OSPF Extensions for Flow Specification

draft-liang-ospf-flowspec-extensions-02

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Motivation

◆ For the network only deploying IGP (Interior Gateway Protocol) (e.g. OSPF), it is expected to extend IGP to distribute FlowSpec info. The advantage is to mitigate the impacts of Denial-of-Service (DoS) attacks.

◆ This document also defines a new OSPFv2 FlowSpec Opaque Link State Advertisement (LSA) / OSPFv3 FlowSpec LSA encoding format that can be used to distribute FlowSpec info.
Use Cases for OSPF based FlowSpec Distribution (1/3)

BGP/MPLS VPN: Traffic Analyzer Deployed in Provider Network

Figure 1: Traffic Analyzer deployed in Provider Network
Use Cases for OSPF based FlowSpec Distribution (2/3)

BGP/MPLS VPN: Traffic Analyzer Deployed in Customer Network

Figure 2: Traffic Analyzer deployed in Customer Network
Use Cases for OSPF based FlowSpec Distribution (3/3)

OSPF Campus Network

Figure 3: OSPF Campus Network
This document defines a new OSPF flow specification Opaque LSA encoding format that can be used to distribute traffic flow specifications. This new OSPF FlowSpec Opaque LSA is extended based on [RFC5250].

**Figure 4: FlowSpec Opaque LSA**

- Opaque type: OSPF FlowSpec Opaque LSA (Type Code: TBD1)
This document defines a new OSPFv3 flow specification LSA encoding format that can be used to distribute traffic flow specifications. This new OSPFv3 FlowSpec LSA is extended based on [RFC5340].

Figure 5: OSPFv3 FlowSpec LSA

- LSA Function Code: FlowSpec LSA (Type Code: TBD2)
OSPF Extensions for FlowSpec Info

The FlowSpec Opaque LSA carries one or more FlowSpec Filters TLVs and corresponding FlowSpec Action TLVs.

![Figure 6: OSPF FlowSpec Filters TLV](image)

- Type: the TLV type (Type Code: TBD3)
- Filters: the same as "flow-spec NLRI value" defined in [RFC5575].

Table 1: Traffic Filtering Actions in [RFC5575]

<table>
<thead>
<tr>
<th>type</th>
<th>FlowSpec Action</th>
<th>encoding</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x8006</td>
<td>traffic-rate</td>
<td>2-byte as#, 4-byte float</td>
</tr>
<tr>
<td>0x8007</td>
<td>traffic-action</td>
<td>bitmask</td>
</tr>
<tr>
<td>0x8008</td>
<td>redirect</td>
<td>6-byte Route Target</td>
</tr>
<tr>
<td>0x8009</td>
<td>traffic-marking</td>
<td>DSCP value</td>
</tr>
</tbody>
</table>
OSPF routers may use Router Information (RI) LSA [RFC4970] for OSPF features advertisement and discovery. The FlowSpec info requires an additional capability for the OSPF router.
When FlowSpec info is from the BGP protocol, it needs to be imported to the IGP protocol. This extended community is used to specify a particular action, i.e. importing the FlowSpec info to the IGP protocol.
Next Step

- AS the flow information is domain wide, we need to describe the flooding problem.
Thanks!