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# draft-merciaz-idr-bgp-bfd-strict-mode-00

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# Problem Description

- Bidirectional Forwarding Detection BFD [[RFC5882](#)] enables routers to monitor data plane connectivity and detect faults in forwarding path.
- Possible failure scenarios when BGP interaction with BFD
  - a. A BGP session may be established while BFD session is down.
  - b. A degraded or poor-quality link may result in the corresponding BFD session going up and down frequently while BGP session is established.
  - c. The consequence of the impact would be traffic being black-holed, routing churn and network interruptions.

# Proposed Solution: BGP BFD Strict-Mode

- This proposed draft defines BGP “strict-mode” operation as preventing BGP session establishment until speakers have a stable BFD session between them.
- A BGP BFD capability is defined for BGP protocol signaling. This document also specifies the BGP protocol extensions for BGP capability [[BGP-CAP](#)] for announcing BFD parameters including a BGP speaker’s support for “strict-mode”, i.e., requiring a BFD session for BGP session establishment.

# BGP BFD Capability Definition

BGP BFD Capability is defined as follows:

Capability code: TBD

Capability length: 1 octet

Capability value: Consists of 1 octet BFD flags

BFD Flags: This field contains bit flags relating to BFD.

```
0 1 2 3 4 5 6 7
+-+--+--+--+--+--+
|S| Reserved  |
+-+--+--+--+--+--+
```

The most significant bit (MSB) is defined as state of Strict-Mode(or "S" bit)

# Operations of “Strict-Mode”

- A BGP speaker with BFD strict-mode enabled MUST advertise the BGP BFD capability with "S" bit value 1
- A BGP speaker which supports BGP BFD capability advertisement, MUST examine BGP BFD capability received from its peer.
- If both the local BGP speaker and its remote BGP peer have BFD strict-mode enabled, then BGP session establishment will be prevented until its BFD session is up.
- If either peer has not advertised BGP BFD Capability with strict-mode enabled, then a BFD session SHOULD NOT be required prior to BGP session establishment.

# Summary & Conclusion

- We have identified the problem of BGP and BFD interaction which could result in routing churn and network interruptions.
- We propose a solution to the problem referred as BGP BFD “strict-mode”:
  - Prevents BGP session establishment until BFD session is up and stabilized.
  - Enables a BGP speaker to signal its peer additional BFD extensions using an optional parameter BFD capability
  - Following the proposed “strict-mode” operations will avoid situations which result in routing churn and minimize the impact of network interruptions.