Populate to FIB Action for FlowSpec

draft-li-idr-flowspec-populate-to-fib-01

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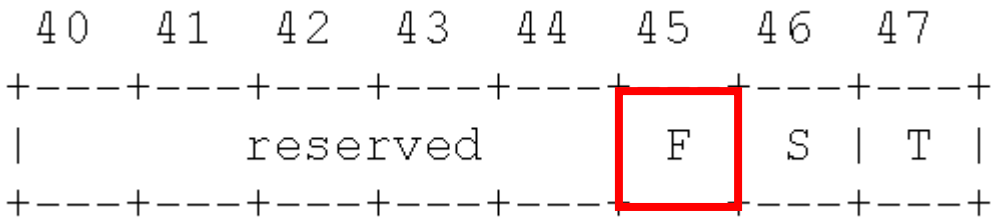
Main content

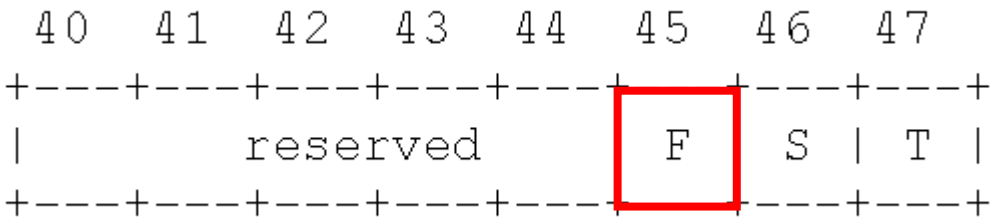
- A bit, F bit, is defined in traffic action extended community, which can be used by FlowSpec to indicate the associated specifications be populated in FIB (Forwarding Information Base) after appropriate process.



Why?

- In routers, BGP FlowSpec rules are stored in distinct set of RIBs (Routing Information Base) according to their (AFI, SAFI) pairs.
- After validation and ordering processing, these RIBs are then populated to the dedicated hardware usually shared with ACLs (Access Control List).
- The dedicated hardware is much more expensive and space limited when compared with the FIB (Forwarding Information Base).
- When FlowSpec is used for dynamic traffic flow steering, the number of FlowSpec rules increases and changes frequently.
- So, to save the limited and expensive space of the dedicated hardware, it is better to populate some FlowSpec specifications to FIB if possible.
- The destination prefix based FlowSpec specifications are suitable to be populated to FIB.
- **We have no method to do this at present.**

How?



- A new bit F is defined in traffic action extended community to indicate the associated FlowSpec specifications are suitable to be populated to FIB.
- If F bit is set and the associated FlowSpec specifications can not be populated to FIB, the associated FlowSpec specifications MUST be ignored.
- The new bit F is solicited to be assigned by IANA.

Implementation Considerations

- FlowSpec rules are ordering sensitive. After ordering processing as per 5.1 of RFC5575, they are searched sequentially until a matching rule is found.
- FIB entries have no ordering implication. Longest prefix matching is the rule to choose the matching FIB entry.
- Only the destination prefix based, F bit tagged FlwoSpec rules that pass the validation and ordering processing are suitable to be populated into FIB.
- FlowSpec rules have higher priority than corresponding IGP and BGP routing entries. To guarantee this:
  - When populating the FIB, the FlowSpec rules with F bit tagged are preferred than the corresponding IGP and BGP routing entries.
  - When a FlowSpec rule is being populated into FIB, the FIB entries, including those come from IGP or BGP updates, covered by this FlowSpec rule MUST be removed or replaced by it.
  - The populated FlowSpec rules in the FIB MUST not be overridden by IGP or BGP updates

Next steps

- Accepted by the working group?

Thanks