Extensions to OSPF for Source Label Distribution
draft-chen-ospf-source-label-distribution-00

Abstract

An MPLS Source Label (SL) is defined to identify a node that is (one of) the ingress LSRs to a specific LSP. This document defines extensions to OSPF protocol for distribution of the mapping of an MPLS Source Label to an specific LSR. Therefore, the egress and intermediate LSRs can determine from which LSR an MPLS packet is sent.

This document also defines OSPF extensions to advertise the Source Label Capability (SLC) of each LSR that indicates whether an LSR can process the Source Label. With the SLC, an ingress LSR can determine whether it is allowed to insert a Source Label into the label stack for a specific LSP.

Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on August 17, 2014.
1. Introduction

The MPLS Source Label is defined in [I-D.chen-mpls-source-label], it is used to identify (one of) the ingress LSR(s) of an LSP. To identify from where an MPLS packet is sent, a pure Source Label (SL) is not enough, it needs to know to which LSR a SL is correlated. Therefore, there needs a mechanism to distribute the mapping information between a SL and its correlated LSR.

In addition, for an ingress LSR, before inserting a SL in the label stack of an LSP, it needs to know whether the egress LSR has the capability to process the SL, otherwise the packet will be dropped at the egress LSR. The capability is called Source Label Capability (SLC).

This document defines extensions to OSPF protocol to distribute SL to LSR mapping and advertise the SLC of each LSR.
2. Extensions to OSPF

The Source Label TLV is defined to distribute the Source Label to ingress LSR mapping information and the SLC. No sub-TLV is currently defined for the Source Label TLV.

The Source Label TLV is advertised in an OSPF Router Information (RI) [RFC4790] Link State Advertisement (LSA), it has the following format:

```
<p>|              Type             |             Length            |
|--------------------------------------------------------------------------|</p>
<table>
<thead>
<tr>
<th>Router ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserved</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
```

Figure 1 - OSPF Source Label TLV format

The value of Type field is TBD1.

The Length field defines the length of the Reserved and Source Label in octets, the value is 4.

The Source Label field contains the Source Label that identifies the advertising LSR.

3. Elements of Procedure

The Source Label TLV is carried in the OSPF Router Information (RI) LSAs that is defined in [RFC4790]. All the procedures that defined in [RFC4790] are inherited here.

The flooding scope of the Source Label TLV can be either area local or entire OSPF domain. The flooding scope is controlled by the Opaque LSA type in OSPFv2 [RFC2370] and by the S1 and S2 bits in OSPFv3 [RFC2740]. If the flooding scope is area local, the Source Label TLV MUST be carried within an OSPFv2 Type 10 RI LSA or within an OSPFv3 RI LSA with the S1 bit set and the S2 bit clear. If the flooding scope is the entire IGP domain, the Source Label TLV MUST be carried within an OSPFv2 Type 11 RI LSA or within an OSPFv3 RI LSA with the S1 bit clear and the S2 bit set.

The Source Label TLV is an optional TLV. Upon receipt the TLV, a router will silently ignore the TLV as defined in [RFC4790] if it
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does not support it. If Source Label TLV is not present that MUST be
interpreted as signaling of non-support of SLC by the LSR. Presence
of a Source Label TLV MUST be interpreted as support of SLC by the
LSR. A Source Label TLV MUST appear only one time in an LSA.

4. IANA Considerations

IANA is requested to assign a new TLV code point for the Source Label
TLV carried within the Router Information LSA.

<table>
<thead>
<tr>
<th>Type</th>
<th>Value</th>
<th>TLV Name</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBD1</td>
<td></td>
<td>Source Label</td>
<td>(this document)</td>
</tr>
</tbody>
</table>

5. Security Considerations

TBD.

6. Acknowledgements

7. References

7.1. Normative References

[RFC2119]  Bradner, S., "Key words for use in RFCs to Indicate

[RFC2370]  Coltun, R., "The OSPF Opaque LSA Option", RFC 2370, July
1998.

2740, December 1999.

[RFC4790]  Newman, C., Duerst, M., and A. Gulbrandsen, "Internet
Application Protocol Collation Registry", RFC 4790, March
2007.

7.2. Informative References

[I-D.chen-mpls-source-label]
Chen, M., Building, K., Li, Z., and L. Fang,
"MultiProtocol Label Switching (MPLS) Source Label",
draft-chen-mpls-source-label-01 (work in progress),
October 2013.
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