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**Welcome
To
Network for you
EIGRP-BFD**



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Bidirectional Forwarding Detection (BFD):

- Bidirectional Forwarding Detection (BFD) is a network protocol that is used to detect faults between two routers or switches connected by a link. Or BFD (Bidirectional Forwarding Detection) is a super-fast protocol that is able to detect link failures within milliseconds or even microseconds.
- It provides low-overhead detection of faults even on physical media that doesn't support failure detection of any kind, such as Ethernet, virtual circuits, tunnels and MPLS Label Switched Paths.
- All dynamic routing protocols have some sort of mechanism to detect link failures.
- OSPF uses hello packets & dead interval, EIGRP uses hello packets & holddown timer.
- OSPF or EIGRP are able to quickly select another path once they lose a neighbor.
- But OSPF and EIGRP takes a while for them to realize that something is wrong.
- Bidirectional Forwarding Detection runs independent from any routing protocols.
- Bidirectional Forwarding Detection provides fast forwarding-path failure detection.
- Bidirectional Forwarding Detection is used in networks to quickly detect link failures.
- Bidirectional Forwarding Detection hence enhance speed of convergence of routing.
- Bidirectional Forwarding Detection can run independent of any other protocol as well.
- Bidirectional Forwarding Detection run with other protocols OSPF,EIGRP,BGP,HSRP etc.
- BFD Bidirectional Forwarding detection for Dynamic routing protocols like BGP, EIGRP.
- With help of BFD, Network engineers can detect forwarding path failures at uniform rate.
- Bidirectional Forwarding Detection provides significantly cut overall network convergence.
- Bidirectional Forwarding Detection works only for the directly connected neighbors only.
- Bidirectional Forwarding Detection (BFD) neighbors must be no more than one IP hop away.
- Bidirectional Forwarding Detection support is not available for all platforms and interfaces.
- Bidirectional Forwarding Detection interval is time in **milliseconds** after BFD packet is sent.
- Bidirectional Forwarding Detection supports Enhanced Interior Gateway Routing Protocol.
- BFD for BGP supports single-hop External Border Gateway Protocol and Internal BGP peers.
- Bidirectional Forwarding Detection supports the Open Shortest Path First routing protocol.
- Bidirectional Forwarding Detection operates **in two modes Asynchronous & Demand mode.**
- Bidirectional Forwarding Detection asynchronous mode is similar to hello & hold-down time.
- BFD will keep sending hello packets when don't receive some, the session is teared down.
- Asynchronous mode keep sending hello packets if hello packets are not received torn down.
- Demand mode is different has found neighbor it won't continuously send control packets.
- Bidirectional Forwarding Detection Demand Mode uses a polling mechanism & reachability.
- Cisco or other vendor doesn't support Bidirectional Forwarding Detection demand mode.

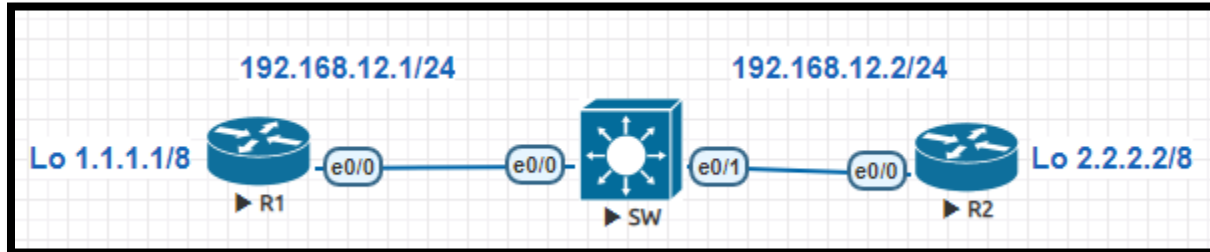
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Lab Time:



R1 Configuration	R2 Configuration
<pre>en config t hostname R1 int e0/0 ip add 192.168.12.1 255.255.255.0 no sh int lo 0 ip add 1.1.1.1 255.0.0.0 router eigrp 1 network 192.168.12.0 network 1.0.0.0 no auto-summary ----- Let make e0/0 down Int e0/0 Sh</pre>	<pre>en config t hostname R2 int e0/0 ip add 192.168.12.2 255.255.255.0 no sh int lo 0 ip add 2.2.2.2 255.0.0.0 router eigrp 1 network 192.168.12.0 network 2.0.0.0 no auto-summary</pre>

R2 took approximately 14 seconds to break the EIGRP neighborship.

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```
R2#sh ip eigrp neighbors
EIGRP-IPv4 Neighbors for AS(1)
H   Address          Interface      Hold Uptime   SRTT   RTO   Q
Seq                                     (sec)        (ms)         Cnt
Num
0   192.168.12.1      Et0/0         12 00:02:31   10    100   0
5
```

- Let's use BFD with EIGRP and then again shut e0/0 on R1 to break the EIGRP.
- Neighborhood and check on R2 how much time it takes to break EIGRP neighborhood.
- Bidirectional Forwarding Detection interval is time in milliseconds after BFD packet is sent.
- Minimum receive interval how often we expect to receive a BFD packet from our neighbor.
- Last value Multiplier to configure is for the hold-down. Value used to multiply the interval.

Enabling BFD on R1	Enabling BFD on R2
interface e0/0 bfd interval 50 min_rx 50 multiplier 3 router eigrp 1 bfd all-interfaces	interface e0/0 bfd interval 50 min_rx 50 multiplier 3 router eigrp 1 bfd all-interfaces

```
R2#sh ip eigrp neighbors
EIGRP-IPv4 Neighbors for AS(1)
H   Address          Interface      Hold Uptime   SRTT   RTO   Q
Seq                                     (sec)        (ms)         Cnt
Num
0   192.168.12.1      Et0/0         14 00:00:53   3     100   0
8
R2#
R2#
R2#sh ip eigrp neighbors
*Sep 29 05:49:37.602: %DUAL-5-NBRCHANGE: EIGRP-IPv4 1: Neighbor 192.168.12.1 (Et
hernet0/0) is down: BFD peer down notified
R2#sn ip eigrp neighbors
EIGRP-IPv4 Neighbors for AS(1)
R2#
R2#sh ip eigrp neighbors
EIGRP-IPv4 Neighbors for AS(1)
```

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