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BFD Working Group

draft-ketant-lsr-ospf-bfd-strict-mode-01

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Problem Statement

- OSPF uses BFD for verification of bidirectional forwarding path and fast detection of any failures to bring down its adjacency – RFC5882
- OSPF Router does not know if BFD is enabled/supported by its neighbour; hence OSPF adjacency bring up is not contingent on successful BFD verification a priori
- In certain scenarios (e.g. lossy links), OSPF adjacency may come UP but not BFD; may result in
 - Traffic loss in forwarding path
 - Frequent adjacency flaps and resultant network churn/instability

What does this draft propose?

- Enables an OSPFv2/v3 router to signal its neighbour that
 - It desires to monitor using BFD, and
 - It does not want to bring up OSPF adjacency until BFD session establishment is successful – known as **BFD “strict mode”**
- When OSPF neighbours on a link detect that they both want to operate with BFD “strict mode”, they wait for BFD session establishment before bringing their adjacency to FULL state

- RFC 6213 specifies similar extensions for IS-IS

How is this done?

- OSPF router indicates its desire to operate in BFD “strict mode” to its neighbour using Link-Local Signalling block included in its Hello Messages
 - SET “B” Flag in LLS Extended Option & Flags Field
- Adjacency is brought up in a BFD “strict mode” only when both routers on a link indicate this capability
- BFD session establishment is requested when a new neighbour is detected with B flag set in it’s Hello
- Neighbour FSM is held in Init State until BFD session UP
 - i.e. do not include neighbour in your hello until BFD session is UP
- On BFD UP, the neighbour address is included in the hello and adjacency proceeds to 2-way/Exstart

Backward Compatibility

- BFD “strict mode” operation is signalled in link-local manner between neighbours
- Existing OSPF adjacency bring-up procedures used with neighbour that is not setting B flag
- Change is only in the initial adjacency bring up and in the Init state of FSM – rest of OSPF neighbour FSM and use of BFD for bringing down adjacency is unchanged

BFD Interactions

- There is no change in the interactions between BFD and OSPF except for the part that OSPF waits for BFD UP before proceeding with its adjacency bring-up
- Enable/disable of BFD does not have any impact on adjacency that is already established (existing mode of operation)
- Enable/disable of BFD strict-mode also does not have any impact on adjacency that is established
 - used only in initial adjacency bring-up

Next Steps ...

- This mechanism is currently deployed but without the signalling ability (i.e. with explicit config) and may cause interop issues
- Seeking feedback/inputs in standardizing this mode of operation
- And adopting this work in LSR WG if we have sufficient interest there ...