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 from WG in standardizing this mode of operation.
- And adopting this work if we have sufficient interest ...