



NETWORKERS 2004

TROUBLESHOOTING EIGRP

SESSION RST-3300

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

1

Agenda

Cisco.com

- **Troubleshooting Common EIGRP Problems**
 - Neighbor Instability**
 - Stuck-in-Active Routes**
 - Other Common Problems**
- **Troubleshooting Tools**
 - Event Log**
 - Debugs**
 - Show Commands**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

2

Neighbor Process: Review

Cisco.com

- **Hello process used for neighbor discovery and maintenance**
- **Multicast hellos (by default)**
224.0.0.10 (0100.5e00.000a)
- **Hello Interval**
60 seconds for low-speed NBMA
5 seconds for all other interfaces



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

3

Neighbor Process: Review

Cisco.com

- **Hold Timer**
How long to wait without hearing an EIGRP packet from a neighbor before declaring them dead
Value received in Hello packet from each neighbor
- **Defaults to 3 X Hello Interval**
15 seconds on most interfaces
180 seconds on low-speed NBMA



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

4

Checking Neighbor Status

Cisco.com

```
RTRA#show ip eigrp neighbors
```

```
IP-EIGRP neighbors for process 1
```

H	Address	Interface	Hold (sec)	Uptime	SRTT (ms)	RTO	Q Cnt	Seq Num
2	10.1.1.1	Et0	12	6d16h	20	200	0	233
1	10.1.4.3	Et1	13	2w2d	87	522	0	452
0	10.1.4.2	Et1	10	2w2d	85	510	0	3

- **Hold Time**—Seconds remaining before declaring a neighbor down
- **Uptime**—How long since the **last** time each neighbor was discovered

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

5

Checking Neighbor Status

Cisco.com

```
RouterA# config terminal
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
RouterA(config) # router eigrp 1
```

```
RouterA(config-router) # eigrp log-neighbor-changes
```

```
RouterA(config-router) # logging buffered 10000
```

```
RouterA(config) # service timestamps log datetime msec
```

- **EIGRP log-neighbor-changes** is on by default since 12.2(12)
Turn it on and leave it on!
Best to send to buffer log

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

6

Log-Neighbor-Changes Messages

Cisco.com

Neighbor 10.1.1.1 (Ethernet0) is down: **peer restarted**
Neighbor 10.1.1.1 (Ethernet0) is up: **new adjacency**
Neighbor 10.1.1.1 (Ethernet0) is down: **holding time expired**
Neighbor 10.1.1.1 (Ethernet0) is down: **retry limit exceeded**
Neighbor 10.1.1.1 (Ethernet0) is down: **route filter changed**
Others, but not often...

- So this tells us why the neighbor is bouncing; but what do they mean?

(Hint: Peer restarted means you have to ask the peer; he's the one that restarted the session!)

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

7

What Causes Neighbor Instability?

Cisco.com

- Holding time expired
- Retry limit exceeded
- Manual changes
- Stuck-in-active routes

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

8

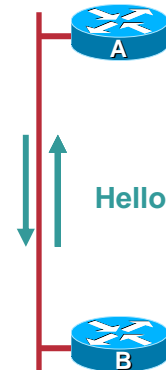
Holding Time Expired

Cisco.com

- Holding time expires when an EIGRP packet is not seen for the duration of the hold time

Usually caused by missing multicast hello packets

Typically caused by congestion or physical errors



Neighbor 10.1.1.1 (Ethernet0) is down: **holding time expired**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

9

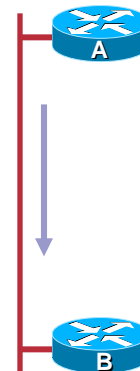
Troubleshooting Holding Time Expiration

Cisco.com

Ping the multicast Address (224.0.0.10) from the **Other Router**

Note: If There Are Many Interfaces or Neighbors on Router B, You Should Use Extended Ping and Specify the Source Address/Interface of the Multicast Ping!

Ping 224.0.0.10



Neighbor 10.1.1.1 (Ethernet0) is down: **holding time expired**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

10

Troubleshooting Holding Time Expiration

Cisco.com

```
RouterA# debug eigrp packet hello
EIGRP Packets debugging is on (HELLO)
19:08:38.521: EIGRP: Sending HELLO on Serial1/1
19:08:38.521: AS 1, Flags 0x0, Seq 0/0 idbQ 0/0 iidbQ un/rely 0/0
19:08:38.869: EIGRP: Received HELLO on Serial1/1 nbr 10.1.6.2
19:08:38.869: AS 1, Flags 0x0, Seq 0/0 idbQ 0/0 iidbQ un/rely 0/0
19:08:39.081: EIGRP: Sending HELLO on FastEthernet0/0
19:08:39.081: AS 1, Fags 0x0, Seq 0/0 idbQ 0/0 iidbQ un/rely 0/0
```

- **Remember—Any debug can be hazardous!**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

11

Retry Limit Exceeded

Cisco.com

- **EIGRP sends unreliable and reliable packets**
 - Hellos and Acks are unreliable
 - Updates, Queries, and Replies are reliable
- **Reliable packets are sequenced and require an Acknowledgement**
 - Reliable packets are retransmitted up to 16 times if not acknowledged

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

12

Retry Limit Exceeded (Cont.)

Cisco.com

```
RTR#show ip eigrp neighbors
```

```
IP-EIGRP neighbors for process 1
```

H	Address	Interface	Hold	Uptime	SRTT (ms)	RTO	Q Cnt	Seq Num
2	10.1.1.1	Et0	12	6d16h	20	200	0	233
1	10.1.4.3	Et1	13	2w2d	87	522	0	452
0	10.1.4.2	Et1	10	2w2d	85	510	0	3

- Reliable packets are re-sent after Retransmit Time Out (RTO)

Typically 6 x Smooth Round Trip Time (SRTT)

Minimum RTO is 200 ms

Maximum RTO is 5000 ms (5 seconds)

16 retransmits takes between 50 seconds and 80 seconds

RST-3300
9802_05_2004_c2

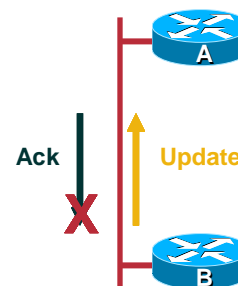
© 2004 Cisco Systems, Inc. All rights reserved.

13

Retry Limit Exceeded (Cont.)

Cisco.com

- If a reliable packet is not acknowledged before 16 retransmissions **and** the Hold Timer duration has passed, re-initialize the neighbor



Neighbor 10.1.1.1 (Ethernet0) is down: **retry limit exceeded**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

14

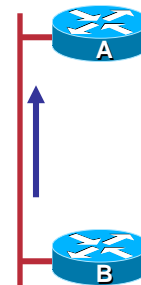
Troubleshooting Retry Limit Exceeded

Cisco.com

Ping the Unicast Address of Your Neighbor with Large and Diverse Packets

Note: This Ping Can Be Issued from Either Neighbor; the Results Should Be the Same

```
RtB# ping
Protocol[ip]:
Target IP address: 10.1.1.1
Repeat count [5]: 100
Datagram Size: 1500
Timeout in seconds[2]:
Extended commands[n]: y
...snip...
```



Neighbor 10.1.1.1 (Ethernet0) is down: **retry limit exceeded**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

15

Manual Changes

Cisco.com

- **Some manual configuration changes also reset EIGRP neighbors:**
 - Summary changes (manual and auto)
 - Route filter changes
- **This is normal behavior (for now)**
 - Metric change no longer resets neighbors
 - CSCdy20284 will remove many of these neighbor resets
 - Enhancement, so may not be visible to customers

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

16

Agenda

Cisco.com

- **Troubleshooting Common EIGRP Problems**
 - Neighbor Instability
 - Stuck-in-Active Routes**
 - Other Common Problems
- **Troubleshooting Tools**
 - Event Log
 - Debugs
 - Show Commands

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

17

Stuck-in-Active Routes (SIA)

Cisco.com

***%DUAL-3-SIA: Route 10.64.5.0 255.255.255.192
stuck-in-active state in IP-EIGRP 100. Cleaning up***

- **Indicates at least two problems**
 - A route went active
 - It got stuck

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

18

Review of Active Process

Cisco.com

- Normal (stable) state of a route is **passive**
- Going **active** is the normal process for resolving network topology changes

Route becomes active if it is lost (or metric increases) and there aren't any feasible successors

Going active means sending Queries to neighbors looking for an alternative path

RST-3300
9802_05_2004_c2

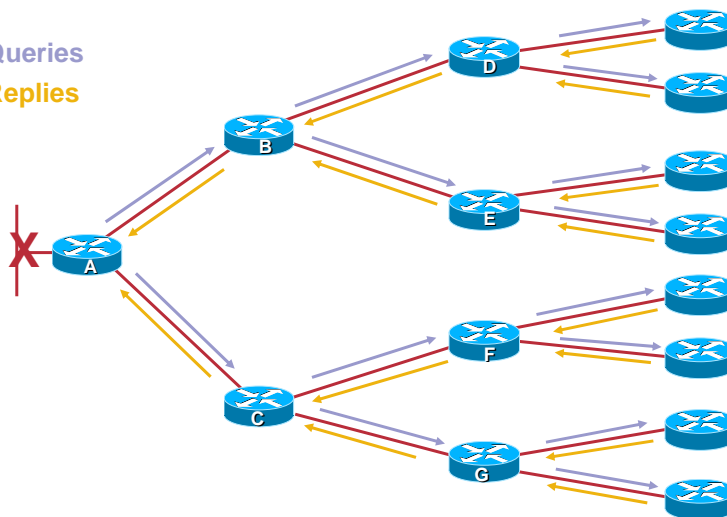
© 2004 Cisco Systems, Inc. All rights reserved.

19

Active Process (Cont.)

Cisco.com

Queries
Replies



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

20

Active Process (Cont.)

Cisco.com

The Query Process Stops When:

- All queries are answered
- End of network is reached
- End of the autonomous system is reached (sort of)
- The lost component is unknown

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

21

When the Active Process Fails (Before CSCdp33034)

Cisco.com

- Active process changed in 12.1(5)
 - First we'll talk about the "before" process
- When a route goes active, the active timer is started
 - Approximately 3 to 3 ½ minutes
 - If timer expires without all queries being answered, the route is declared "stuck" in the active process

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

22

Stuck-in-Active (Before CSCdp33034)

Cisco.com

On the Router Where Active Timer Expires:

- Reinitializes neighbor(s) who didn't answer
- Goes active on all routes known through bounced neighbor(s)
- Re-advertises to bounced neighbor all routes that we were advertising to him

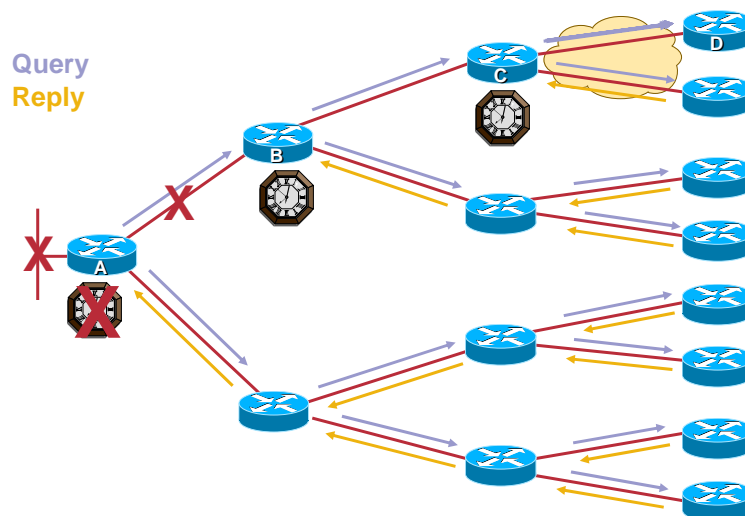
RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

23

Active Process Failure (Before CSCdp33034)

Cisco.com



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

24

When the Active Process Fails (After CSCdp33034)

Cisco.com

- **When a route goes active, timer is started**
 ½ active timer (normally 1 ½ minutes)
- **If this timer expires with a query unanswered, the neighbor who didn't reply is asked again (using SIA-query)**
 Gives that neighbor a chance to say
 "I'm still working on it!" (using SIA-reply)

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

25

When the Active Process Fails (After CSCdp33034)

Cisco.com

SIA-Queries Are Sent to a Neighbor Up to Three Times

- **May attempt to get a reply from a neighbor for a total of 6 minutes**
- **If still no Reply by the end of this process, consider the route stuck through this neighbor**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

26

Stuck-in-Active (After CSCdp33034)

Cisco.com

On the Router That Doesn't Get a Reply
after Three SIA-Queries:

- Reinitializes neighbor(s) who didn't answer
- Goes active on all routes known through bounced neighbor(s)
- Re-advertises to bounced neighbor all routes that we were advertising

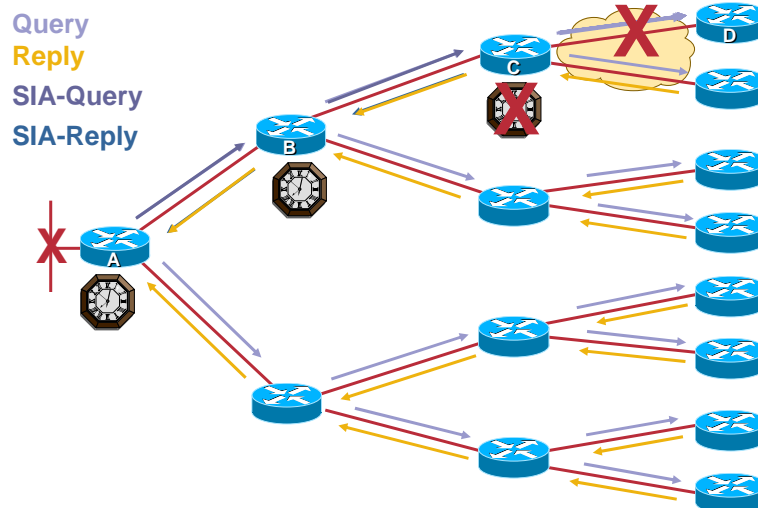
RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

27

Active Process Failure (After CSCdp33034)

Cisco.com



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

28

Likely Causes for Stuck-in-Active

Cisco.com

- Bad or congested links
- Query range is too long
- Excessive redundancy
- Overloaded router (high CPU)
- Router memory shortage
- Software defects (seldom)

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

29

Troubleshooting SIAs

Cisco.com

- Two (probably) unrelated causes of the problem—**stuck** and **active**
- Need to troubleshoot both parts
 - Cause of active often easier to find
 - Cause of stuck more important to find

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

30

Troubleshooting the Active Part of SIAs

Cisco.com

- **Determine what is common to routes going active**
 - Flapping link(s)?
 - From the same region of the network?
 - /32s from dial-in?
- **Resolve whatever is causing them to go active (if possible)**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

31

Troubleshooting the Stuck Part of SIAs

Cisco.com

- ***Show ip eigrp topology active***
 - Useful only while the problem is occurring
 - If problem isn't occurring at the time, it is difficult to find the source of routes getting stuck

RST-3300
9802_05_2004_c2

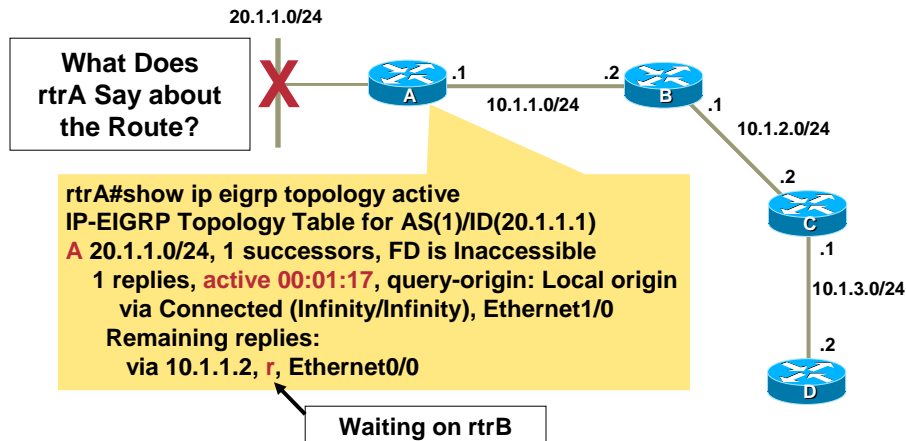
© 2004 Cisco Systems, Inc. All rights reserved.

32

Chasing Active Routes—Example

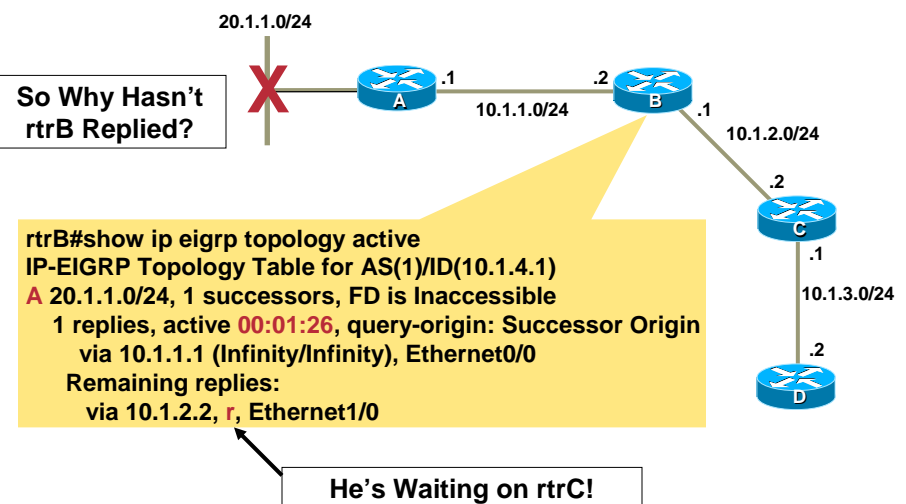
Cisco.com

Why Is rtrA Reporting SIA Routes? Let's Look at a Problem in Progress...



Chasing Active Routes (Cont.)

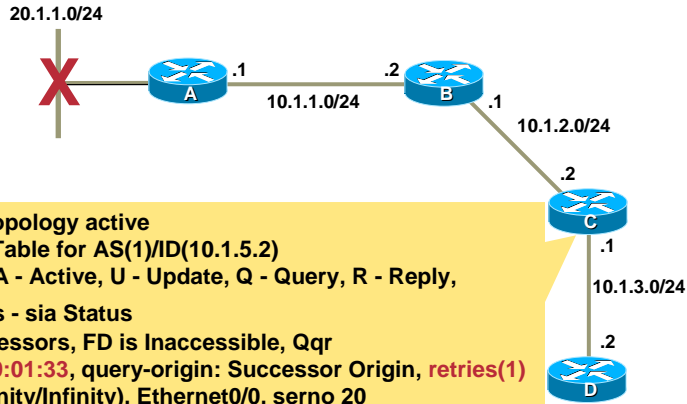
Cisco.com



Chasing Active Routes (Cont.)

Cisco.com

What's rtrC's Problem?



```
rtrC#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(10.1.5.2)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
       r - reply Status, s - sia Status
A 20.1.1.0/24, 1 successors, FD is Inaccessible, Qqr
  1 replies, active 00:01:33, query-origin: Successor Origin, retries(1)
  via 10.1.2.1 (Infinity/Infinity), Ethernet0/0, serno 20
  via 10.1.3.2 (Infinity/Infinity), rs, q, Ethernet1/0, serno 19, anchored
```

He's Waiting on rtrD!

RST-3300
9802_05_2004_c2

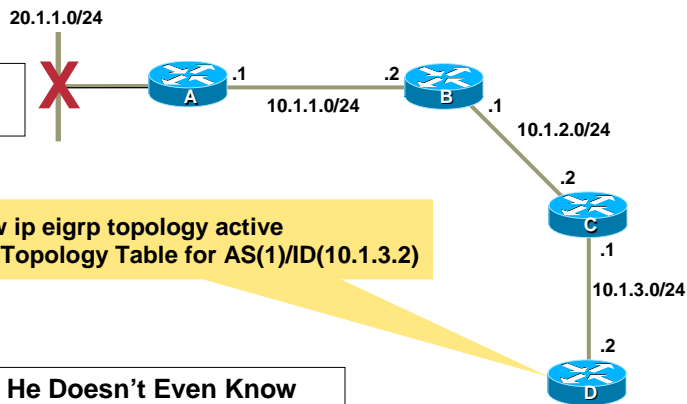
© 2004 Cisco Systems, Inc. All rights reserved.

35

Chasing Active Routes (Cont.)

Cisco.com

Why Isn't rtrD's Answering?



```
rtrD#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(10.1.3.2)
```

Wow! He Doesn't Even Know There Was a Question Asked! Maybe He's Already Answered

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

36

Chasing Active Routes (Cont.)

Cisco.com

20.1.1.0/24

No; rtrC Is Still Waiting on rtrD
What's the Deal?

```
rtrC#show ip eigrp topology active
IP-EIGRP Topology Table for AS(1)/ID(10.1.5.2)
A 20.1.1.0/24, 1 successors, FD is Inaccessible, Qqr
  1 replies, active 00:01:52, query-origin: Successor Origin, retries(1)
    via 10.1.2.1 (Infinity/Infinity), Ethernet0/0, serno 20
    via 10.1.3.2 (Infinity/Infinity), rs, q, Ethernet1/0, serno 19, anchored
rtrC#
```

RST-3300
9802_05_2004_c2 © 2004 Cisco Systems, Inc. All rights reserved. 37

Chasing Active Routes (Cont.)

Cisco.com

20.1.1.0/24

Let's See Why They Don't Seem to Agree about the Active Route

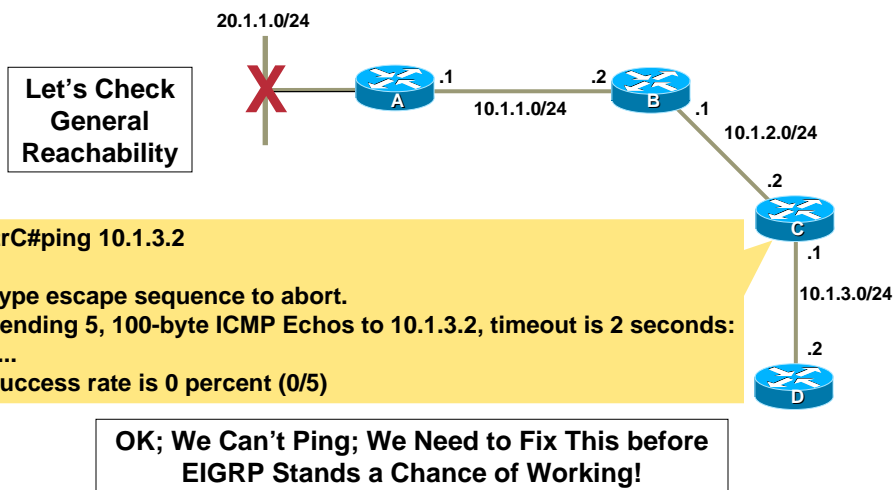
```
rtrC#show ip eigrp neighbors
IP-EIGRP neighbors for process 1
H Address Interface Hold Uptime SRTT RTO Q Seq
  Cnt Num
0 10.1.3.2 Et1/0 13 00:00:14 0 5000 1 0
1 10.1.2.1 Et0/0 13 01:22:54 227 1362 0 385
```

Looks Like Something's Broken between rtrC and rtrD!

RST-3300
9802_05_2004_c2 © 2004 Cisco Systems, Inc. All rights reserved. 38

Chasing Active Routes (Cont.)

Cisco.com



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

39

Troubleshooting the Stuck Part of SIAs (Cont.)

Cisco.com

- It's not always this easy to find the cause of an SIA
- Sometimes you chase the waiting neighbors in a circle
 - If so, summarize and simplify
- Easier after CSCdp33034
 - SIA should happen closer to the location of the **cause** of the problem

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

40

Minimizing SIA Routes

Cisco.com

- **Decrease query scope (involve fewer routers in the query process)**
 - Summarization (manual or auto)
 - Distribute-lists
 - Define remote routers as stubs
- **Run a Cisco OS which includes CSCdp33034!**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

41

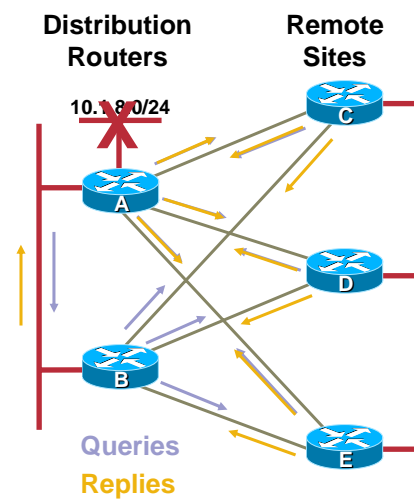
Decreasing Query Scope: Example

Cisco.com

In Our First Example, the Network Is Implemented without Any Query-Bounding Techniques

With Only Five Routers, a Total of 20 Reliable Packets (Replies/Queries) Are Required to Converge!

A Lot of Work to Converge on a Single Route!



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

42

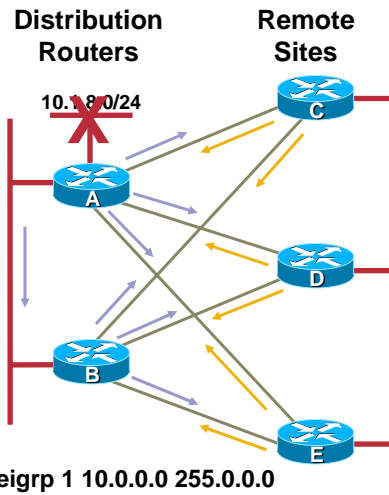
Decreasing Query Scope A Little Better

Cisco.com

In this Example, Manual Summarization Is Used on the Distribution Routers' Interfaces towards the Remote Sites

We're Down to 14 Reliable Packets (Replies/Queries) Required to Converge!

Better, but Not Great



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

43

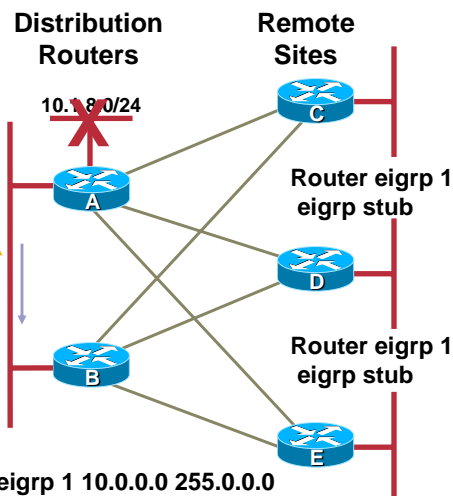
Decreasing Query Scope Stub Remotes

Cisco.com

In this Example, the Remote Sites Are Defined as Stubs.

We're down To Two Reliable Packets! And the Benefit Is Even Greater with the Large Number of Remote Sites in Many Networks!

Note: You Should Still Use Manual Summarization Even when Using the Stub Feature



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

44

Minimizing SIA Routes (Cont.)

Cisco.com

Maintain Reasonable Redundancy

- Don't make EIGRP's job too difficult
- Use passive-interface
- Use hierarchy

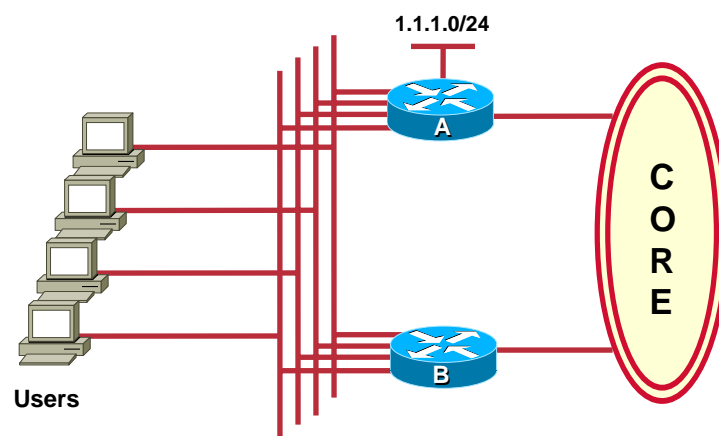
RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

45

Removing Excessive Redundancy

Cisco.com



RST-3300
9802_05_2004_c2

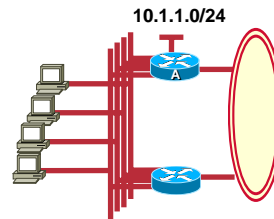
© 2004 Cisco Systems, Inc. All rights reserved.

46

Removing Excessive Redundancy

Cisco.com

```
RtrA#show ip eigrp topo all | begin 1.1.1.0
P 1.1.1.0/24, 1 successors, FD is 128256, serno 2673915
  via Connected, Loopback1
  via 10.0.19.2 (9690112/9173248), FastEthernet6/0.19
  via 10.0.20.2 (9690368/9173248), FastEthernet6/0.20
  via 10.0.13.2 (9688576/9173248), FastEthernet6/0.13
  via 10.0.45.2 (9696768/9173248), FastEthernet6/0.45
  via 10.0.27.2 (9692160/9173248), FastEthernet6/0.27
  via 10.0.28.2 (9692416/9173248), FastEthernet6/0.28
  via 10.0.22.2 (9690880/9173248), FastEthernet6/0.22
  via 10.0.42.2 (9696000/9173248), FastEthernet6/0.42
  via 10.0.16.2 (9689344/9173248), FastEthernet6/0.16
  via 10.0.10.2 (9687808/9173248), FastEthernet6/0.10
  via 10.0.40.2 (9695488/9173248), FastEthernet6/0.40
  via 10.0.21.2 (9690624/9173248), FastEthernet6/0.21
  via 10.0.37.2 (9694720/9173248), FastEthernet6/0.37
  via 10.0.41.2 (9695744/9173248), FastEthernet6/0.41
....snip....
```



Wow, Where Did All of These Alternative Paths Come from! For a Connected Route!

RST-3300
9802_05_2004_c2

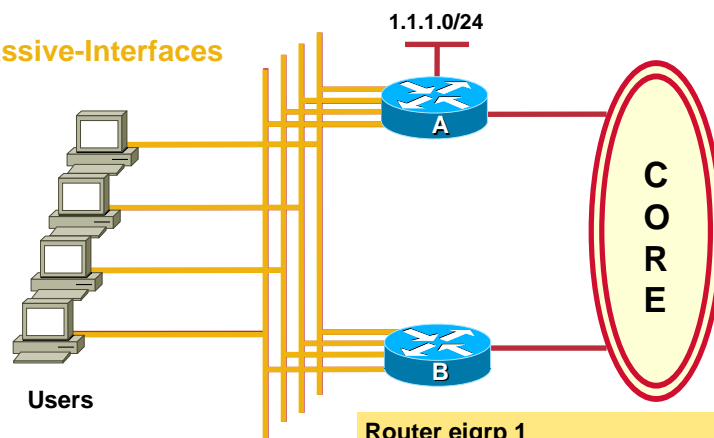
© 2004 Cisco Systems, Inc. All rights reserved.

47

Removing Excessive Redundancy

Cisco.com

Passive-Interfaces



```
Router eigrp 1
passive-interface fastethernet6/0.1
passive-interface fastethernet6/0.2
.....
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

48

Minimizing SIA Routes (Cont.)

Cisco.com

Using Multiple EIGRP Autonomous Systems Does NOT Decrease Query Scope

- Terminates original query, but new one starts
- Adds redistribution complexity
- Requires distribute-lists to stop routing loops
- (At least better after CSCdm47037)

RST-3300
9802_05_2004_c2

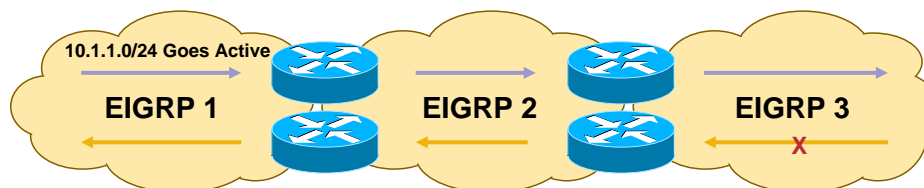
© 2004 Cisco Systems, Inc. All rights reserved.

49

Multiple EIGRP AS'

Cisco.com

Query
Reply



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

50

Agenda

Cisco.com

- **Troubleshooting Common EIGRP Problems**
 - Neighbor Instability
 - Stuck-in-Active Routes
 - Other Common Problems**
- **Troubleshooting Tools**
 - Event Log
 - Debugs
 - Show Commands

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

51

Other Common Network Problems

Cisco.com

- **Unidirectional links**
- **Mismatch of primary/secondary addresses**
- **Not installing external routes**
- **Black hole summary routes**

RST-3300
9802_05_2004_c2

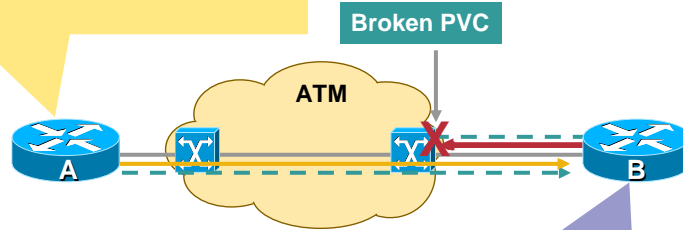
© 2004 Cisco Systems, Inc. All rights reserved.

52

Unidirectional Links

Cisco.com

RtrA#show ip eigrp neighbors
IP-EIGRP neighbors for process 1
RtrA#



PVC - - - - -
Hello - - - - ->
Update - - - - ->

RtrB#show ip eigrp neighbors
IP-EIGRP neighbors for process 1

H	Address	Interface	Hold (sec)	Uptime	SRTT (ms)	RTO (ms)	Q	Seq Cnt	Num
1	10.1.102.2	Et0	14	00:00:15	0	5000	4	0	0

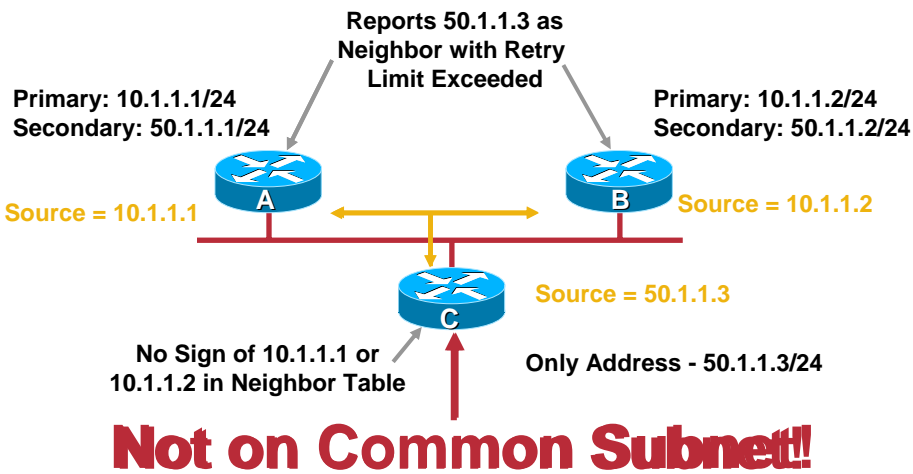
RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

53

Primary/Secondary Mismatch

Cisco.com



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

54

EIGRP Not Installing External Routes

Cisco.com

RTR_A# Show ip route 150.150.0.0

- The problem is the duplicate router ID for EIGRP between router X and router A
- Event log says “dup router”, if you can catch it

RTR_B# Show ip eigrp topology 150.150.0.0
 IP-EIGRP (AS 1) topology entry for 150.150.0.0/16
 State is Passive, query origin flag is 1, 1 Successor(s), FD is 3757056
 Routing Descriptor Blocks:
 10.1.2.2 (Serial 1), from 10.1.2.2, Send flag is 0x0
 Composite metric is (3757056/3245056), Route is External
 Vector metric:
 Minimum bandwidth is 1544 Kbit
 Total delay is 82000 microseconds
 Reliability is 255/255
 Load is 1/255
 Minimum MTU is 1500
 Hop count is 7
 External data:
 Originating router is 192.168.1.1
 AS number of routes is 0
 External protocol is static, external metric is 0
 Administrator tag is 0

Router EIGRP 1
 Redistribute static
 IP route 150.150.0.0 255.255.0.0 e0

RST-3300
 9802_05_2004_c2 © 2004 Cisco Systems, Inc. All rights reserved. 55

Black Hole Summary Routes

Cisco.com

This Network Implements Manual Summarization from the Distribution Routers toward the Core

It Normally Doesn't Matter whether A or B Is Used to Reach a Remote

But what if a Link Goes down?

Solutions:

- Second Link between A and B without Summarization or
- GRE Tunnel between A and B without Summarization

ip summary-address eigrp 1 10.1.0.0 255.255.0.0

RST-3300
 9802_05_2004_c2 © 2004 Cisco Systems, Inc. All rights reserved. 56

Agenda

Cisco.com

- **Troubleshooting Common EIGRP Problems**
 - Neighbor Instability
 - Stuck-in-Active Routes
 - Other Common Problems
- **Troubleshooting Tools**
 - Event Log
 - Debugs
 - Show Commands

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

57

EIGRP Troubleshooting Tools

Cisco.com

Debugs versus the EIGRP Event Log

- **On a busy, unstable network debugs can be hazardous to your network's health**
- **Event log is non-disruptive—Already running**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

58

Event Log

Cisco.com

- Always running (unless manually disabled)
- Default 500 lines (configurable)
EIGRP event-log-size <number of lines>
- Most recent events at top of log
Read bottom to top!

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

59

Event Log (Cont.)

Cisco.com

Three Different Event Types Can Be Logged

- *EIGRP log-event-type [dual][xmit][transport]*
- Default is dual—Normally most useful
- Any combination of the three can be on at the same time
- Work in progress to add additional debug info to event log

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

60

Event Log (Cont.)

Cisco.com

```
RtrA#show ip eigrp events
```

```
Event information for AS 1:
```

```
1 01:52:51.223 NDB delete: 30.1.1.0/24 1
2 01:52:51.223 RDB delete: 30.1.1.0/24 10.1.3.2
3 01:52:51.191 Metric set: 30.1.1.0/24 4294967295
4 01:52:51.191 Poison squashed: 30.1.1.0/24 lost if
5 01:52:51.191 Poison squashed: 30.1.1.0/24 metric chg
6 01:52:51.191 Send reply: 30.1.1.0/24 10.1.3.2
7 01:52:51.187 Not active net/1=SH: 30.1.1.0/24 1
8 01:52:51.187 FC not sat Dmin/met: 4294967295 46738176
9 01:52:51.187 Find FS: 30.1.1.0/24 46738176
10 01:52:51.187 Rcv query met/succ met: 4294967295 4294967295
11 01:52:51.187 Rcv query dest/nh: 30.1.1.0/24 10.1.3.2
12 01:52:36.771 Change queue emptied, entries: 1
13 01:52:36.771 Metric set: 30.1.1.0/24 46738176
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

61

Debugs

Cisco.com

- **Remember—Can be dangerous**
Use only in the lab or if advised by the TAC
- **To make a little safer:**
logging buffered <size>
no logging console

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

62

Debugs (Cont.)

Cisco.com

Use Modifiers to Limit Scope of Route Events or Packet Debugs

- Limit to a particular neighbor

debug ip eigrp neighbor AS address

- Limit to a particular route

debug ip eigrp AS network mask

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

63

Debug IP EIGRP (Route Events)

Cisco.com

```
RTRA#debug ip eigrp
IP-EIGRP Route Events debugging is on
RTRA#debug ip eigrp neighbor 1 10.1.6.2
IP Neighbor target enabled on AS 1 for 10.1.6.2
IP-EIGRP Neighbor Target Events debugging is on
RTRA#clear ip eigrp neighbor
RTRA#
IP-EIGRP: 10.1.8.0/24 - do advertise out Serial1/2
IP-EIGRP: Int 10.1.8.0/24 metric 28160 - 256002560
IP-EIGRP: 10.1.7.0/24 - do advertise out Serial1/2
IP-EIGRP: 10.1.1.0/24 - do advertise out Serial1/2
IP-EIGRP: Int 10.1.1.0/24 metric 28160 - 25600256
IP-EIGRP: Processing incoming UPDATE packet
IP-EIGRP: 10.1.6.0/24 - do advertise out Serial1/1
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

64

Debug IP EIGRP (Cont.)

Cisco.com

```
RTRA#debug ip eigrp
IP-EIGRP Route Events debugging is on
RTRA#debug ip eigrp 1 10.1.7.0 255.255.255.0
IP Target enabled on AS 1 for 10.1.7.0/24
IP-EIGRP AS Target Events debugging is on
RTRA#clear ip eigrp neighbor
IP-EIGRP: 10.1.7.0/24 - do advertise out Serial1/2
IP-EIGRP: 10.1.7.0/24 - do advertise out Serial1/1
IP-EIGRP: Int 10.1.7.0/24 metric 20512000 20000000 512000
IP-EIGRP: 10.1.7.0/24 - do advertise out Serial1/2
IP-EIGRP: Processing incoming UPDATE packet
IP-EIGRP: 10.1.7.0/24 - do advertise out Serial1/1
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

65

Debug EIGRP Packet <type>

Cisco.com

```
RTRA#debug eigrp packet ?
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
stub         EIGRP stub packets
retry        EIGRP retransmissions
terse        Display all EIGRP packets except Hellos
update       EIGRP update packets
verbose      Display all EIGRP packet
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

66

Debug EIGRP Packet Terse

Cisco.com

```
RtrA#debug eigrp packet terse
EIGRP Packets debugging is on
  (UPDATE, REQUEST, QUERY, REPLY, IPXSAP, PROBE, ACK, STUB)
EIGRP: Sending UPDATE on Serial1/0 nbr 10.1.1.2
  AS 1, Flags 0x0, Seq 2831/1329 idbQ 0/0 iibQ un/rely 0/0 peerQ un/rely 0/1 serno 19707-19707
EIGRP: Sending UPDATE on Serial1/1 nbr 10.1.2.2
  AS 1, Flags 0x0, Seq 2832/1708 idbQ 0/0 iibQ un/rely 0/0 peerQ un/rely 0/1 serno 19707-19707
EIGRP: Sending UPDATE on Serial1/2 nbr 10.1.3.2
  AS 1, Flags 0x0, Seq 2833/1680 idbQ 0/0 iibQ un/rely 0/0 peerQ un/rely 0/1 serno 19707-19707
EIGRP: Received ACK on Serial1/0 nbr 10.1.1.2
  AS 1, Flags 0x0, Seq 0/2831 idbQ 0/0 iibQ un/rly 0/0 peerQ un/rely 0/1
EIGRP: Serial1/0 multicast flow blocking cleared
EIGRP: Received ACK on Serial1/1 nbr 10.1.2.2
  AS 1, Flags 0x0, Seq 0/2832 idbQ 0/0 iibQ un/rely 0/0 peerQ un/rely 0/1
EIGRP: Serial1/1 multicast flow blocking cleared
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

67

Debug IP EIGRP Notifications

Cisco.com

```
RtrA#debug ip eigrp notifications
IP-EIGRP Event notification debugging is on
RtrA#clear ip route *
RtrA#
IP-EIGRP: Callback: reload_ipable
IP-EIGRP: iptable_redistribute into eigrp AS 1
IP-EIGRP: Callback: redist frm static AS 0 100.100.100.0/24
  into: eigrp AS 1 event: 1
IP-EIGRP: Callback: redist frm static AS 0 200.200.200.0/24
  into: eigrp AS 1 event: 1
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

68

Debug EIGRP FSM (Finite State Machine)

Cisco.com

```
RTRA#debug eigrp fsm
EIGRP FSM Events/Actions debugging is on
RTRA#clear ip route *
RTRA#
DUAL: Find FS for dest 10.1.8.0/24. FD is 28160, RD is 28160
DUAL: 0.0.0.0 metric 28160/0 found Dmin is 28160
DUAL: Find FS for dest 10.1.3.0/24. FD is 21024000, RD is 21024000
DUAL: 10.1.6.2 metric 21024000/2169856 found Dmin is 21024000
DUAL: RT installed 10.1.3.0/24 via 10.1.6.2
DUAL: Find FS for dest 10.1.2.0/24. FD is 21536000, RD is 21536000
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

69

Topology Table

Cisco.com

- **The topology table is probably the most critical structure in EIGRP**
 - Contains building blocks used by DUAL
 - Used to create updates for neighbors/populate routing table
- **Understanding the topology table contents is extremely important in troubleshooting EIGRP problems**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

70

Show IP EIGRP Topology Summary

Cisco.com

- To get a quick overview of what your topology table contains, use the “show ip eigrp topology summary” command

```
RtrA#sh ip eigrp topology sum
IP-EIGRP Topology Table for AS(200)/ID(40.80.0.17)
Head serial 1, next serial 1526
589 routes, 0 pending replies, 0 dummies
IP-EIGRP(0) enabled on 12 interfaces, neighbors present on 4 interfaces
Quiescent interfaces: Po3 Po6 Po2 Gi8/5
```

RST-3300
9802_05_2004_c2

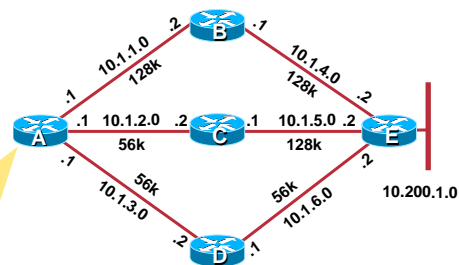
© 2004 Cisco Systems, Inc. All rights reserved.

71

Show IP EIGRP Topology

Cisco.com

Show ip eigrp topology Displays a List of Successors and Feasible Successors for All Destinations Known by EIGRP



```
RtrA#show ip eigrp topology
IP-EIGRP Topology Table for AS(1)/ID(10.1.6.1)
..snip.....
P 10.200.1.0/24, 1 successors, FD is 21026560
  via 10.1.1.2 (21026560/20514560), Serial1/0
  via 10.1.2.2 (46740736/20514560), Serial1/1
```

← Feasible Distance
← Successor
← Feasible Successor

↑ Computed Distance ↑ Reported Distance

RST-3300
9802_05_2004_c2

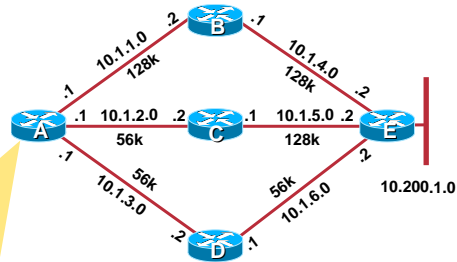
© 2004 Cisco Systems, Inc. All rights reserved.

72

Show IP EIGRP Topology All-Links

Cisco.com

Show ip eigrp topology all-links
 Displays a List of **All** Neighbors
 who Are Providing EIGRP with
 an Alternative Path to Each
 Destination



```
RtrA#show ip eigrp topology all-links
IP-EIGRP Topology Table for AS(1)/ID(10.1.6.1)
.....snip.....
P 10.200.1.0/24, 1 successors, FD is 21026560
  via 10.1.1.2 (21026560/20514560), Serial1/0
  via 10.1.2.2 (46740736/20514560), Serial1/1
  via 10.1.3.2 (46740736/46228736), Serial1/2
```

← Successor
 ← Feasible Successor
 ← Possible Successor

↑
RD

RST-3300
9802_05_2004_c2

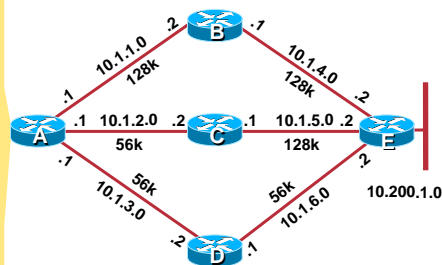
© 2004 Cisco Systems, Inc. All rights reserved.

73

Show IP EIGRP Topology <network><mask>

Cisco.com

```
RtrA#show ip eigrp topology 10.200.1.0 255.255.255.0
IP-EIGRP topology entry for 10.200.1.0/24
State is Passive. Query origin flag is 1, 1 Successor(s), FD is 21026560
Routing Descriptor Blocks:
 10.1.1.2 (Serial1/0), from 10.1.1.2, Send flag is 0x0
   Composite metric is (21026560/20514560), Route is Internal
   Vector metric:
     Minimum bandwidth is 128 Kbit
     Total delay is 40100 microseconds
     Reliability is 255/255
     Load is 1/255
     Minimum MTU is 1500
     Hop count is 2
 10.1.2.2 (Serial1/1), from 10.1.2.2, Send flag is 0x0
   Composite metric is (46740736/20514560), Route is Internal
   Vector metric:
     Minimum bandwidth is 56 Kbit
     Total delay is 40100 microseconds
     Reliability is 255/255
     Load is 1/255
     Minimum MTU is 1500
     Hop count is 2
 10.1.3.2 (Serial1/2), from 10.1.3.2, Send flag is 0x0
   Composite metric is (46740736/46228736), Route is Internal
   Vector metric:
     Minimum bandwidth is 56 Kbit
     Total delay is 40100 microseconds
     Reliability is 255/255
     Load is 1/255
     Minimum MTU is 1500
     Hop count is 2
```



**Show ip eigrp topology
 <network><mask>** Displays
 Detailed Information for All
 Paths Received for that
 Destination

9802_05_2004_c2

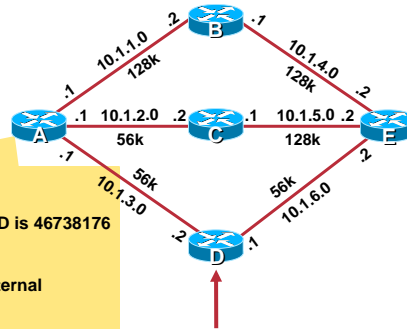
© 2004 Cisco Systems, Inc. All rights reserved.

74

Show IP EIGRP Topology <network><mask>

Cisco.com

Showing the Topology Table Entry for an External Route Shows Additional Information about the Route



```
RtrA#show ip eigrp topology 30.1.1.0 255.255.255.0
IP-EIGRP topology entry for 30.1.1.0/24
State is Passive, Query origin flag is 1, 1 Successor(s), FD is 46738176
Routing Descriptor Blocks:
 10.1.3.2 (Serial1/2), from 10.1.3.2, Send flag is 0x0
  Composite metric is (46738176/46226176), Route is External
  Vector metric:
    Minimum bandwidth is 56 Kbit
    Total delay is 40000 microseconds
    Reliability is 255/255
    Load is 1/255
    Minimum MTU is 1500
    Hop count is 1
  External data:
    Originating router is 64.1.4.14
    AS number of route is 0
    External protocol is Static, external metric is 0
    Administrator tag is 0 (0x00000000)
```

Static Route to 30.1.1.0/24 Is Redistributed into EIGRP

9802_05_2004_c2

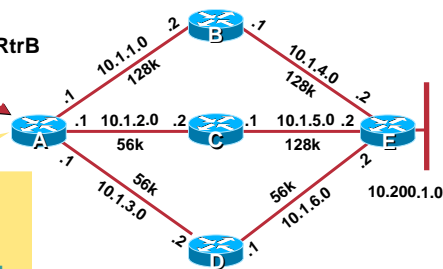
© 2004 Cisco Systems, Inc. All rights reserved.

75

Show IP EIGRP Topology Zero

Cisco.com

Static Route to 10.200.1.0/24 through RtrB



```
RtrA#show ip eigrp topology zero
IP-EIGRP Topology Table for AS(1)/ID(10.1.6.1)

P 10.200.1.0/24, 0 successors, FD is Inaccessible
  via 10.1.1.2 (21026560/20514560), Serial1/0
  via 10.1.2.2 (46740736/20514560), Serial1/1
  via 10.1.3.2 (46740736/46228736), Serial1/2
RtrA#show ip route 10.200.1.0 255.255.255.0
Routing entry for 10.200.1.0/24
  Known via "static", distance 1, metric 0
  Routing Descriptor Blocks:
    * 10.1.1.2
      Route metric is 0, traffic share count is 1
```

"Zero Successor" Routes Are Those that Fail to Get Installed in the Routing Table by EIGRP because There Is a Route with a Better Admin Distance Already Installed

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

76

Show IP EIGRP Neighbor Detail

Cisco.com

```
rtr302-ce1#show ip eigrp neighbor detail
```

```
IP-EIGRP neighbors for process 1
```

H	Address	Interface	Hold (sec)	Uptime	SRTT (ms)	RTO	Q Cnt	Seq Num	Type
---	---------	-----------	------------	--------	-----------	-----	-------	---------	------

1	17.17.17.2	Et1/0	14	00:00:03	394	2364	0	124	
---	------------	-------	----	----------	-----	------	---	-----	--

```
Version 12.0/1.2, Retrans: 0, Retries: 0
```

```
Stub Peer Advertising ( CONNECTED SUMMARY ) Routes
```

0	50.10.10.1	Et0/0	13	04:04:39	55	330	0	13	
---	------------	-------	----	----------	----	-----	---	----	--

```
Version 12.0/1.2, Retrans: 2, Retries: 0
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

77

Show IP EIGRP Interface Detail

Cisco.com

```
rtrB#show ip eigrp interface detail
```

```
IP-EIGRP interfaces for process 1
```

Interface	Peers	Xmit Un/Reliable	Queue Un/Reliable	Mean SRTT	Pacing Un/Reliable	Time Flow Timer	Multicast	Pending Routes
-----------	-------	------------------	-------------------	-----------	--------------------	-----------------	-----------	----------------

Et0/0	1	0/0	0/0	737	0/10	5376	0	0
-------	---	-----	-----	-----	------	------	---	---

```
Hello interval is 5 sec
```

```
Next xmit serial <none>
```

```
Un/reliable mcasts: 0/3 Un/reliable ucasts: 6/3
```

```
Mcast exceptions: 0 CR packets: 0 ACKs suppressed: 0
```

```
Retransmissions sent: 0 Out-of-sequence rcvd: 0
```

```
Authentication mode is not set
```

Et1/0	1	0/0	0/0	885	0/10	6480	0	0
-------	---	-----	-----	-----	------	------	---	---

```
Hello interval is 5 sec
```

```
Next xmit serial <none>
```

```
Un/reliable mcasts: 0/2 Un/reliable ucasts: 5/3
```

```
Mcast exceptions: 0 CR packets: 0 ACKs suppressed: 0
```

```
Retransmissions sent: 0 Out-of-sequence rcvd: 0
```

```
Authentication mode is not set
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

78

Show IP EIGRP Traffic

Cisco.com

```
rtrB#show ip eigrp traffic
IP-EIGRP Traffic Statistics for AS 1
  Hellos sent/received: 574/558
  Updates sent/received: 5/7
  Queries sent/received: 2/2
  Replies sent/received: 2/2
  Acks sent/received: 11/7
  Input queue high water mark 2, 0 drops
  SIA-Queries sent/received: 1/1
  SIA-Replies sent/received: 1/1
  Hello Process ID: 64
  PDM Process ID: 63
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

79

Show IP Protocol

Cisco.com

```
RtrA# show ip protocol
*** IP Routing is NSF aware ***

Routing Protocol is "eigrp 200"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Default networks flagged in outgoing updates
  Default networks accepted from incoming updates
  EIGRP metric weight K1=1, K2=0, K3=1, K4=0, K5=0
  EIGRP maximum hopcount 100
  EIGRP maximum metric variance 1
  Redistributing: eigrp 200
  EIGRP NSF-aware route hold timer is 240s
  EIGRP NSF enabled
    NSF signal timer is 20s
    NSF converge timer is 120s
```

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

80

Show IP Protocol (Cont.)

Cisco.com

Automatic network summarization is not in effect

Address Summarization:

40.0.0.0/8 for Vlan301

Summarizing with metric 1536

Maximum path: 4

Routing for Networks:

40.80.0.0/16

192.168.107.0

Routing Information Sources:

Gateway	Distance	Last Update
(this router)	90	00:01:10
40.80.24.33	90	01:13:47
40.80.12.19	90	01:13:47
40.80.23.31	90	01:13:48
40.80.8.13	90	01:13:48

Distance: internal 90 external 170

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

81

EIGRP Troubleshooting Summary

Cisco.com

- **Most problems seen in EIGRP networks are caused by factors outside of EIGRP, itself (congestion, lack of summarization, etc.)**
- **There are many tools and techniques available for troubleshooting problems in EIGRP networks**

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

82

Cisco Technical Support Website: www.cisco.com/techsupport

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

83

Troubleshooting Support for EIGRP

Troubleshooting section for EIGRP

- Known problems documented as field notices
- Troubleshooting steps
- Troubleshooting tools

RST-3300
9802_05_2004_c2

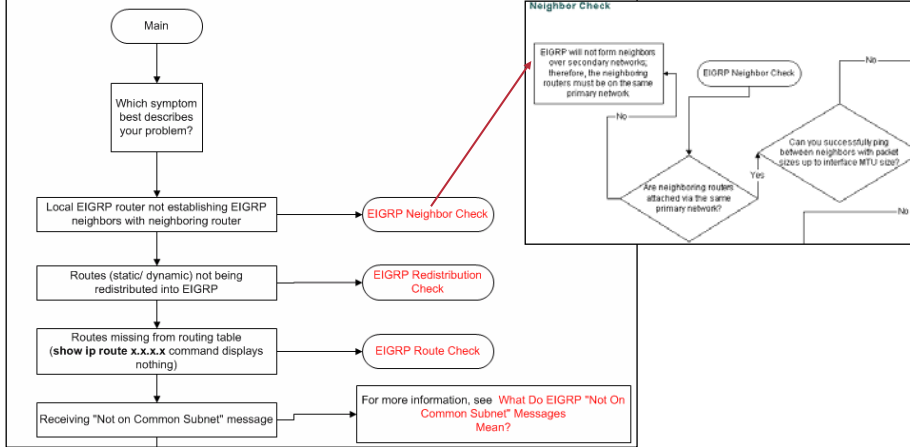
© 2004 Cisco Systems, Inc. All rights reserved.

84

Troubleshooting EIGRP Documentation

Cisco.com

Main Troubleshooting Flowchart



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

85

TAC Case Collection

Cisco.com

- Free text query
- Guided search
- Search by solution number
- View All Solutions
- Suggests solutions that come from actual service requests taken by TAC engineers

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

86

TAC Case Collection: Troubleshooting EIGRP Issue

Cisco.com

Free Text Query

TAC Case Collection (Troubleshooting Assistant)

FREE TEXT QUERY GUIDED SEARCH VIEW ALL SOLUTIONS

Knowledge Base: **IP Routing**

Note: Due to the dynamic nature of content within the TAC Case Collection, please use the controls and navigation provided within the tool. Using the browser's Back button will result in lost data.

Free Text Query
Please enter a brief description of your problem or question and click the Submit button.
[Search Tips](#)

EIGRP router not establishing neighbors

Submit

Guided Search
Use the Guided Search to step through a series of questions to arrive at the most relevant solutions.

View All Solutions
Use View All Solutions to browse a list of available solutions, categorized by problem type.

Search by Solution #
If you know the ID number of the solution you need, please enter it below and click the Submit button.

Submit

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

87

TAC Case Collection: Troubleshooting EIGRP Issue

Cisco.com

Free Text Query (Cont.)—Problem Type

TAC Case Collection (Troubleshooting Assistant)

FREE TEXT QUERY GUIDED SEARCH VIEW ALL SOLUTIONS

Knowledge Base: **IP Routing**

Your Search

Free Text Query
Please enter your query: EIGRP router not establishing neighbors

Select which of the following best describes your problem

Problem Type

Network not being propagated / advertised

Neighbor issues

Avoid neighbors on an interface

Neighbors flapping

Not forming neighbors

Router not forwarding packets

Back Cancel Skip Next

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

88

TAC Case Collection: Troubleshooting EIGRP Issue

Cisco.com

- Tool will clarify the problem area
- Edit problem type if query has been misunderstood

The screenshot shows the 'TAC Case Collection (Troubleshooting Assistant)' window. It has a 'FREE TEXT QUERY' tab selected. The query is 'EIGRP router not establishing neighbors'. Under the 'I understand:' section, the 'Problem Type' is set to 'Not forming neighbors' and 'IP Routing Protocols' is set to 'EIGRP'. There are 'Back', 'Cancel', and 'Next' buttons at the bottom.

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

89

TAC Case Collection: Troubleshooting EIGRP Issue

Cisco.com

- Search results table
- Click “View Solution” links to be taken to solution(s)

The screenshot shows the 'Search Results' section of the TAC Case Collection interface. It displays one result for the query 'EIGRP neighbors are not forming over the secondary network'. The result includes a 'View Solution' link, a table of problem details, and additional details. The 'View Solution' link is highlighted with a red box.

Your Search		#1 (100%)
Title		EIGRP neighbors are not forming over the secondary network
Problem Type	= Not forming neighbors	Not forming neighbors Neighbor issues
IP Routing Protocols	= EIGRP	EIGRP
Additional Details		
How are Neighbors Connected		Connected via LAN switch(es) Connected via Frame Relay
show ip eigrp neighbors		Neighbor does not exist in neighbor table

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

90

TAC Case Collection: Troubleshooting EIGRP Issue

Cisco.com

Detailed Solution Page

TAC Case Collection (Troubleshooting Assistant)	
FREE TEXT QUERY	
Back To Results	SEARCH
Feedback Please rate this solution. <input type="radio"/> Excellent <input type="radio"/> Good <input type="radio"/> Average <input type="radio"/> Fair <input type="radio"/> Poor This solution solved my problem. <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Just browsing Suggestions for improvement: (Please include your email address if you would like to hear from us.) <input type="text"/> <input type="button" value="Send"/>	Search Result #1 of 1 (100%) Solution # K75816047 Title EIGRP neighbors are not forming over the secondary network Core Issue The Enhanced Interior Gateway Routing Protocol (EIGRP) supports secondary addresses. However, since EIGRP sources data packets from the primary address, all the routers should be configured with the primary addresses that belong on the same subnet. Resolution EIGRP only forms neighbors over the primary network. Be sure that the primary address on the interface is configured for EIGRP by issuing the <code>network</code> command under the <code>router eigrp</code> configuration command. This network should include the primary address of the interface which is running EIGRP. An example follows: <pre>interface e0 ip address 172.16.3.1 255.255.255.0 ip address 131.102.3.1 255.255.255.0 secondary router eigrp 7 network 172.16.0.0 ! - This network covers the address assigned to interface e0. network 131.102.0.0</pre> <p>The 131.102.0.0 network covers the secondary IP address assigned to interface e0. Although the 131.102.0.0 network is also included in EIGRP, EIGRP will not form a neighbor over this network. However, the 131.102.0.0 network is advertised through EIGRP.</p> <p>For more information about EIGRP neighbors, refer to the Neighbor Discovery and Maintenance section of Enhanced Interior Gateway Routing Protocol.</p> Problem Type Not forming neighbors, Neighbor issues IP Routing Protocols EIGRP How are Neighbors Connected Connected via LAN switch(es), Connected via Frame Relay show ip eigrp neighbors Neighbor does not exist in neighbor table

RST-3300
9802_05_2004_c2

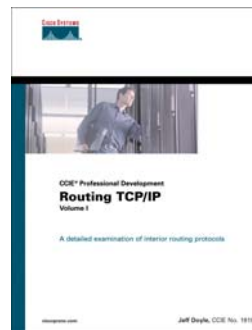
© 2004 Cisco Systems, Inc. All rights reserved.

91

Further Reading on Troubleshooting EIGRP

Cisco.com

- **EIGRP Network Design Solutions**
ISBN 1-57870-165-1
- **EIGRP for IP**
ISBN 0-201-65773-2
- **Troubleshooting IP Routing Protocols**
ISBN 1-58705-019-6
- **Routing TCP/IP Volume I**
ISBN 1-57870-041-8



Available on-site at the Cisco Company Store

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

92

Q AND A



RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

93

Complete Your Online Session Evaluation!

Cisco.com

- WHAT:** Complete an online session evaluation and your name will be entered into a daily drawing
- WHY:** Win fabulous prizes! Give us your feedback!
- WHERE:** Go to the Internet stations located throughout the Convention Center
- HOW:** Winners will be posted on the onsite Networkers Website; four winners per day

RST-3300
9802_05_2004_c2

© 2004 Cisco Systems, Inc. All rights reserved.

94

CISCO SYSTEMS

