457, #pkts verify 158102457
 #pkts compressed: 0, #pkts decompressed: 0
 #pkts not compressed: 0, #pkts compr. failed: 0
 #pkts not decompressed: 0, #pkts decompress failed: 0
 #send errors 5523, #recv errors 42
```

标志在一个HEX编号打印。因此，标志0x5意味着标志4和1设置;标志0x9意味着标志8和1设置;标志0xA意味着标志8和2设置。

您能使用这些命令为了排除故障飘荡邻居：

- **显示EIGRP接口详细信息**
- **show ip eigrp neighbor详细信息**
- **ping单播**
- **与大小全双工MTU的ping**
- **ping与“验证回复数据”**
- **ping组播**
- **debug eigrp packet (Hello)**
- **show ip eigrp traffic**
- **show ip traffic|开始EIGRP**

SIA

此部分提供SIA状态、一些可能的症状和原因的概述，和如何排除故障它。

SIA的定义

SIA状态意味着EIGRP路由器在被定量的时间(大约三分钟)内未接收对一查询的一回复从一个或更多邻居。当这发生时， EIGRP清除不发送回复的邻居并且记录去激活的路由的一**DUAL-3-SIA**错误消息。

症状

这些消息在一或许多路由器能被看到：

```
show crypto ipsec sa

  protected vrf:
  local  ident (addr/mask/prot/port):  (10.10.110.1/255.255.255.255/47/0)
  remote ident (addr/mask/prot/port):  (10.10.101.1/255.255.255.255/47/0)
  current_peer: 144.23.252.1:500
    PERMIT, flags={origin_is_acl,}
   #pkts encaps: 190840467, #pkts encrypt: 190840467, #pkts digest 190840467
   #pkts decaps: 158102457, #pkts decrypt: 158102457, #pkts verify 158102457
   #pkts compressed: 0, #pkts decompressed: 0
   #pkts not compressed: 0, #pkts compr. failed: 0
   #pkts not decompressed: 0, #pkts decompress failed: 0
   #send errors 5523, #recv errors 42
```

如果这偶发地只发生，可以忽略。如果它频繁地发生，指示一个不变网络问题。

可能的原因

这是SIA状态的一些可能的原因：

- 摇摆链接
- Bad链路
- 摆动路由
- 阻塞链路
- 大型网络直径(大查询范围)
- 内存不足
- 高CPU
- 误配置(错误的带宽值)

故障排除提示

当SIA情况发生时，有问题某处在网络。确切的原因可以是难发现。有两个途径：

- 查看一致报告作为SIA的前缀并且确定公共。
- 找出不一致能回答这些路由的查询的路由器。

确定SIA报告的所有前缀是否有公共。例如，他们全都也许是从网络的边缘的**/32**路由(例如在拨号网络)。如果那样，它也许指示网络的问题位置(即，其中产生的这些前缀)。

最终，您必须发现一台或多台路由器发送查询，并且不收到回复的位置，而下行路由器不是在此状态。例如，路由器可能发送查询，并且他们确认，但是从下行路由器的回复没有接收。

您能使用**show ip eigrp topology active命令**为了帮助排除故障SIA问题。寻找小**r**在命令输出中。这意味着路由器等候对一查询的一回复从该邻居的该前缀的。

下面是一个示例。查看拓扑。链路R1-R6和R1-R5被关闭。当路由器R1的回环接口被关闭时，R1发送前缀的10.100.1.1/32一查询对R2和R3。路由器R1为此前缀当前是活跃的。路由器R2和R3去激活和查询反之路由器R4，去激活并且发送查询对R5。路由器R5终于去激活并且发送查询对R6。路由器R6应该返回对R5的一回复。路由器R5去被动和回复对R4，反过来去被动并且发送一回复对R2和R3。最后， R2和R3去被动并且发送对R1的一回复，再去被动。

如果问题遇到，则路由器能坚持活动在延长的时间，因为必须等待回复。为了防止等待不也许接收的回复的路由器，路由器能宣称SIA和杀害等候回复的结邻。为了排除故障问题，查看**show ip eigrp topology active命令**输出和跟随**r.的**跟踪**。**

这是路由器的R1输出：

```
R1#show ip eigrp topology active
IP-EIGRP Topology Table for AS 1)/ID(10.100.1.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
      r - reply Status, s - sia Status

A 10.100.1.1/32, 1 successors, FD is Inaccessible
   1 replies, active 00:01:11, query-origin: Local origin
       via Connected (Infinity/Infinity), Loopback0
     Remaining replies:
        via 10.1.1.2, r, Ethernet0/0
```

路由器R1是活跃的并且等候从R2的一回复。这是路由器的R2输出：

```
R2#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(10.100.1.2)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
      r - reply Status, s - sia Status

A 10.100.1.1/32, 1 successors, FD is Inaccessible
   1 replies, active 00:01:01, query-origin: Successor Origin
       via 10.1.1.1 (Infinity/Infinity), Ethernet0/0
       via 10.2.1.4 (Infinity/Infinity), r, Ethernet1/0, serno 524
       via 10.2.1.3 (Infinity/Infinity), Ethernet1/0, serno 523
```

路由器R2是活跃的并且等候从R4的一回复。这是路由器的R4输出：

```
R4#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(10.100.1.4)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
      r - reply Status, s - sia Status
```

```
A 10.100.1.1/32, 1 successors, FD is Inaccessible
   1 replies, active 00:00:56, query-origin: Successor Origin
       via 10.2.1.2 (Infinity/Infinity), Ethernet1/0
       via 172.16.1.5 (Infinity/Infinity), r, Serial2/0, serno 562
       via 10.2.1.3 (Infinity/Infinity), Ethernet1/0, serno 560
```

路由器R4是活跃的并且等候从R5的一回复。这是路由器的R5输出：

```
R5#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(172.16.1.5)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
      r - reply Status, s - sia Status

A 10.100.1.1/32, 1 successors, FD is Inaccessible, Q
   1 replies, active 00:00:53, query-origin: Successor Origin
       via 172.16.1.4 (Infinity/Infinity), Serial2/0
     Remaining replies:
        via 192.168.1.6, r, Serial3/0
```

路由器R5是活跃的并且等候从R6的一回复。这是路由器的R6输出：

```
R6#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(192.168.1.6)
R6#
```

如显示，路由器R6为前缀不是活跃的，因此问题必须在路由器R5和R6之间。在一些时间以后，我们看到R5杀害结邻对R6并且宣称SIA状态：

```
R6#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(192.168.1.6)
R6#
```

当您查看路由器的R5时输出，您能看到有在链路的问题往R6。

这是新的SIA代码，以及同样，在是在问题旁边的路由器发生的SIA。在本例中，这是路由器R5和R6之间的链路。在更旧的代码版本中， SIA在沿路径的所有路由器可能被宣称(例如在R2)，也许是遥远的从问题。SIA计时器是三分钟。沿路径的所有路由器能是去SIA和杀害结邻的第一个。使用更新的代码，路由器等候回复，半成品发送SIA查询给其邻居，并且邻居立即回答与SIA回复。例如，而在活动状态，路由器R4发送SIA查询对R5，并且R5与SIA的回复应答。

```
R6#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(192.168.1.6)
R6#
```

路由器R5也发送SIA查询对R6，但是不收到从R6的一个SIA答复。

```
R6#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(192.168.1.6)
R6#
```

一旦路由器发送SIA查询，但是不收到SIA答复， **s**为该邻居出现：

```
R5#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(172.16.1.5)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
      r - reply Status, s - sia Status

A 10.100.1.1/32, 1 successors, FD is Inaccessible, Qqr
   1 replies, active 00:02:36, query-origin: Successor Origin, retries(1)
       via 1172.16.1.4 (Infinity/Infinity), Serial2/0, serno 61
       via 192.168.1.6 (Infinity/Infinity), rs, q, Serial3/0, serno 60, anchored
```

使用新的SIA代码，当不收到SIA答复时，在路由器R5应该宣称SIA。您应该然后启用这两EIGRP

SIA数据包的调试：

```
R2#debug eigrp packets SIAquery SIAreply

EIGRP Packets debugging is on
   (SIAQUERY, SIAREPLY)

R2#show deb
EIGRP:
 EIGRP Packets debugging is on
   (SIAQUERY, SIAREPLY)
```

总之，您能使用这些命令为了排除故障SIA问题：

- **show ip eigrp topology active**
- **show ip eigrp事件**(可能请增加事件日志大小)
- **show ip eigrp traffic** (许多SIA查询和SIA回复的搜索)
- **show proc mem**
- **显示mem总和**

这是SIA问题的一些可能的解决方案：

- 解决链路问题。
- 应用汇总(手工或自动)在与许多前缀或一个深刻的查询范围的网络。
- 请使用distribute-list为了减小查询范围。
- 定义远程路由器作为残余部分。

缺少前缀

有缺少前缀的两种类型：在路由表的那些(或路由信息库(RIB))未命中和在拓扑表里未命中的那些。

在RIB的缺少前缀

可以有几个原因前缀在RIB没有包括：

- 前缀在路由表里安装由与更短的管理距离的另一个路由协议。
- distribute-list阻塞前缀。
- 水平分割阻塞前缀。

与更短的管理距离的路由协议安装的前缀

在本例中，前缀在路由表里安装由静态路由或一个路由协议与更短的管理距离。

典型地，当这发生时，前缀在拓扑表里，但是没有后继路由。您能查看所有这些条目用**show ip eigrp topology无后继**命令。可行距离(FD)应该有一个无限的值。

输入**show ip route <prefix>**命令并且验证该的路由协议自己在RIB的路由：

```
R1#show ip eigrp topology 192.168.100.6 255.255.255.255
IP-EIGRP (AS 1): Topology entry for 192.168.100.6/32
 State is Passive, Query origin flag is 1, 0 Successor(s), FD is 4294967295
 Routing Descriptor Blocks:
 10.3.1.6 (Serial2/0), from 10.3.1.6, Send flag is 0x0
     Composite metric is (2297856/128256), Route is Internal
     Vector metric:
       Minimum bandwidth is 1544 Kbit
       Total delay is 25000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 1R1#show ip eigrp topology zero-successors
IP-EIGRP Topology Table for AS(1)/ID(10.100.1.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
      r - reply Status, s - sia Status

P 192.168.1.0/24, 0 successors, FD is Inaccessible
       via 10.3.1.6 (2681856/2169856), Serial2/0
P 192.168.100.6/32, 0 successors, FD is Inaccessible
       via 10.3.1.6 (2297856/128256), Serial2/0
```

Distribute-list阻塞前缀

EIGRP是距离矢量路由协议。您能使用在所有路由器为了字组前缀的一个distribute-list。您在接口能使用它为了从被派出终止前缀或接收，或者您能配置distribute-list全局在router eigrp进程下为了应用在所有的路由选择过滤器Eigrp启用的接口。

示例如下：

```
R1#show running-config | begin router eigrp

router eigrp 1
network 10.0.0.0
distribute-list 1 in
no auto-summary
!
access-list 1 deny   192.168.100.6
access-list 1 permit any
```

缺少前缀在拓扑表里

此部分描述某些原因前缀也许未命中从拓扑表。

适当的命令输出的掩码规格

请勿犯典型的错误;当您在拓扑表里时验证一个前缀，总是请指定掩码。如果不使用掩码，这发生：

```
R1#show ip eigrp topology 192.168.100.6
% IP-EIGRP (AS 1): Route not in topology table
```

这是**show ip eigrp topology命令**输出，当掩码指定时：

```
R1#show ip eigrp topology 192.168.100.6 255.255.255.255
IP-EIGRP (AS 1): Topology entry for 192.168.100.6/32
 State is Passive, Query origin flag is 1, 1 Successor(s), FD is 2297856
 Routing Descriptor Blocks:
 10.3.1.6 (Serial2/0), from 10.3.1.6, Send flag is 0x0
     Composite metric is (2297856/128256), Route is Internal
     Vector metric:
       Minimum bandwidth is 1544 Kbit
       Total delay is 25000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 1
 10.4.1.5 (Ethernet1/0), from 10.4.1.5, Send flag is 0x
     Composite metric is (2323456/2297856), Route is Internal
     Vector metric:
       Minimum bandwidth is 1544 Kbit
       Total delay is 26000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 2
```

如显示，前缀是存在拓扑表里。

水平分割阻塞前缀

此部分描述另一个常见错误。EIGRP不是链路状态路由协议，但是相当它是距离矢量路由协议。没有，因为EIGRP是链路状态路由协议，必须用于拓扑表Diffuse更新算法(DUAL)的正确操作;因此，它要求数据库。拓扑表要求，因为仅最佳路由在路由表里安装，而DUAL需求可行路由监控。这些在拓扑表里存储。

您应该总是有后继路由路由和可行路由在拓扑表里。否则，有bug。然而，只要他们接收，在拓扑表里可能也有非可行路由。如果他们没有从邻居接收，可能有阻塞前缀的水平分割。

输出**show ip eigrp topology命令**显示指向后继路由和可行后继者仅的前缀条目。如果要查看在所有路径接收的前缀(也非可行路径)，则请输入**show ip eigrp topology all-links命令。**

示例如下：

```
R1#show ip eigrp topology
IP-EIGRP Topology Table for AS(1)/ID(10.100.1.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
      r - reply Status, s - sia Status

P 10.3.1.0/24, 1 successors, FD is 2169856
       via Connected, Serial2/0
P 10.2.1.0/24, 2 successors, FD is 307200
       via 10.1.1.2 (307200/281600), Ethernet0/0
       via 10.1.1.3 (307200/281600), Ethernet0/0
P 10.1.1.0/24, 1 successors, FD is 281600
       via Connected, Ethernet0/0
P 172.16.1.0/24, 1 successors, FD is 2195456
       via 10.4.1.5 (2195456/2169856), Ethernet1/0
P 192.168.1.0/24, 1 successors, FD is 2195456
       via 10.4.1.5 (2195456/2169856), Ethernet1/0
```

```
       via 10.3.1.6 (2681856/2169856), Serial2/0
P 10.4.1.0/24, 1 successors, FD is 281600
       via Connected, Ethernet1/0
P 172.16.100.5/32, 1 successors, FD is 409600
       via 10.4.1.5 (409600/128256), Ethernet1/0
P 10.100.1.4/32, 2 successors, FD is 435200
       via 10.1.1.2 (435200/409600), Ethernet0/0
       via 10.1.1.3 (435200/409600), Ethernet0/0
P 10.100.1.3/32, 1 successors, FD is 409600
       via 10.1.1.3 (409600/128256), Ethernet0/0
P 10.100.1.2/32, 1 successors, FD is 409600
       via 10.1.1.2 (409600/128256), Ethernet0/0
P 10.100.1.1/32, 1 successors, FD is 128256
       via Connected, Loopback0
P 192.168.100.6/32, 1 successors, FD is 2297856
       via 10.3.1.6 (2297856/128256), Serial2/0
```

在此输出中您能看到命令的**所有链接**部分包括更多路径：

```
R1#show ip eigrp topology all-links
IP-EIGRP Topology Table for AS(1)/ID(10.100.1.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
      r - reply Status, s - sia Status

P 10.3.1.0/24, 1 successors, FD is 2169856, serno 43
       via Connected, Serial2/0
P 10.2.1.0/24, 2 successors, FD is 307200, serno 127
       via 10.1.1.2 (307200/281600), Ethernet0/0
       via 10.1.1.3 (307200/281600), Ethernet0/0
P 10.1.1.0/24, 1 successors, FD is 281600, serno 80
       via Connected, Ethernet0/0
P 172.16.1.0/24, 1 successors, FD is 2195456, serno 116
       via 10.4.1.5 (2195456/2169856), Ethernet1/0
        via 10.3.1.6 (3193856/2681856), Serial2/0
        via 10.1.1.2 (2221056/2195456), Ethernet0/0
        via 10.1.1.3 (2221056/2195456), Ethernet0/0
P 192.168.1.0/24, 1 successors, FD is 2195456, serno 118
       via 10.4.1.5 (2195456/2169856), Ethernet1/0
       via 10.3.1.6 (2681856/2169856), Serial2/0
P 10.4.1.0/24, 1 successors, FD is 281600, serno 70
       via Connected, Ethernet1/0
P 172.16.100.5/32, 1 successors, FD is 409600, serno 117
       via 10.4.1.5 (409600/128256), Ethernet1/0
       via 10.3.1.6 (2809856/2297856), Serial2/0
P 10.100.1.4/32, 2 successors, FD is 435200, serno 128
       via 10.1.1.2 (435200/409600), Ethernet0/0
       via 10.1.1.3 (435200/409600), Ethernet0/0
P 10.100.1.3/32, 1 successors, FD is 409600, serno 115
       via 10.1.1.3 (409600/128256), Ethernet0/0
P 10.100.1.2/32, 1 successors, FD is 409600, serno 109
       via 10.1.1.2 (409600/128256), Ethernet0/0
P 10.100.1.1/32, 1 successors, FD is 128256, serno 4
       via Connected, Loopback0
P 192.168.100.6/32, 1 successors, FD is 2297856, serno 135
       via 10.3.1.6 (2297856/128256), Serial2/0
        via 10.4.1.5 (2323456/2297856), Ethernet1/0
```

考虑最后前缀在上一个输出中;路径通过**10.4.1.5**有**(2323456/2297856)**。报告距离(通告的度量标准)是**2297856**，小于FD不**2297856**，因此路径不可行。

```
P 192.168.100.6/32, 1 successors, FD is 2297856, serno 135
       via 10.3.1.6 (2297856/128256), Serial2/0
        via 10.4.1.5 (2323456/2297856), Ethernet1/0
```

这是示例水平分割造成一个路径从一个路由的地方拓扑表被排除。当您查看拓扑时，您能看到路由器R1有前缀**192.168.100.6/32**通过R6和R5在拓扑表里，但是不通过R2或R3 ：

```
R1#show ip eigrp topology 192.168.100.6 255.255.255.255
IP-EIGRP (AS 1): Topology entry for 192.168.100.6/32
 State is Passive, Query origin flag is 1, 1 Successor(s), FD is 2297856
 Routing Descriptor Blocks:
 10.3.1.6 (Serial2/0), from 10.3.1.6, Send flag is 0x0
     Composite metric is (2297856/128256), Route is Internal
     Vector metric:
       Minimum bandwidth is 1544 Kbit
       Total delay is 25000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 1
 10.4.1.5 (Ethernet1/0), from 10.4.1.5, Send flag is 0x0
     Composite metric is (2323456/2297856), Route is Internal
     Vector metric:
       Minimum bandwidth is 1544 Kbit
       Total delay is 26000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 2
```

这是因为路由器R1通过R2或R3未曾接收前缀192.168.100.6/32，因为他们有前缀192.168.100.6/32通过R1在路由表里。

```
R2#show ip route 192.186.100.6 255.255.255.255
Routing entry for 192.168.100.6/32
 Known via "eigrp 1", distance 90, metric 2323456, type internal
 Redistributing via eigrp 1
 Last update from 10.1.1.1 on Ethernet0/0, 00:02:07 ago
 Routing Descriptor Blocks:
 * 10.1.1.1, from 10.1.1.1, 00:02:07 ago, via Ethernet0/0
     Route metric is 2323456, traffic share count is 1
     Total delay is 26000 microseconds, minimum bandwidth is 1544 Kbit
     Reliability 255/255, minimum MTU 1500 bytes
     Loading 1/255, Hops 2

R3#show ip route 192.168.100.6 255.255.255.255
Routing entry for 192.168.100.6/32
 Known via "eigrp 1", distance 90, metric 2323456, type internal
 Redistributing via eigrp 1
 Last update from 10.1.1.1 on Ethernet0/0, 00:01:58 ago
 Routing Descriptor Blocks:
 * 10.1.1.1, from 10.1.1.1, 00:01:58 ago, via Ethernet0/0
     Route metric is 2323456, traffic share count is 1
     Total delay is 26000 microseconds, minimum bandwidth is 1544 Kbit
     Reliability 255/255, minimum MTU 1500 bytes
     Loading 1/255, Hops 2
```

当您查看拓扑表时，为了验证此，请使用在R1的**所有链接**关键字。这显示所有所有的路径前缀，包括非可行路径。您能然后看到前缀192.168.100.6/32未由从R2或R3的路由器R1了解。

量度

> **注意**：MTU和跳数在量度的计算没有包括。

这些是使用为了计算路由的路径量度的公式：

- 如果K5是非零值：

  EIGRP度量= 256*(((K1*Bw) + (K2*Bw)/(256-Load) + (K3*Delay))*(K5/(Reliability + K4)))

- 如果K5是相等的到零：

  EIGRP度量= 256*((K1*Bw) + (K2*Bw)/(256-Load) + (K3*Delay))

K-values是使用为了衡量EIGRP度量的四个组件的重要性：延迟、带宽、可靠性和负载。这些是默认K-values ：

- K1 = 1
- K2 = 0
- K3 = 1
- K4 = 0
- K5 = 0

使用默认K-values (仅使用带宽和延迟)，公式变为：

EIGRP度量= 256 * (Bw +迪莱)

Bw= (10^7/minimum在千位每秒的Bw)

> **注意**：延迟用十倍微秒被测量;然而，在接口，它用微秒被测量。

所有四个组件可以用**show interface命令**验证：

```
 R1#show interface et 0/0
Ethernet0/0 is up, line protocol is up
 Hardware is AmdP2, address is aabb.cc00.0100 (bia aabb.cc00.0100)
 Internet address is 10.1.1.1/24
 MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
 Encapsulation ARPA, loopback not set  Keepalive set (10 sec)
 ARP type: ARPA, ARP Timeout 04:00:00  Last input 00:00:02, output 00:00:02,
output hang never
 Last clearing of "show interface" counters never
 Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
 Queueing strategy: fifo
 Output queue: 0/40 (size/max)
 5 minute input rate 0 bits/sec, 0 packets/sec
 5 minute output rate 0 bits/sec, 0 packets/sec
    789 packets input, 76700 bytes, 0 no buffer
    Received 707 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 input packets with dribble condition detected
    548 packets output, 49206 bytes, 0 underruns
    0 output errors, 0 collisions, 1 interface resets
    0 unknown protocol drops
    0 babbles, 0 late collision, 0 deferred
```

```
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out
```
延迟是渐增的，因此意味着您添加每条链路延迟沿路径的。带宽不是渐增的，如此在公式使用是最小的带宽沿路径的所有链路的带宽。

相同的路由器ID

为了查看EIGRP使用的路由器ID，输入**show ip eigrp topology命令**在路由器并且查看输出的第一行：

```
R1#show ip eigrp topology
IP-EIGRP Topology Table for AS(1)/ID(10.100.1.1)

Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
      r - reply Status, s - sia Status

P 10.3.1.0/24, 1 successors, FD is 2169856
       via Connected, Serial2/0
```
EIGRP路由器ID根本没有使用内部路由在更旧的Cisco IOS版本。如果使用， EIGRP的相同的路由器ID不应该引起任何问题仅内部路由。在更新的Cisco IOS软件方面， EIGRP内部路由运送EIGRP路由器ID。

外部路由的路由器ID在此输出中可以查看：

```
R1#show ip eigrp topology 192.168.1.4 255.255.255.255
IP-EIGRP (AS 1): Topology entry for 192.168.1.4/32
 State is Passive, Query origin flag is 1, 2 Successor(s), FD is 435200
 Routing Descriptor Blocks:
 10.1.1.2 (Ethernet0/0), from 10.1.1.2, Send flag is 0x0
     Composite metric is (435200/409600), Route is External
     Vector metric:
       Minimum bandwidth is 10000 Kbit
       Total delay is 7000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 2
     External data&colon;
       Originating router is 10.100.1.4
       AS number of route is 0
       External protocol is Connected, external metric is 0
       Administrator tag is 0 (0x00000000)
```
如果有EIGRP路由器ID的(外部) EIGRP路由和路由器一样接收，不生成日志条目。然而， EIGRP事件日志捕获此。当您检查(外部)时EIGRP路由，在拓扑表里没出现。

检查EIGRP事件日志可能的相同的路由器ID消息：

```
R1#show ip eigrp events
Event information for AS 1:
1    08:36:35.303 Ignored route, metric: 10.33.33.33 3347456
2    08:36:35.303 Ignored route, neighbor info: 10.3.1.6 Serial2/1
3    08:36:35.303 Ignored route, dup router: 10.100.1.1
4    08:36:35.303 Rcv EOT update src/seq: 10.3.1.6 143
5    08:36:35.227 Change queue emptied, entries: 2
6    08:36:35.227 Route OBE net/refcount: 10.100.1.4/32 3
7    08:36:35.227 Route OBE net/refcount: 10.2.1.0/24 3
8    08:36:35.227 Metric set: 10.100.1.4/32 435200
```

```
9    08:36:35.227 Update reason, delay: nexthop changed 179200
10   08:36:35.227 Update sent, RD: 10.100.1.4/32 435200
11   08:36:35.227 Route install: 10.100.1.4/32 10.1.1.3
12   08:36:35.227 Route install: 10.100.1.4/32 10.1.1.2
13   08:36:35.227 RDB delete: 10.100.1.4/32 10.3.1.6
```

K-values不匹配/从容关机

当K-values不是相同的在邻接路由器时，此消息观察：

```
R1#show ip eigrp events
Event information for AS 1:
1    08:36:35.303 Ignored route, metric: 10.33.33.33 3347456
2    08:36:35.303 Ignored route, neighbor info: 10.3.1.6 Serial2/1
3    08:36:35.303 Ignored route, dup router: 10.100.1.1
4    08:36:35.303 Rcv EOT update src/seq: 10.3.1.6 143
5    08:36:35.227 Change queue emptied, entries: 2
6    08:36:35.227 Route OBE net/refcount: 10.100.1.4/32 3
7    08:36:35.227 Route OBE net/refcount: 10.2.1.0/24 3
8    08:36:35.227 Metric set: 10.100.1.4/32 435200
9    08:36:35.227 Update reason, delay: nexthop changed 179200
10   08:36:35.227 Update sent, RD: 10.100.1.4/32 435200
11   08:36:35.227 Route install: 10.100.1.4/32 10.1.1.3
12   08:36:35.227 Route install: 10.100.1.4/32 10.1.1.2
13   08:36:35.227 RDB delete: 10.100.1.4/32 10.3.1.6
```

K-values用此命令配置(与可能的值在0和255之间的K)：

```
metric weights tos k1 k2 k3 k4 k5

!
router eigrp 1
network 10.0.0.0
metric weights 0 1 2 3 4 5
!
```

消息表明EIGRP结邻没有设立由于不匹配在K-values。当另外路由器使用不同度量值计算时， K-values必须是相同的在所有一自治系统的EIGRP路由器为了防止路由问题。

证实K-values是否是相同的在邻接路由器。如果K-values是相同的，问题也许由EIGRP从容关机功能导致。在那种情况下，路由器发送有设置的K-values的一个EIGRP Hello信息包到255，以便K-values不匹配故意地发生。这是为了表明对邻接EIGRP路由器断开。在邻接路由器上，您会看到此*再见*接收的*消息*：

```
metric weights tos k1 k2 k3 k4 k5

!
router eigrp 1
network 10.0.0.0
metric weights 0 1 2 3 4 5
!
```

然而，如果邻接路由器运行一个更旧的代码版本(在Cisco Bug ID CSCdr96531)之前，它不认可此作为从容关机消息，而是作为在K-values的一不匹配：

```
metric weights tos k1 k2 k3 k4 k5

!
router eigrp 1
network 10.0.0.0
metric weights 0 1 2 3 4 5
!
```

这是消息和一样一旦在邻接路由器的一真的K-values不匹配。

这些是从容关机的触发：

- **没有router eigrp命令**被输入。
- **网络命令没有**被输入。
- **清楚ip eigrp neighbor命令**被输入。
- 路由器重新加载。

从容关机用于为了加速一个邻接故障状态的检测。没有从容关机，邻居必须等待，直到保持时间超时，在宣称邻居发生故障前。

不同的开销负载均衡(差异)

不同的开销负载均衡是可能的在EIGRP用**变化命令**，但是必须符合差异和可行性条件。

差异情况意味着路由的量度大于差异乘的最好的量度不。为了可行的路由能将被认为，一定通告路由与比可行距离(FD)更低的一报告距离。示例如下：

```
!
router eigrp 1
variance 2
network 10.0.0.0
no auto-summary
!
```

路由器R1有**2**配置的**差异**。这意味着，如果路由器有路由的一个另一个路径有大于该路由的最好的量度不两次的量度的，应该有该路由的不同的开销负载均衡。

```
R1#show ip eigrp topology 172.16.100.5 255.255.255.255
IP-EIGRP (AS 1): Topology entry for 172.16.100.5/32
 State is Passive, Query origin flag is 1, 1 Successor(s), FD is 409600
 Routing Descriptor Blocks:
 10.4.1.5 (Ethernet1/0), from 10.4.1.5, Send flag is 0x0
     Composite metric is (409600/128256), Route is Internal
     Vector metric:
       Minimum bandwidth is 10000 Kbit
       Total delay is 6000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 1
 10.3.1.6 (Serial2/0), from 10.3.1.6, Send flag is 0x0
     Composite metric is (435200/409600), Route is Internal <<< RD = 409600
     Vector metric:
       Minimum bandwidth is 10000 Kbit
       Total delay is 7000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 2
```

如果第二个拓扑条目在路由表里安装，第二个拓扑条目的量度是**435200**。因为两次最好的量度是2 x 409600 = 819200和435200 < 819200，第二个拓扑条目在差异范围内。第二个拓扑条目的报告距离是409600，小于FD不= 409600。第二个情况(可行性)在RIB没有符合和第二个条目不可能安装。

```
R1#show ip route 172.16.100.5
Routing entry for 172.16.100.5/32
 Known via "eigrp 1", distance 90, metric 409600, type internal
 Redistributing via eigrp 1
 Last update from 10.4.1.5 on Ethernet1/0, 00:00:16 ago
 Routing Descriptor Blocks:
 * 10.4.1.5, from 10.4.1.5, 00:00:16 ago, via Ethernet1/0
     Route metric is 409600, traffic share count is 1
     Total delay is 6000 microseconds, minimum bandwidth is 10000 Kbit
     Reliability 255/255, minimum MTU 1500 bytes
     Loading 1/255, Hops 1
```

如果第二个拓扑条目的RD更加小然后FD，正如在下一个示例，有不同的开销负载均衡。

```
R1#show ip eigrp topology 172.16.100.5 255.255.255.255
IP-EIGRP (AS 1): Topology entry for 172.16.100.5/32
 State is Passive, Query origin flag is 1, 1 Successor(s), FD is 409600
 Routing Descriptor Blocks:
 10.4.1.5 (Ethernet1/0), from 10.4.1.5, Send flag is 0x0
     Composite metric is (409600/128256), Route is Internal
     Vector metric:
       Minimum bandwidth is 10000 Kbit
       Total delay is 6000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 1
 10.3.1.6 (Serial2/0), from 10.3.1.6, Send flag is 0x0
     Composite metric is (434944/409344), Route is Internal <<< RD = 409344
     Vector metric:
       Minimum bandwidth is 10000 Kbit
       Total delay is 6990 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 2
```

两个拓扑条目当前在路由表里：

```
R1#show ip route 172.16.100.5
Routing entry for 172.16.100.5/32
 Known via "eigrp 1", distance 90, metric 409600, type internal
 Redistributing via eigrp 1
 Last update from 10.3.1.6 on Serial2/0, 00:00:26 ago
 Routing Descriptor Blocks:
 * 10.4.1.5, from 10.4.1.5, 00:00:26 ago, via Ethernet1/0
     Route metric is 409600, traffic share count is 120
     Total delay is 6000 microseconds, minimum bandwidth is 10000 Kbit
     Reliability 255/255, minimum MTU 1500 bytes
     Loading 1/255, Hops 1
   10.3.1.6, from 10.3.1.6, 00:00:26 ago, via Serial2/0
     Route metric is 434944, traffic share count is 113
     Total delay is 6990 microseconds, minimum bandwidth is 10000 Kbit
     Reliability 255/255, minimum MTU 1500 bytes
     Loading 1/255, Hops 2
```

静态邻居

与一个或更多静态邻居的EIGRP支持配置同一个接口的。当您配置接口的一静态EIGRP邻居，路由器不再发送EIGRP数据包作为在该接口的组播或处理已接收组播的EIGRP数据包。这意味着Hello、更新和查询数据包当前是单播的。除非**静态邻居**命令为该接口的，那些邻居明确地配置另外的neighborships不可以形成。

这是如何配置一静态EIGRP邻居：

```
router eigrp 1
passive-interface Loopback0
network 10.0.0.0
no auto-summary
neighbor 10.1.1.1 Ethernet0/0
!
```

当在链路的两边路由器有**静态邻居**命令时，结邻形成：

```
R1#show ip eigrp neighbors detail
IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
1   10.1.1.2                Et0/0             14 00:00:23   27   200  0  230
  Static neighbor
  Version 12.4/1.2, Retrans: 0, Retries: 0, Prefixes: 1
0   10.3.1.6                Se2/0             14 1d02h      26   200  0  169
  Version 12.4/1.2, Retrans: 0, Retries: 0, Prefixes: 12
3   10.4.1.5                Et1/0             10 1d02h      16   200  0  234
  Version 12.4/1.2, Retrans: 0, Retries: 0, Prefixes: 7
```

如果仅一个路由器有配置的**静态邻居**命令，您注意到路由器丢弃组播的EIGRP数据包，并且另一个路由器丢弃单播的EIGRP数据包：

```
R1#show ip eigrp neighbors detail
IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
1   10.1.1.2                Et0/0             14 00:00:23   27   200  0  230
  Static neighbor
  Version 12.4/1.2, Retrans: 0, Retries: 0, Prefixes: 1
0   10.3.1.6                Se2/0             14 1d02h      26   200  0  169
  Version 12.4/1.2, Retrans: 0, Retries: 0, Prefixes: 12
3   10.4.1.5                Et1/0             10 1d02h      16   200  0  234
  Version 12.4/1.2, Retrans: 0, Retries: 0, Prefixes: 7R1#show ip eigrp neighbors detail
IP-EIGRP neighbors for process 1
H   Address                 Interface       Hold Uptime   SRTT   RTO  Q  Seq
                                            (sec)         (ms)       Cnt Num
1   10.1.1.2                Et0/0             14 00:00:23   27   200  0  230
  Static neighbor
  Version 12.4/1.2, Retrans: 0, Retries: 0, Prefixes: 1
0   10.3.1.6                Se2/0             14 1d02h      26   200  0  169
  Version 12.4/1.2, Retrans: 0, Retries: 0, Prefixes: 12
3   10.4.1.5                Et1/0             10 1d02h      16   200  0  234
  Version 12.4/1.2, Retrans: 0, Retries: 0, Prefixes: 7
```

有特殊debug命令为EIGRP静态邻居：

```
R2#debug eigrp neighbors static
EIGRP Static Neighbors debugging is on

R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router eigrp 1
R2(config-router)#neighbor 10.1.1.1 et 0/0
R2(config-router)#end
R2#

EIGRP: Multicast Hello is disabled on Ethernet0/0!
EIGRP: Add new static nbr 10.1.1.1 to AS 1 Ethernet0/0
```

这是一些理由静态EIGRP邻居也许配置：

- 您要限制或避免在非广播多路访问(NBMA)网络的广播。
- 您要限制或避免在广播介质(以太网)的组播。
- 为了实现故障排除目的(使用而不是组播的单播)。

警告：请勿与**静态EIGRP邻居**命令一起配置**passive-interface命令**。

静态路由再分配

当您配置指向接口和路由时的静态路由由在router eigrp下的一网络声明包括，然后静态路由由EIGRP通告，好象它已连接路由。**redistribute static命令**或默认度量在这种情况下没有要求。

```
R2#debug eigrp neighbors static
EIGRP Static Neighbors debugging is on

R2#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#router eigrp 1
R2(config-router)#neighbor 10.1.1.1 et 0/0
R2(config-router)#end
R2#

EIGRP: Multicast Hello is disabled on Ethernet0/0!
EIGRP: Add new static nbr 10.1.1.1 to AS 1 Ethernet0/0R1#show ip eigrp top 172.16.0.0
255.255.0.0
IP-EIGRP (AS 1): Topology entry for 172.16.0.0/16
 State is Passive, Query origin flag is 1, 1 Successor(s), FD is 2169856
 Routing Descriptor Blocks:
 0.0.0.0, from Rstatic, Send flag is 0x0
     Composite metric is (2169856/0), Route is Internal
     Vector metric:
       Minimum bandwidth is 1544 Kbit
       Total delay is 20000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 0
```

可靠性和负载量度的计算的

警告：使用可靠性和负载为了计算量度。

可靠性和负荷参数在**show interface命令**输出中出现。当负载和可靠性更改时，没有这些参数的动态更新。如果负载和可靠性更改，不触发在量度上的一个立即变化。只有当EIGRP决定发送由于拓扑更改在负载和可靠性上的变化将传播对其邻居的更新。此外，因为自适应路由然后被执行，使用负载和可靠性为了计算量度能引入不稳定性。如果希望更改路由符合数据流负载，则您应该考虑使用多协议标签交换(MPLS)流量工程或性能路由(PfR)。

高CPU

有同时运行的三个EIGRP进程：

- **路由器**âÂ Â 此进程拿着共享内存存储池。
- **Hello** âÂ此进程发送并且收到Hello数据包并且维护对等连接的 Â 。
- **协议相关模块(PDM)** âÂ Â EIGRP支持四个协议组：IP、IPv6、IPX和AppleTalk。每个套件有其自己的PDM。这是PDM的主要功能：

  保存属于该协议组EIGRP路由器的邻居和拓扑表。

  修造和转换DUAL的协议特殊化数据包(EIGRP数据包的发射和接收)。

  对协议特殊化路由表的接口DUAL。

  计算量度并且给DUAL传递信息(DUAL只选择后继路由和可行后继者)。

  实现过滤和访问列表。

  到/从其他路由协议执行再分配功能。

这是显示这三进程的示例输出：

```
R1#show proc cpu | include EIGRP
 89           4         24        166  0.00%  0.00%  0.00%   0 IP-EIGRP Router
 90        1016       4406        230  0.00%  0.03%  0.00%   0 IP-EIGRP: PDM
 91        2472       6881        359  0.00%  0.07%  0.08%   0 IP-EIGRP: HELLO
```

在EIGRP的高CPU不是正常。如果这发生，或者EIGRP有执行的太多或有在EIGRP的一bug。在第一个案件中，请检查前缀数量在拓扑表里和对等体数量。检查在EIGRP路由和邻居中的不稳定性。

在帧中继网络(广播队列)的EIGRP

在有一个点到多点接口的广泛邻接路由器的帧中继网络中，那里可以是许多必须传送的广播或组播信息包。为此，有分开的广播队列用其自己的缓冲区。广播队列有优先级，当传送以速率在配置的最大值之下时并且有保证的最小带宽分配。

这是在此方案使用的命令：

```
frame-relay broadcast-queue size byte-rate packet-rate
```

通常，请用每数据链路连接标识符(DLCI)二十数据包开始。比特率比这两应该是较少：

- N/4计时最低的远程访问存取速率(测量在字节每秒)，其中N是必须复制广播DLCI的编号。
- 本地访问存取速率的四分之一(测量在字节每秒)。

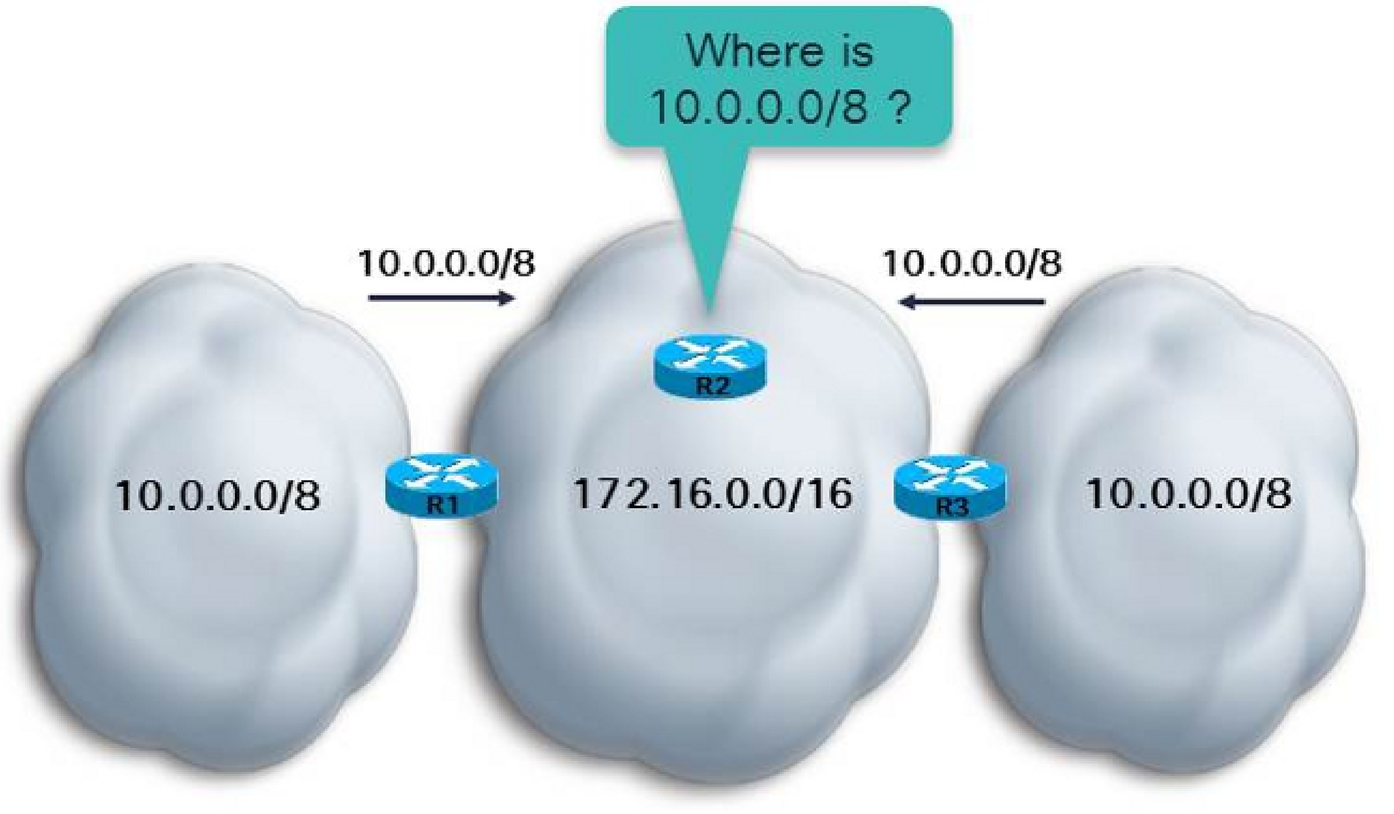
如果观察很大数量的EIGRP邻居飘荡，请增加帧中继广播队列大小。此问题不存在，如果有帧中继子接口，因为每个邻接路由器是在与一个不同的IP子网的一子接口。当有一个大，完全网格帧中继网络时，此把应急方案视为。

不匹配的AS编号

当您输入**debug eigrp packets Hello**命令时，表示路由器不收到Hello数据包。

Auto-summary

用于的EIGRP执行汇总在主要网络(网络A、B和C)限定范围默认情况下。这意味着更加特定的路由比主要网络的/8前缀键入A、更加特定的路由比/16前缀主要网络类型的B和更加特定的路由比/24前缀主要网络的键入C，丢失，当他们超过他们的限定范围时。这是示例auto-summary引起一问题的地方：



如显示，路由器R1和R3有*auto-summary*在router eigrp下。因为R2和R3是在主要A类网络10.0.0.0/8和172.16.0.0/16之间的边界路由器路由器R2接收10.0.0.0/8从路由器R2和R3。如果量度偶然是相同的，路由器R2能通过R1和R3有路由10.0.0.0/8。否则， R2有路由10.0.0.0/8通过R1或通过R3，从属在导致最少开销的路径。无论如何，如果R2必须发送流量到某些子网10.0.0.0/8，不可以完全肯定流量到达其目的地，因为一子网10.0.0.0/8可以仅在左侧或正确的网云。

为了缓和此问题，完全类型**no auto-summary**在router eigrp进程下。路由器然后传播主要网络的子网在边界间的。在更新的Cisco IOS版本中， *no auto-summary*设置是默认行为。

EIGRP事件日志

EIGRP事件日志捕获EIGRP事件。当调试为EIGRP时，启用它类似于。默认情况下然而，它较不中断并且运行。它可以用于为了捕获是更难排除故障或更加断断续续的事件的事件。默认情况下此日志只是500条线路。为了增加它，请输入**eigrp事件LOG大小<0 âÂ Â 209878>**命令。您能如期望的一样增加日志大小一样，但是记住路由器必须为此日志节省的内存数量。为了清除EIGRP事件日志

，请输入**结算ip eigrp事件**命令。

示例如下：

```
R1#show ip eigrp events
Event information for AS 1:
1    09:01:36.107 Poison squashed: 10.100.1.3/32 reverse
2    09:01:35.991 Update ACK: 10.100.1.4/32 Serial2/0
3    09:01:35.967 Update ACK: 10.100.1.4/32 Ethernet0/0
4    09:01:35.967 Update ACK: 10.100.1.4/32 Ethernet1/0
5    09:01:35.943 Update delay/poison: 179200 FALSE
6    09:01:35.943 Update transmitted: 10.100.1.4/32 Serial2/0
7    09:01:35.943 Update delay/poison: 179200 TRUE
8    09:01:35.943 Update transmitted: 10.100.1.4/32 Ethernet0/0
9    09:01:35.943 Update delay/poison: 179200 FALSE
10   09:01:35.943 Update transmitted: 10.100.1.4/32 Ethernet1/0
11   09:01:35.923 Update packetized: 10.100.1.4/32 Ethernet0/0
12   09:01:35.923 Update packetized: 10.100.1.4/32 Ethernet1/0
13   09:01:35.923 Update packetized: 10.100.1.4/32 Serial2/0
14   09:01:35.903 Change queue emptied, entries: 1
15   09:01:35.903 Route OBE net/refcount: 10.100.1.4/32 3
16   09:01:35.903 Metric set: 172.16.1.0/24 2195456
17   09:01:35.903 Route install: 172.16.1.0/24 10.4.1.5
18   09:01:35.903 FC sat rdbmet/succmet: 2195456 2169856
19   09:01:35.903 FC sat nh/ndbmet: 10.4.1.5 2195456
20   09:01:35.903 Find FS: 172.16.1.0/24 2195456
```

多数近期事件出现在日志顶部。您能过滤EIGRP事件特定类型，例如DUAL、Xmit和传输：

```
R1#show ip eigrp events
Event information for AS 1:
1    09:01:36.107 Poison squashed: 10.100.1.3/32 reverse
2    09:01:35.991 Update ACK: 10.100.1.4/32 Serial2/0
3    09:01:35.967 Update ACK: 10.100.1.4/32 Ethernet0/0
4    09:01:35.967 Update ACK: 10.100.1.4/32 Ethernet1/0
5    09:01:35.943 Update delay/poison: 179200 FALSE
6    09:01:35.943 Update transmitted: 10.100.1.4/32 Serial2/0
7    09:01:35.943 Update delay/poison: 179200 TRUE
8    09:01:35.943 Update transmitted: 10.100.1.4/32 Ethernet0/0
9    09:01:35.943 Update delay/poison: 179200 FALSE
10   09:01:35.943 Update transmitted: 10.100.1.4/32 Ethernet1/0
11   09:01:35.923 Update packetized: 10.100.1.4/32 Ethernet0/0
12   09:01:35.923 Update packetized: 10.100.1.4/32 Ethernet1/0
13   09:01:35.923 Update packetized: 10.100.1.4/32 Serial2/0
14   09:01:35.903 Change queue emptied, entries: 1
15   09:01:35.903 Route OBE net/refcount: 10.100.1.4/32 3
16   09:01:35.903 Metric set: 172.16.1.0/24 2195456
17   09:01:35.903 Route install: 172.16.1.0/24 10.4.1.5
18   09:01:35.903 FC sat rdbmet/succmet: 2195456 2169856
19   09:01:35.903 FC sat nh/ndbmet: 10.4.1.5 2195456
20   09:01:35.903 Find FS: 172.16.1.0/24 2195456
```

另外，您能启用日志这三个类型之一的，两个类型的组合，或者所有三的。这是记录日志的两种类型启用的示例：

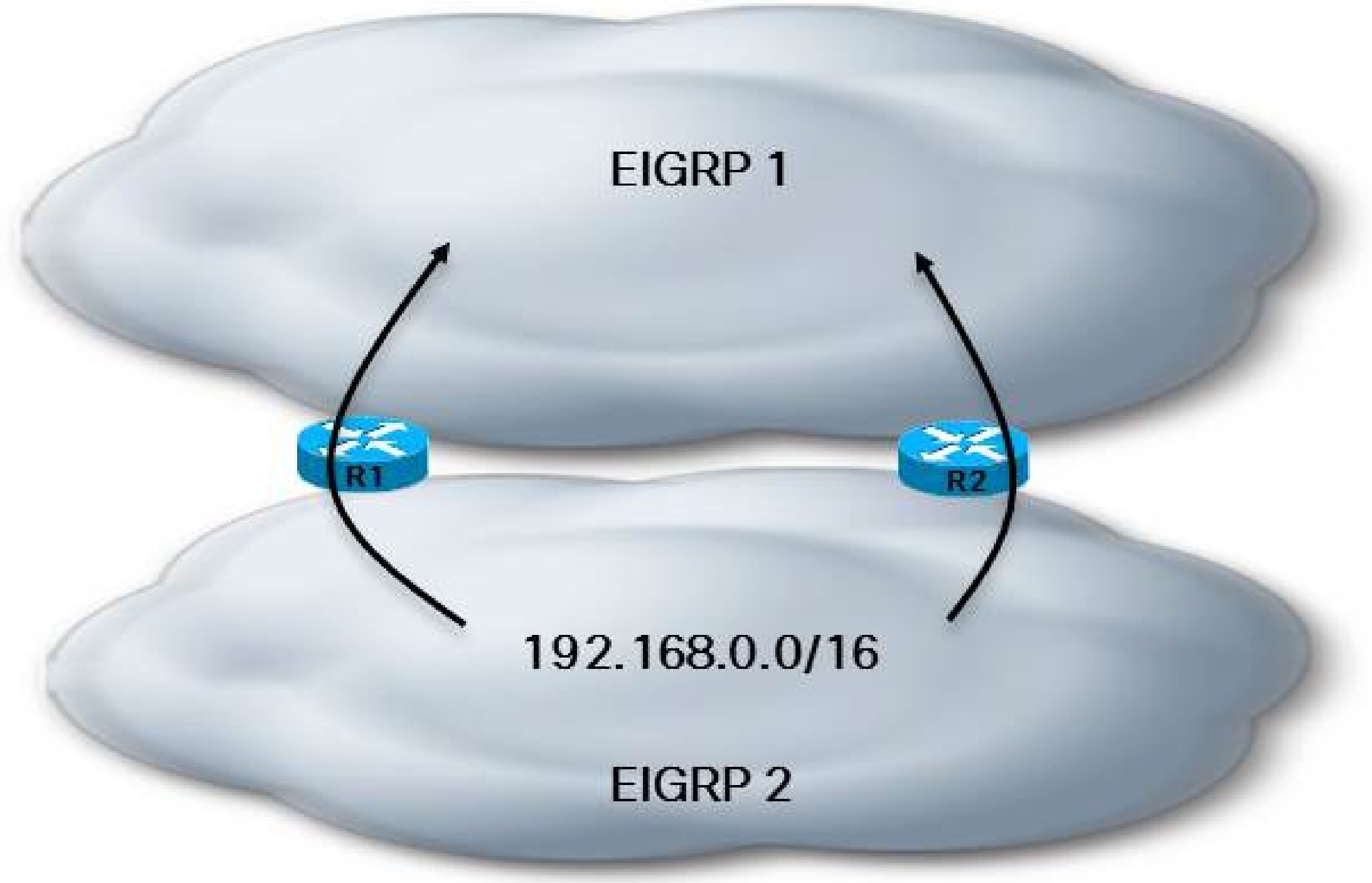
```
router eigrp 1
redistribute connected
network 10.0.0.0
no auto-summary
eigrp log-event-type dual xmit
eigrp event-logging
eigrp event-log-size 100000
!
```

警告：当您启用**eigrp事件日志时**，在事件表里打印事件日志并且存储它。当大量EIGRP调试启用时，这可能导致在控制台的很多打印的输出，类似于。

两个EIGRP自治系统了解的同样网络

如果路由通过两个EIGRP进程了解，则仅一个EIGRP进程能安装在RIB的路由。与最短管理距离的进程安装路由。如果管理距离是相同的，则与最低权值的进程安装路由。如果量度是相同的，则与最低的EIGRP进程ID安装的EIGRP进程在RIB的路由。另一个EIGRP进程的拓扑表将有路由安装与零的后继路由和一个无限的FD值。

示例如下：




```
R1#show ip eigrp topology 192.168.1.0 255.255.255.0
IP-EIGRP (AS 1): Topology entry for 192.16.1.0/24
 State is Passive, Query origin flag is 1, 1 Successor(s), FD is 2681856
 Routing Descriptor Blocks:
 10.3.1.6 (Serial2/0), from 10.3.1.6, Send flag is 0x0
     Composite metric is (2681856/2169856), Route is Internal
     Vector metric:
       Minimum bandwidth is 1544 Kbit
       Total delay is 40000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 1
IP-EIGRP (AS 2): Topology entry for 192.16.1.0/24
 State is Passive, Query origin flag is 1, 0 Successor(s), FD is 4294967295
 Routing Descriptor Blocks:
```

```
 10.4.1.5 (Ethernet1/0), from 10.4.1.5, Send flag is 0x0
     Composite metric is (2681856/2169856), Route is Internal
     Vector metric:
       Minimum bandwidth is 1544 Kbit
       Total delay is 40000 microseconds
       Reliability is 255/255
       Load is 1/255
       Minimum MTU is 1500
       Hop count is 1R1#show ip route 192.168.1.0 255.255.255.0

Routing entry for 192.168.1.0/24
 Known via "eigrp 1", distance 90, metric 2681856, type internal
 Redistributing via eigrp 1
 Last update from 10.3.1.6 on Serial2/0, 00:04:16 ago
 Routing Descriptor Blocks:
 * 10.3.1.6, from 10.3.1.6, 00:04:16 ago, via Serial2/0
     Route metric is 2681856, traffic share count is 1
     Total delay is 40000 microseconds, minimum bandwidth is 1544 Kbit
     Reliability 255/255, minimum MTU 1500 bytes
     Loading 1/255, Hops 1
```