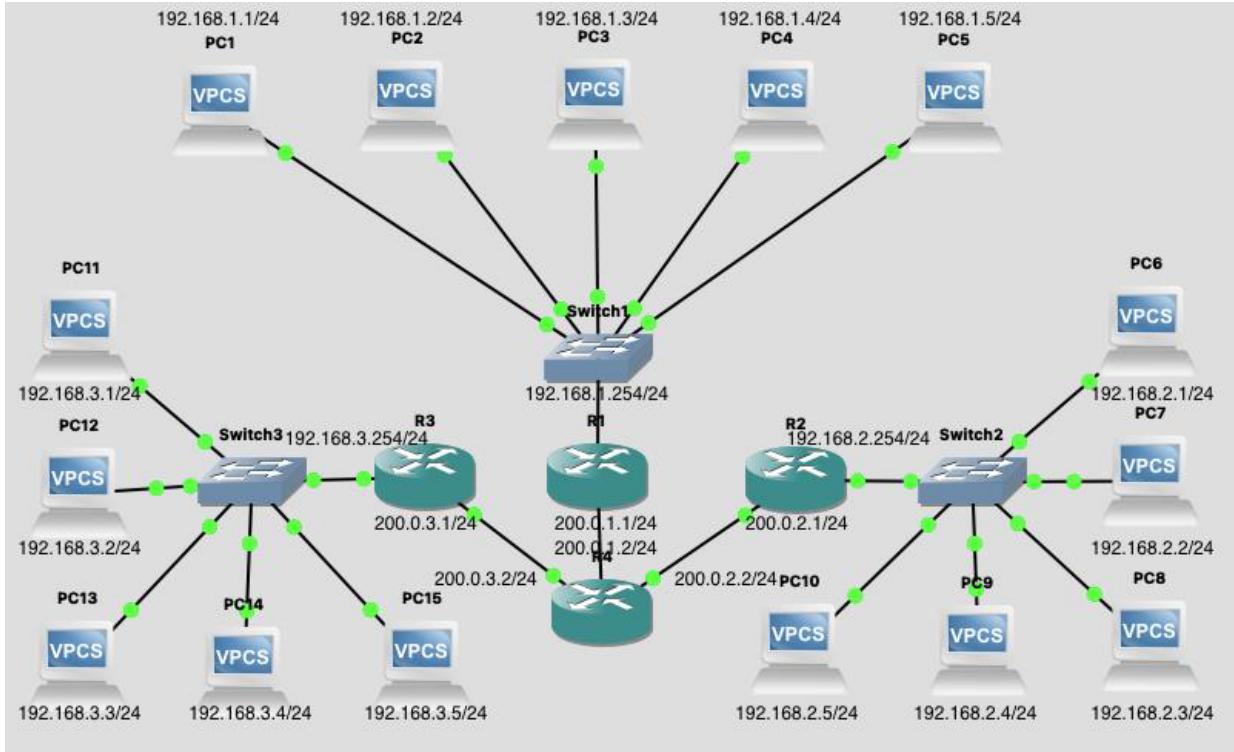


F29DC Lab 6

Topology A:



Topology A EIGRP Proof:

```

lucca — R1 — telnet localhost 5000 — 80x24
R1(config-if)#
*Mar 1 00:12:42.667: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
o up
*Mar 1 00:12:43.667: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
(R1(config-if)#write
% Invalid input detected at '^' marker.

R1(config-if)#
R1#
*Mar 1 00:14:21.591: %SYS-5-CONFIG_I: Configured from console by console
[R1#write
Building configuration...
[OK]
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
[R1(config)#router eigrp 1
[R1(config-router)#network 192.168.1.0 0.0.0.255
[R1(config-router)#network 200.0.1.0 0.0.0.255
[R1(config-router)#
*Mar 1 00:22:50.299: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 200.0.1.2 (Fast Ethernet0/1) is up: new adjacency
R1(config-router)#
lucca — R3 — telnet localhost 5002 — 80x24
et0/0, changed state to up
R3(config-if)#interface fa0/1
R3(config-if)#ip address 200.0.3.1 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
*Mar 1 00:13:18.275: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar 1 00:13:19.275: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
(R3(config-if)#
R3#
*Mar 1 00:14:21.559: %SYS-5-CONFIG_I: Configured from console by console
[R3#write
Building configuration...
[OK]
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
[R3(config)#router eigrp 1
[R3(config-router)#network 192.168.3.0 0.0.0.255
[R3(config-router)#network 200.0.3.0 0.0.0.255
[R3(config-router)#
*Mar 1 00:23:06.015: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 200.0.3.2 (Fast Ethernet0/1) is up: new adjacency
R3(config-router)#
lucca — R2 — telnet localhost 5001 — 80x24
% Incomplete command.

R2(config-if)#ip address 200.0.2.1 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
*Mar 1 00:12:59.663: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
o up
*Mar 1 00:13:00.663: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
(R2(config-if)#
R2#
*Mar 1 00:14:20.915: %SYS-5-CONFIG_I: Configured from console by console
[R2#write
Building configuration...
[OK]
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
[R2(config)#router eigrp 1
[R2(config-router)#network 192.168.2.0 0.0.0.255
[R2(config-router)#network 200.0.2.0 0.0.0.255
[R2(config-router)#
*Mar 1 00:22:56.587: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 200.0.2.2 (Fast Ethernet0/1) is up: new adjacency
R2(config-router)#
lucca — R4 — telnet localhost 5003 — 80x24
Building configuration...
[OK]
R4#ping 10.0.1.1
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echoes to 10.0.1.1, timeout is 2 seconds:
.
Success rate is 0 percent (0/5)
R4#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R4(config)#router eigrp 1
R4(config-router)#network 200.0.1.0 0.0.0.255
R4(config-router)#
*Mar 1 00:22:48.971: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 200.0.1.1 (Fast Ethernet0/0) is up: new adjacency
R4(config-router)#
R4(config-router)#
*Mar 1 00:22:59.859: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 200.0.2.1 (Fast Ethernet0/1) is up: new adjacency
R4(config-router)#
R4(config-router)#
*Mar 1 00:23:10.447: %DUAL-5-NBRCHANGE: IP-EIGRP(0) 1: Neighbor 200.0.3.1 (Fast Ethernet1/0) is up: new adjacency
R4(config-router)#

```

Topology A Test Cases:

Topology A EIGRP R1-R4 No Changes:

Capturing from -- R1 FastEthernet0/1 to R4 FastEthernet0/0						
No.	Time	Source	Destination	Protocol	Length	Info
33	53.200070	200.0.1.1	224.0.0.10	EIGRP	74	Hello
34	53.687595	200.0.1.2	224.0.0.10	EIGRP	74	Hello
35	57.177949	c0:04:0b:1d:00:00	c0:04:0b:1d:00:00	LOOP	60	Reply
36	57.339265	c0:01:0b:0b:00:01	c0:01:0b:0b:00:01	LOOP	60	Reply
37	58.510515	200.0.1.1	224.0.0.10	EIGRP	74	Hello
38	58.850578	200.0.1.2	224.0.0.10	EIGRP	74	Hello
39	63.488912	200.0.1.1	224.0.0.10	EIGRP	74	Hello
40	63.974745	200.0.1.2	224.0.0.10	EIGRP	74	Hello
41	68.465988	c0:04:0b:1d:00:00	c0:04:0b:1d:00:00	LOOP	60	Reply
42	68.794912	c0:01:0b:0b:00:01	c0:01:0b:0b:00:01	LOOP	60	Reply
43	69.083974	200.0.1.1	224.0.0.10	EIGRP	74	Hello
44	69.410906	200.0.1.2	224.0.0.10	EIGRP	74	Hello

```

> Frame 30: 60 bytes on wire (480 bits), 60 bytes
  0000  c0 01 0b 0b 00 01 c0 01 0b 0b 00 01 90 00 00 00
> Ethernet II, Src: c0:01:0b:0b:00:01 (c0:01:0b:00:00:00)
> Configuration Test Protocol (loopback)
> Data (40 bytes)
  0010  01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0020  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0030  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

```

Topology A EIGRP R2-R4 No Changes:

Capturing from -- R2 FastEthernet0/1 to R4 FastEthernet0/1						
No.	Time	Source	Destination	Protocol	Length	Info
86	143.572270	200.0.2.2	224.0.0.10	EIGRP	74	Hello
87	144.515019	200.0.2.1	224.0.0.10	EIGRP	74	Hello
88	148.598741	200.0.2.2	224.0.0.10	EIGRP	74	Hello
89	149.703970	200.0.2.1	224.0.0.10	EIGRP	74	Hello
90	149.999171	c0:04:0b:1d:00:01	c0:04:0b:1d:00:01	LOOP	60	Reply
91	153.330498	c0:02:0b:18:00:01	c0:02:0b:18:00:01	LOOP	60	Reply
92	154.153522	200.0.2.2	224.0.0.10	EIGRP	74	Hello
93	154.899201	200.0.2.1	224.0.0.10	EIGRP	74	Hello
94	159.840810	200.0.2.2	224.0.0.10	EIGRP	74	Hello
95	160.213748	200.0.2.1	224.0.0.10	EIGRP	74	Hello
96	161.527619	c0:04:0b:1d:00:01	c0:04:0b:1d:00:01	LOOP	60	Reply

```

> Frame 83: 60 bytes on wire (480 bits), 60 bytes
  0000  c0 04 0b 1d 00 01 c0 04 0b 1d 00 01 90 00 00 00
> Ethernet II, Src: c0:04:0b:1d:00:01 (c0:04:0b:00:00:00)
> Configuration Test Protocol (loopback)
> Data (40 bytes)
  0010  01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0020  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
  0030  00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

```

Topology A EIGRP R3-R4 No Changes:

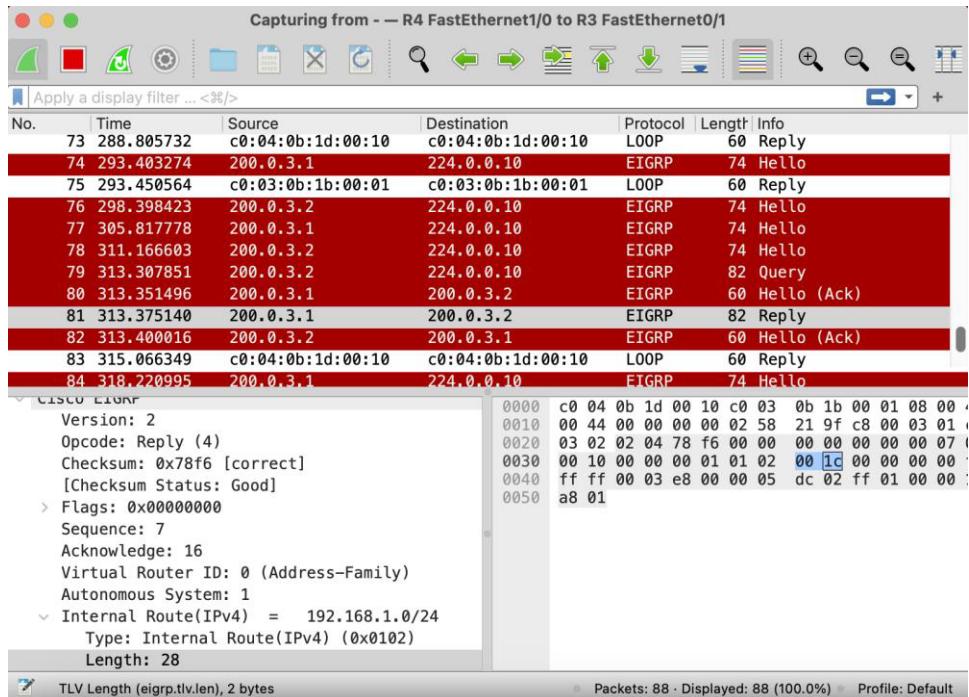
Capturing from -- R4 FastEthernet1/0 to R3 FastEthernet0/1						
No.	Time	Source	Destination	Protocol	Length	Info
82	155.080539	200.0.3.2	224.0.0.10	EIGRP	74	Hello
83	136.587162	200.0.3.1	224.0.0.10	EIGRP	74	Hello
84	140.076031	c0:04:0b:1d:00:10	c0:04:0b:1d:00:10	LOOP	60	Reply
85	140.821379	200.0.3.2	224.0.0.10	EIGRP	74	Hello
86	142.321115	200.0.3.1	224.0.0.10	EIGRP	74	Hello
87	143.878960	c0:03:0b:1b:00:01	c0:03:0b:1b:00:01	LOOP	60	Reply
88	145.955770	200.0.3.2	224.0.0.10	EIGRP	74	Hello
89	147.284120	200.0.3.1	224.0.0.10	EIGRP	74	Hello
90	151.067839	200.0.3.2	224.0.0.10	EIGRP	74	Hello
91	151.323345	c0:04:0b:1d:00:10	c0:04:0b:1d:00:10	LOOP	60	Reply
92	152.303883	200.0.3.1	224.0.0.10	EIGRP	74	Hello
93	155.260282	c0:03:0b:1b:00:01	c0:03:0b:1b:00:01	LOOP	60	Reply

```

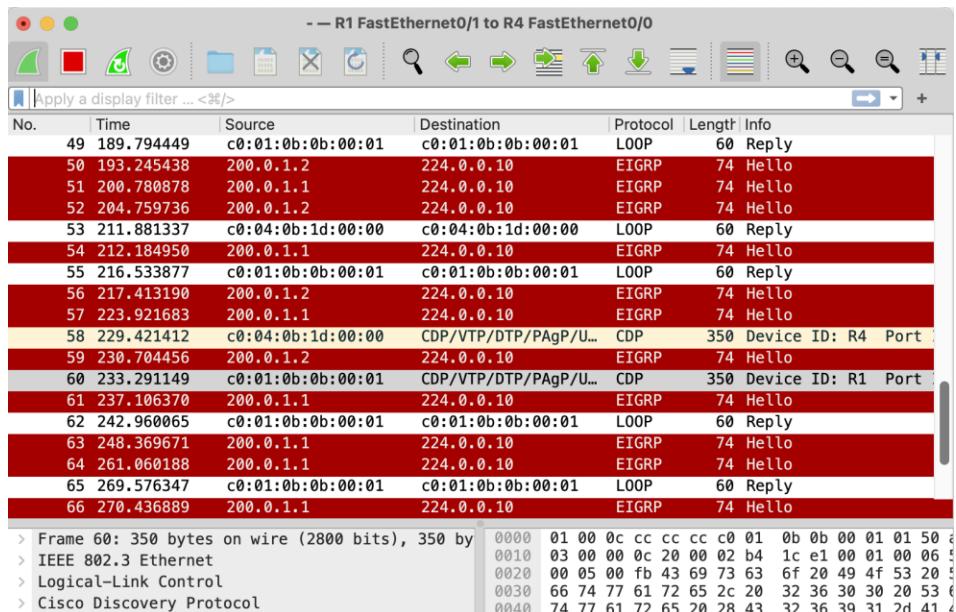
> Frame 77: 350 bytes on wire (2800 bits), 350 bytes
  0000  01 00 0c cc cc cc c0 03 0b 1b 00 01 01 50
  0010  03 00 00 0c 20 00 02 b4 1a df 00 01 00 06
  0020  00 05 00 fb 43 69 73 63 6f 20 49 4f 53 20
  0030  66 74 77 61 72 65 2c 20 32 36 30 30 20 53
  0040  74 77 61 72 65 20 28 43 32 36 39 31 2d 41
  0050  45 4e 54 45 52 50 52 49 f2 45 4b 20 2d 4d

```

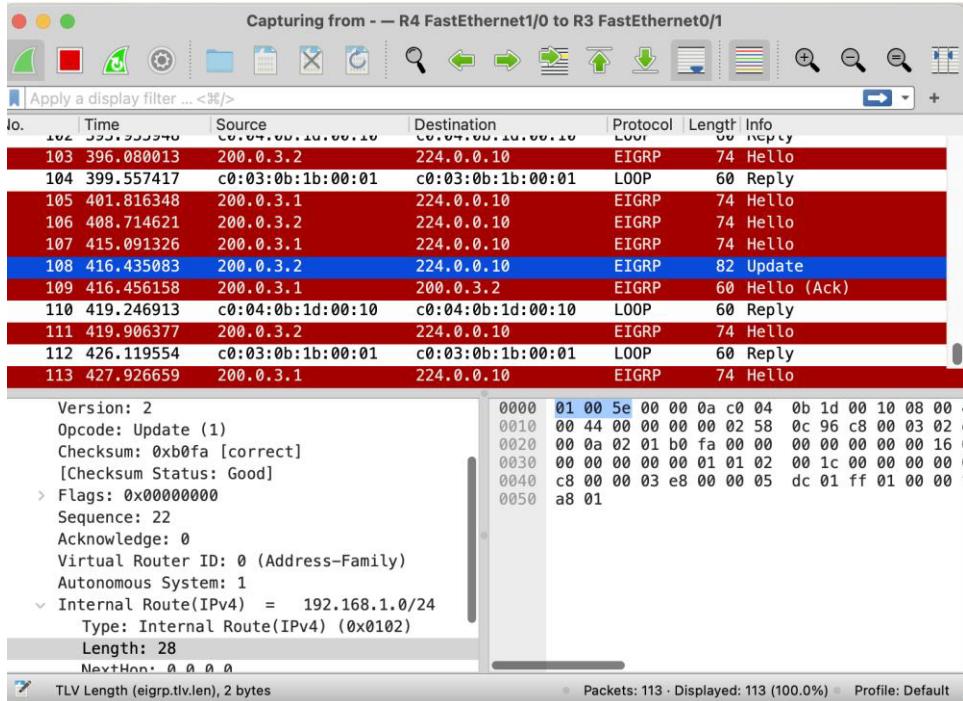
Topology A EIGRP Link Goes Down (Outsider Perspective):



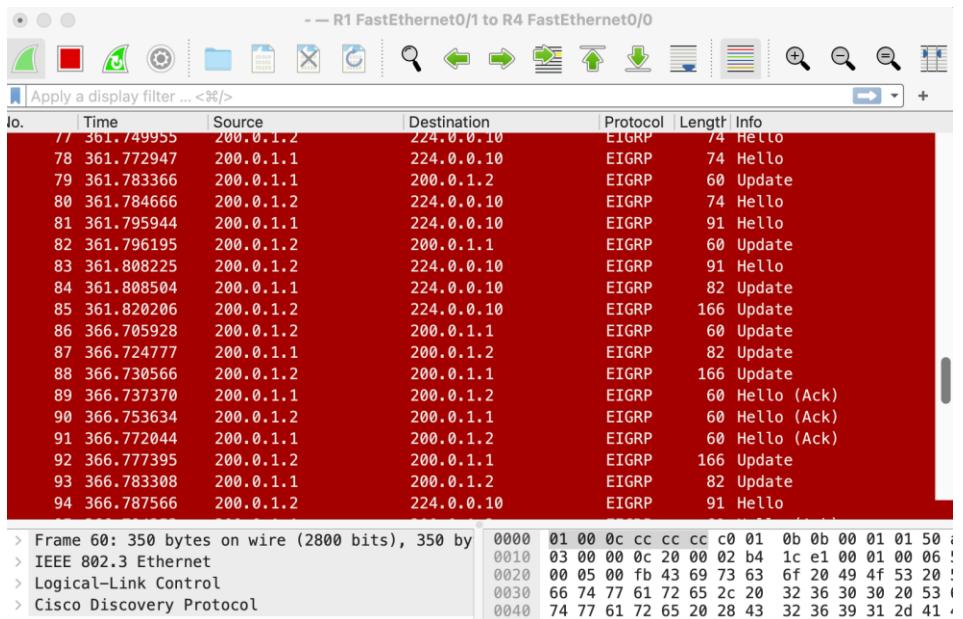
Topology A EIGRP Link Goes Down (Insider Perspective):



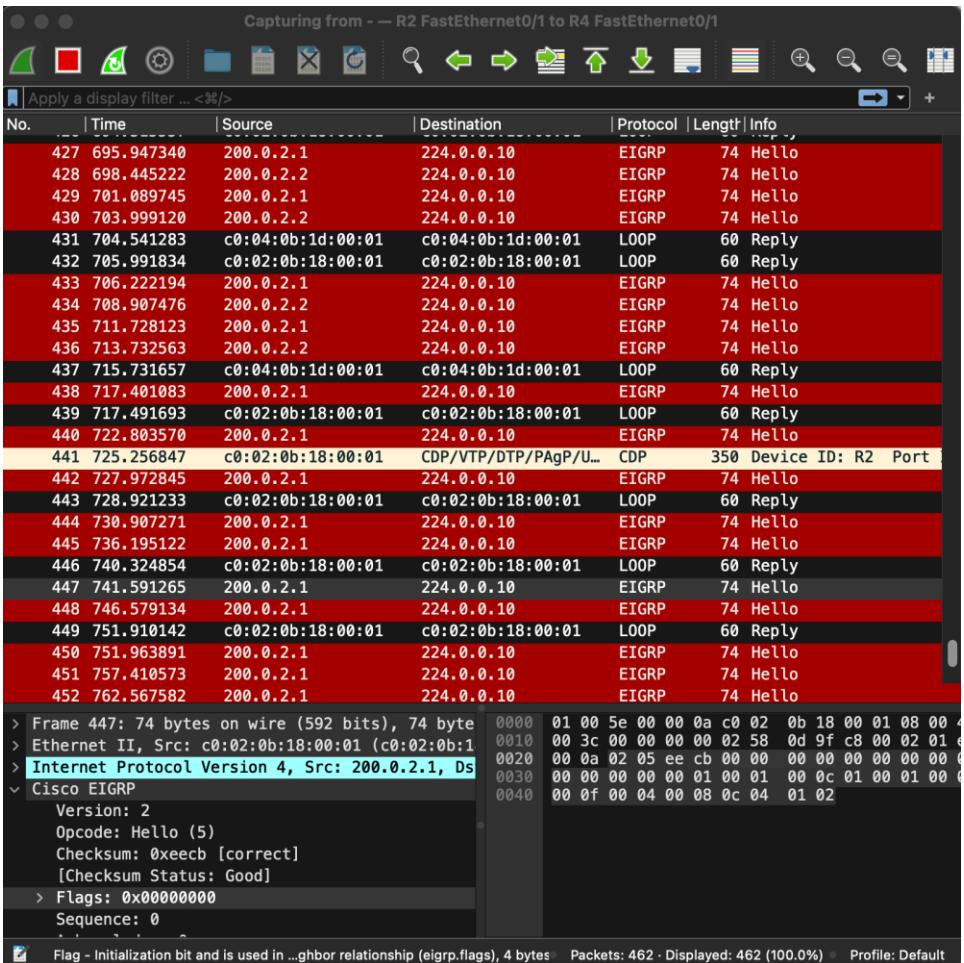
Topology A EIGRP Link Goes Back Up (Outsider Perspective):



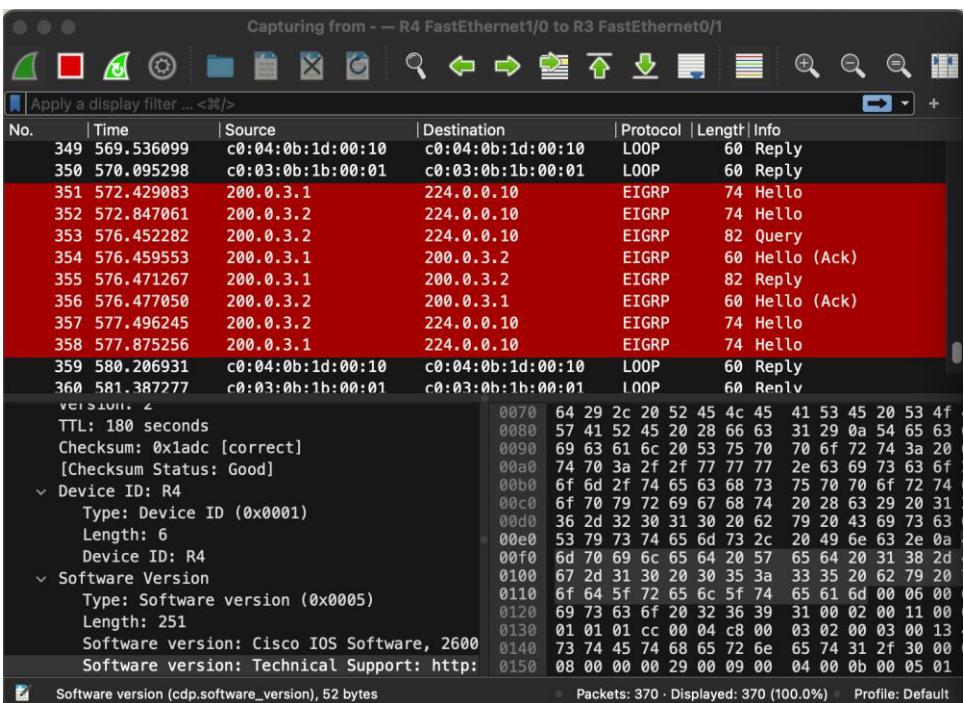
Topology A EIGRP Link Goes Back Up (Insider Perspective):



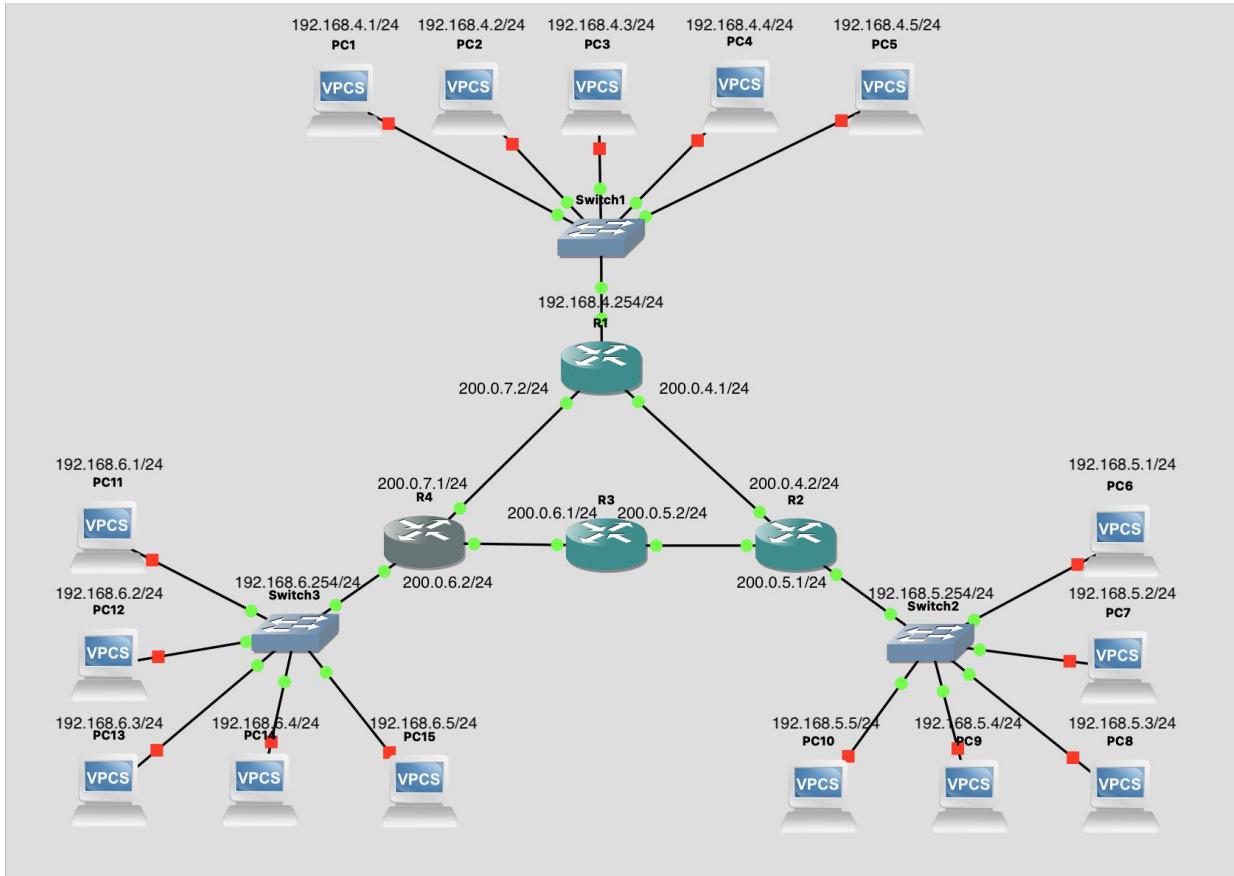
Topology A EIGRP Router Goes Down (Insider Perspective):



Topology A EIGRP Router Goes Down (Outsider Perspective):



Topology B:



Topology B OSPF Proof:

```

lucca - R1 — telnet localhost 5073 — 80x24
ia - IS-IS inter area, * - candidate default, U - per-user static route
o - ODR, P - periodic downloaded static route
Gateway of last resort is not set

C    200.0.4.0/24 is directly connected, FastEthernet0/1
C    200.0.7.0/24 is directly connected, FastEthernet1/0
C    192.168.4.0/24 is directly connected, FastEthernet0/0
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router ospf
% Incomplete command.

R1(config)#router ospf 1
R1(config-router)#network 192.168.4.0 0.0.0.255 area 0
R1(config-router)#network 200.0.4.0 0.0.0.255 area 0
R1(config-router)#network 200.0.7.0 0.0.0.255 area 0
R1(config-router)#
*Mar 1 00:07:51.859: %OSPF-5-ADJCHG: Process 1, Nbr 200.0.5.1 on FastEthernet0/1
from LOADING to FULL, Loading Done
R1(config-router)#
*Mar 1 00:09:38.295: %OSPF-5-ADJCHG: Process 1, Nbr 200.0.7.1 on FastEthernet1/0
from LOADING to FULL, Loading Done
R1(config-router)#[]

lucca - R3 — telnet localhost 5071 — 80x24
Cisco IOS Software, 2600 Software (C2691-ADVENTERPRISEK9-M), Version 12.4(25d),
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Wed 18-Aug-10 05:35 by prod_rel_team
*Mar 1 00:00:07.915: %SNMP-5-COLDSTART: SNMP agent on host R3 is undergoing a cold start
*Mar 1 00:00:08.091: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
*Mar 1 00:00:08.095: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R3#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#no router rip
R3(config)#router ospf 1
R3(config-router)#network 200.0.5.0 0.0.0.255 area 0
R3(config-router)#network 200.0.6.0 0.0.0.255 area 0
R3(config-router)#
*Mar 1 00:08:56.779: %OSPF-5-ADJCHG: Process 1, Nbr 200.0.5.1 on FastEthernet0/0
from LOADING to FULL, Loading Done
R3(config-router)#
*Mar 1 00:09:59.843: %OSPF-5-ADJCHG: Process 1, Nbr 200.0.7.1 on FastEthernet0/0
from LOADING to FULL, Loading Done
R3(config-router)#[]

lucca - R2 — telnet localhost 5070 — 80x24
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Wed 18-Aug-10 05:35 by prod_rel_team
*Mar 1 00:00:08.495: %SNMP-5-COLDSTART: SNMP agent on host R2 is undergoing a cold start
*Mar 1 00:00:08.723: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
*Mar 1 00:00:08.727: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
R2#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#no router rip
R2(config)#router ospf 1
R2(config-router)#network 192.168.5.0 0.0.0.255 area 0
R2(config-router)#network 200.0.4.0 0.0.0.255 area 0
R2(config-router)#network 200.0.4.0 0.0.0.255 area 0
*Mar 1 00:07:41.855: %OSPF-5-ADJCHG: Process 1, Nbr 200.0.7.2 on FastEthernet1/0
from LOADING to FULL, Loading Done
R2(config-router)#network 200.0.5.0 0.0.0.255 area 0
R2(config-router)#
*Mar 1 00:09:56.783: %OSPF-5-ADJCHG: Process 1, Nbr 200.0.6.1 on FastEthernet0/1
from LOADING to FULL, Loading Done
R2(config-router)#[]

lucca - R4 — telnet localhost 5072 — 80x24
RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Wed 18-Aug-10 05:35 by prod_rel_team
*Mar 1 00:00:08.415: %SNMP-5-COLDSTART: SNMP agent on host R4 is undergoing a cold start
*Mar 1 00:00:08.679: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
*Mar 1 00:00:08.679: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R4#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R4(config)#no router rip
R4(config)#router ospf 1
R4(config-router)#network 192.168.6.0 0.0.0.255 area 0
R4(config-router)#network 200.0.6.0 0.0.0.255 area 0
R4(config-router)#
*Mar 1 00:09:28.287: %OSPF-5-ADJCHG: Process 1, Nbr 200.0.7.2 on FastEthernet0/0
from LOADING to FULL, Loading Done
R4(config-router)#
*Mar 1 00:09:59.875: %OSPF-5-ADJCHG: Process 1, Nbr 200.0.6.1 on FastEthernet1/0
from LOADING to FULL, Loading Done
R4(config-router)#[]

```

Topology A Test Cases:

Topology B OSPF R1-R2 No Changes:

Capturing from -- R1 FastEthernet0/1 to R2 FastEthernet1/0								
No.	Time	Source	Destination	Protocol	Length	Info		
6	12.904367	200.0.4.1	224.0.0.5	OSPF	94	Hello Packet		
7	19.889935	c0:02:fa:2a:00:10	c0:02:fa:2a:00:10	LOOP	60	Reply		
8	19.919937	c0:01:fa:33:00:01	c0:01:fa:33:00:01	LOOP	60	Reply		
9	20.021533	200.0.4.2	224.0.0.5	OSPF	94	Hello Packet		
10	22.909150	200.0.4.1	224.0.0.5	OSPF	94	Hello Packet		
11	29.171429	c0:01:fa:33:00:01	CDP/VTP/DTP/PAgP/U...	CDP	350	Device ID: R1 Port		
12	29.861225	c0:02:fa:2a:00:10	c0:02:fa:2a:00:10	LOOP	60	Reply		
13	29.892301	c0:01:fa:33:00:01	c0:01:fa:33:00:01	LOOP	60	Reply		
14	29.992644	200.0.4.2	224.0.0.5	OSPF	94	Hello Packet		
15	32.908851	200.0.4.1	224.0.0.5	OSPF	94	Hello Packet		
16	39.144093	c0:02:fa:2a:00:10	CDP/VTP/DTP/PAgP/U...	CDP	350	Device ID: R2 Port		

```

> Frame 6: 94 bytes on wire (752 bits), 94 bytes
> Ethernet II, Src: c0:01:fa:33:00:01 (c0:01:fa:3
> Internet Protocol Version 4, Src: 200.0.4.1, Ds
> Open Shortest Path First

```

Topology B OSPF R2-R4 No Changes:

Capturing from -- R2 FastEthernet0/1 to R3 FastEthernet0/1								
No.	Time	Source	Destination	Protocol	Length	Info		
1	32.112000	200.0.5.1	224.0.0.5	OSPF	94	Hello Packet		
18	35.176943	200.0.5.2	224.0.0.5	OSPF	94	Hello Packet		
19	40.003896	c0:02:fa:2a:00:01	c0:02:fa:2a:00:01	LOOP	60	Reply		
20	40.011655	c0:03:fa:2c:00:01	c0:03:fa:2c:00:01	LOOP	60	Reply		
21	42.095988	200.0.5.1	224.0.0.5	OSPF	94	Hello Packet		
22	45.179710	200.0.5.2	224.0.0.5	OSPF	94	Hello Packet		
23	49.997302	c0:02:fa:2a:00:01	c0:02:fa:2a:00:01	LOOP	60	Reply		
24	49.997511	c0:03:fa:2c:00:01	c0:03:fa:2c:00:01	LOOP	60	Reply		
25	52.127824	200.0.5.1	224.0.0.5	OSPF	94	Hello Packet		
26	55.176994	200.0.5.2	224.0.0.5	OSPF	94	Hello Packet		
27	60.001487	c0:02:fa:2a:00:01	c0:02:fa:2a:00:01	LOOP	60	Reply		
28	60.005341	c0:03:fa:2c:00:01	c0:03:fa:2c:00:01	LOOP	60	Reply		

```

> Frame 1: 60 bytes on wire (480 bits), 60 bytes
> Ethernet II, Src: c0:02:fa:2a:00:01 (c0:02:fa:2
> Configuration Test Protocol (loopback)
> Data (40 bytes)

```

Topology B OSPF R3-R4 No Changes:

Capturing from -- R3 FastEthernet0/0 to R4 FastEthernet1/0								
No.	Time	Source	Destination	Protocol	Length	Info		
19	35.1550034	200.0.6.2	224.0.0.5	OSPF	94	Hello Packet		
20	41.380163	c0:03:fa:2c:00:00	c0:03:fa:2c:00:00	LOOP	60	Reply		
21	41.526117	c0:04:fa:2f:00:10	c0:04:fa:2f:00:10	LOOP	60	Reply		
22	42.458053	200.0.6.1	224.0.0.5	OSPF	94	Hello Packet		
23	49.986681	200.0.6.2	224.0.0.5	OSPF	94	Hello Packet		
24	51.346057	c0:03:fa:2c:00:00	c0:03:fa:2c:00:00	LOOP	60	Reply		
25	51.544052	c0:04:fa:2f:00:10	c0:04:fa:2f:00:10	LOOP	60	Reply		
26	52.434460	200.0.6.1	224.0.0.5	OSPF	94	Hello Packet		
27	59.988053	200.0.6.2	224.0.0.5	OSPF	94	Hello Packet		
28	61.349425	c0:03:fa:2c:00:00	c0:03:fa:2c:00:00	LOOP	60	Reply		
29	61.530340	c0:04:fa:2f:00:10	c0:04:fa:2f:00:10	LOOP	60	Reply		
30	62.444305	200.0.6.1	224.0.0.5	OSPF	94	Hello Packet		

```

> Frame 1: 94 bytes on wire (752 bits), 94 bytes
> Ethernet II, Src: c0:04:fa:2f:00:10 (c0:04:fa:2
> Internet Protocol Version 4, Src: 200.0.6.2, Ds
> Open Shortest Path First

```

Topology B OSPF R4-R1 No Changes:

No.	Time	Source	Destination	Protocol	Length	Info
32	71.040004	200.0.7.2	224.0.0.5	OSPF	94	Hello Packet
33	73.372962	c0:01:fa:33:00:10	c0:01:fa:33:00:10	LOOP	60	Reply
34	73.401307	c0:04:fa:2f:00:01	c0:04:fa:2f:00:01	LOOP	60	Reply
35	80.027492	200.0.7.1	224.0.0.5	OSPF	94	Hello Packet
36	81.666475	200.0.7.2	224.0.0.5	OSPF	94	Hello Packet
37	83.372794	c0:01:fa:33:00:10	c0:01:fa:33:00:10	LOOP	60	Reply
38	83.387523	c0:04:fa:2f:00:01	c0:04:fa:2f:00:01	LOOP	60	Reply
39	90.0033170	200.0.7.1	224.0.0.5	OSPF	94	Hello Packet
40	91.659652	200.0.7.2	224.0.0.5	OSPF	94	Hello Packet
41	92.673402	c0:01:fa:33:00:10	CDP/VTP/DTP/PAgP/U...	CDP	350	Device ID: R1 Port
42	93.384410	c0:04:fa:2f:00:01	c0:04:fa:2f:00:01	LOOP	60	Reply
43	93.403963	c0:01:fa:33:00:10	c0:01:fa:33:00:10	LOOP	60	Reply

> Frame 1: 94 bytes on wire (752 bits), 94 bytes
> Ethernet II, Src: c0:04:fa:2f:00:01 (c0:04:fa:2
> Internet Protocol Version 4, Src: 200.0.7.1, Ds
> Open Shortest Path First

0000	01	00	5e	00	00	05	c0	04	fa	2f	00	01	08	00
0010	00	50	02	e0	00	00	01	59	06	af	c8	00	07	01
0020	00	05	02	01	00	30	c8	00	07	01	00	00	00	00
0030	00	00	00	00	00	00	00	00	00	ff	ff	ff	00	00
0040	12	01	00	00	00	28	c8	00	07	02	c8	00	07	01
0050	07	02	ff	f6	00	03	00	01	00	04	00	00	00	01

Topology B OSPF Link Goes Down (Insider Perspective):

No.	Time	Source	Destination	Protocol	Length	Info
378	863.416008	c0:04:fa:2f:00:01	c0:04:fa:2f:00:01	LOOP	60	Reply
379	870.055836	200.0.7.1	224.0.0.5	OSPF	94	Hello Packet
380	871.649020	200.0.7.2	224.0.0.5	OSPF	94	Hello Packet
381	872.655759	c0:01:fa:33:00:10	CDP/VTP/DTP/PAgP/U...	CDP	350	Device ID: R1 Port
382	873.368196	c0:01:fa:33:00:10	c0:01:fa:33:00:10	LOOP	60	Reply
383	873.407289	c0:04:fa:2f:00:01	c0:04:fa:2f:00:01	LOOP	60	Reply
384	880.030688	200.0.7.1	224.0.0.5	OSPF	94	Hello Packet
385	882.668789	c0:04:fa:2f:00:01	CDP/VTP/DTP/PAgP/U...	CDP	350	Device ID: R4 Port
386	883.408767	c0:04:fa:2f:00:01	c0:04:fa:2f:00:01	LOOP	60	Reply
387	890.042976	200.0.7.1	224.0.0.5	OSPF	94	Hello Packet
388	893.386096	c0:04:fa:2f:00:01	c0:04:fa:2f:00:01	LOOP	60	Reply
389	894.571412	c0:04:fa:2f:00:01	DEC-MOP-Remote-Conso...		77	DEC DNA Remote Consol
390	900.023831	200.0.7.1	224.0.0.5	OSPF	94	Hello Packet
391	903.399350	c0:04:fa:2f:00:01	c0:04:fa:2f:00:01	LOOP	60	Reply
392	910.048644	200.0.7.1	224.0.0.5	OSPF	94	Hello Packet
393	910.580739	200.0.7.1	224.0.0.5	OSPF	122	LS Update
394	910.651445	200.0.7.1	224.0.0.5	OSPF	94	LS Update
395	913.401182	c0:04:fa:2f:00:01	c0:04:fa:2f:00:01	LOOP	60	Reply

Topology B OSPF Link Goes Down (Outsider Perspective):

No.	Time	Source	Destination	Protocol	Length	Info
393	094.155970	200.0.7.1	224.0.0.5	OSPF	94	Hello Packet
394	895.160561	200.0.5.2	224.0.0.5	OSPF	94	Hello Packet
395	897.235827	200.0.5.1	224.0.0.5	OSPF	122	LS Update
396	897.259439	200.0.5.1	224.0.0.5	OSPF	94	LS Update
397	898.828348	200.0.5.2	224.0.0.5	OSPF	122	LS Update
398	899.755143	200.0.5.2	224.0.0.5	OSPF	98	LS Acknowledge
399	900.000762	c0:02:fa:2a:00:01	c0:02:fa:2a:00:01	LOOP	60	Reply
400	900.018471	c0:03:fa:2c:00:01	c0:03:fa:2c:00:01	LOOP	60	Reply
401	901.353672	200.0.5.1	224.0.0.5	OSPF	78	LS Acknowledge
402	902.125522	200.0.5.1	224.0.0.5	OSPF	94	Hello Packet
403	905.167534	200.0.5.2	224.0.0.5	OSPF	94	Hello Packet
404	910.000850	c0:02:fa:2a:00:01	c0:02:fa:2a:00:01	LOOP	60	Reply

> Frame 1: 60 bytes on wire (480 bits), 60 bytes
> Ethernet II, Src: c0:02:fa:2a:00:01 (c0:02:fa:2
> Configuration Test Protocol (loopback)
> Data (40 bytes)

0000	c0	02	fa	2a	00	01	c0	02	fa	2a	00	01	90	00
0010	01	00	00	00	00	00	00	00	00	00	00	00	00	00
0020	00	00	00	00	00	00	00	00	00	00	00	00	00	00
0030	00	00	00	00	00	00	00	00	00	00	00	00	00	00

Topology B OSPF Link Goes Back Up (Outsider Perspective):

Much of the same as when the link goes down.

Topology B OSPF Link Goes Back Up (Insider Perspective):

Capturing from -- R4 FastEthernet0/1 to R1 FastEthernet1/0

No.	Time	Source	Destination	Protocol	Length	Info
400	940.053402	200.0.7.1	224.0.0.5	OSPF	90	Hello Packet
401	940.071566	200.0.7.2	200.0.7.1	OSPF	94	Hello Packet
402	940.100731	200.0.7.1	200.0.7.2	OSPF	78	DB Description
403	940.112737	200.0.7.1	200.0.7.2	OSPF	94	Hello Packet
404	940.119593	200.0.7.2	200.0.7.1	OSPF	78	DB Description
405	940.135310	200.0.7.1	200.0.7.2	OSPF	218	DB Description
406	940.143965	200.0.7.2	200.0.7.1	OSPF	218	DB Description
407	940.147437	200.0.7.1	200.0.7.2	OSPF	78	DB Description
408	940.155872	200.0.7.2	200.0.7.1	OSPF	78	DB Description
409	940.159968	200.0.7.1	200.0.7.2	OSPF	78	DB Description
410	940.595295	200.0.7.1	224.0.0.5	OSPF	122	LS Update
411	940.595529	200.0.7.2	224.0.0.5	OSPF	122	LS Update
412	940.691530	200.0.7.2	224.0.0.5	OSPF	94	LS Update
413	941.668969	200.0.7.2	224.0.0.5	OSPF	94	Hello Packet
414	942.648742	c0:04:fa:2f:00:01	CDP/VT/P/DTP/PAgP/U...	CDP	350	Device ID: R4 Port
415	943.100744	200.0.7.1	224.0.0.5	OSPF	98	LS Acknowledge
416	943.104919	200.0.7.2	224.0.0.5	OSPF	78	LS Acknowledge
417	943.371444	c0:01:fa:33:00:10	c0:01:fa:33:00:10	LOOP	60	Reply

```

> Frame 378: 60 bytes on wire (480 bits), 60 bytes
> Ethernet II, Src: c0:04:fa:2f:00:01 (c0:04:fa:2
> Configuration Test Protocol (loopback)
> Data (40 bytes)

```

Topology B OSPF Router Goes Down (Insider Perspective):

Capturing from -- R2 FastEthernet0/1 to R3 FastEthernet1/0

No.	Time	Source	Destination	Protocol	Length	Info
471	1092.953077	c0:02:fa:2c:00:01	c0:02:fa:2c:00:01	LOOP	68	Reply
472	1090.083477	c0:02:fa:2c:00:01	c0:02:fa:2c:00:01	LOOP	68	Reply
473	1092.111319	200.0.5.1	c0:02:fa:2c:00:01	OSPF	94	Hello Packet
474	1090.03149	c0:02:fa:2c:00:01	c0:02:fa:2c:00:01	LOOP	68	Reply
475	1092.138669	200.0.5.1	c0:02:fa:2c:00:01	OSPF	94	Hello Packet
476	1070.028824	c0:02:fa:2c:00:01	c0:02:fa:2c:00:01	LOOP	68	Reply
477	1072.139524	200.0.5.1	c0:02:fa:2c:00:01	OSPF	94	Hello Packet
478	1092.093477	c0:02:fa:2c:00:01	c0:02:fa:2c:00:01	LOOP	68	Reply
479	1092.119828	200.0.5.1	c0:02:fa:2c:00:01	OSPF	94	Hello Packet
480	1090.011875	c0:02:fa:2c:00:01	c0:02:fa:2c:00:01	LOOP	68	Reply
481	1092.101775	200.0.5.1	c0:02:fa:2c:00:01	OSPF	94	Hello Packet

```

> Frame 472: 60 bytes on wire (480 bits), 60 bytes
> Ethernet II, Src: c0:02:fa:2a:00:01 (c0:02:fa:2
> Configuration Test Protocol (loopback)
> Data (40 bytes)

```

Topology B OSPF Router Goes Down (Outsider Perspective):

Capturing from -- R1 FastEthernet0/1 to R2 FastEthernet1/0

No.	Time	Source	Destination	Protocol	Length	Info
488	1092.884252	200.0.4.1	224.0.0.5	OSPF	94	Hello Packet
489	1095.556053	200.0.4.2	224.0.0.5	OSPF	122	LS Update
490	1098.100875	200.0.4.1	224.0.0.5	OSPF	78	LS Acknowledge
491	1099.880587	c0:02:fa:2a:00:10	c0:02:fa:2a:00:10	LOOP	60	Reply
492	1099.907803	c0:01:fa:33:00:01	c0:01:fa:33:00:01	LOOP	60	Reply
493	1100.012046	200.0.4.2	224.0.0.5	OSPF	94	Hello Packet
494	1101.348827	200.0.4.1	224.0.0.5	OSPF	122	LS Update
495	1101.371782	200.0.4.1	224.0.0.5	OSPF	94	LS Update
496	1102.900563	200.0.4.1	224.0.0.5	OSPF	94	Hello Packet
497	1103.852027	200.0.4.2	224.0.0.5	OSPF	98	LS Acknowledge
498	1109.195988	c0:01:fa:33:00:01	CDP/VT/P/DTP/PAgP/U...	CDP	350	Device ID: R1 Port
499	1109.875121	c0:02:fa:2a:00:10	c0:02:fa:2a:00:10	LOOP	60	Reply

```

> Frame 6: 94 bytes on wire (752 bits), 94 bytes
> Ethernet II, Src: c0:01:fa:33:00:01 (c0:01:fa:3
> Internet Protocol Version 4, Src: 200.0.4.1, Ds
> Open Shortest Path First

```

General Observation Notes:

My screenshots above show three different scenarios. The first scenario is one in which nothing has been taken offline. The second scenario shows what happens when a link is taken offline, and then what happens when it goes back online. The third scenario shows what happens when a router is taken offline.

EIGRP Observations:

In the first scenario (where nothing has been taken offline), routers from both sides of the link send EIGRP Hello messages to each other to show that they are still around. This phenomenon is present in every link between routers.

In the second scenario (when a link is taken offline), firstly, one of the routers repeatedly tries to get the other one to respond to no avail. After a while of this, it queries the rest of the routers, and they respond with an acknowledgment. If this link was to go back online after being down, a flurry of pings would go between the two routers connected to it, but mostly updates and acknowledgements.

In the third scenario (when a router is taken offline), much of the same happens, with the only difference being when one of the other routers is queried, it responds with a “reply” as well as the acknowledgment it did when being queried when the link tested above went offline.

OSPF Observations:

In the first scenario (where nothing has been taken offline), routers from both sides of the link send OSPF Hello messages to each other to show that they are still around. This phenomenon is present in every link between routers.

In the second scenario (when a link is taken offline), firstly, one of the routers repeatedly tries to get the other one to respond to no avail. After a while of this, the router that has not been able to ping the other updates with new routing information and sends these LS updates to other routers for them to update their routing tables. Those other routers then respond with LS acknowledgements. If this link was to go back online after being down, other routers would send LS updates and respond to each other with the same LS acknowledgements. The routers on each side of the link that went down would send each other a flurry of “DB Descriptions” and updates.

In the third scenario (when a router is taken offline), the topology treats it identically as it would in the case of a link going down and sends around the same sets of LS updates and acknowledgements (unlike the minor differences in how EIGRP treats this situation with replies).