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Signaling Entropy Label Capability Using OSPF
draft-xu-ospf-mpls-elc-01

Abstract

   Multi Protocol Label Switching (MPLS) has defined a mechanism to load
   balance traffic flows using Entropy Labels (EL). An ingress LSR
   cannot insert ELs for packets going into a given tunnel unless an
   egress LSR has indicated via signaling that it can process ELs on
   that tunnel. This draft defines a mechanism to signal that
   capability using OSPF. This mechanism is useful when the label
   advertisement is also done via OSPF.

Status of This Memo

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1. Introduction

Multi Protocol Label Switching (MPLS) has defined a method in
[RFC6790] to load balance traffic flows using Entropy Labels (EL).
An ingress LSR cannot insert ELs for packets going into a given
tunnel unless an egress LSR has indicated that it can process ELs on
that tunnel. [RFC6790] defines the signaling of this capability
(a.k.a Entropy Label Capability - ELC) via signaling protocols.
Recently, mechanisms are being defined to signal labels via link
state Interior Gateway Protocols (IGP) such as OSPF
[I-D.ietf-ospf-segment-routing-extensions] . In such scenario the
signaling mechanisms defined in [RFC6790] are inadequate. This draft
defines a mechanism to signal the ELC using OSPF. This mechanism is
useful when the label advertisement is also done via OSPF. In
addition, in the cases where stacked LSPs are used for whatever
reasons (e.g., SPRING-MPLS [I-D.gredler-spring-mpls]
[I-D.filsfils-spring-segment-routing-mpls]), it would be useful for
ingress LSRs to know each LSR's capability of reading the maximum
label stack deepth. This capability, referred to as Readable Label
Stack Deepth Capability (RLSDC) can be used by ingress LSRs to
determine whether it's necessary to insert an EL for a given LSP
tunnel in the case where there has already been at least one EL in
the label stack [I-D.kini-mpls-spring-entropy-label] . Of course,

even it has been determined that it's neccessary to insert an EL for
a given LSP tunnel, if the egress LSR of that LSP tunnel has not yet
indicated that it can process ELs for that tunnel, the ingress LSR
MUST NOT include an entropy label for that tunnel as well.

1.1. 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].

2. Terminology

This memo makes use of the terms defined in [RFC6790] and [RFC4970].

3. Advertising ELC Using OSPF

The OSPF Router Information (RI) Opaque LSA defined in [RFC4970] is
used by OSPF routers to announce their capabilities. A new TLV
within the body of this LSA, called ELC TLV is defined to advertise
the capability of the router to process the ELs. It is formatted as
described in Section 2.1 of [RFC4970]. This TLV is applicable to
both OSPFv2 and OSPFv3. The Type for the ELC TLV needs to be
assigned by IANA and it has a Length of zero. The scope of the
advertisement depends on the application but it is recommended that
it SHOULD be AS-scoped.

4. Advertising RLSDC Using OSPF

A new TLV within the body of the OSPF RI LSA, called RLSDC TLV is
defined to advertise the capability of the router to read the maximum
label stack depth. It is formatted as described in Section 2.1 of
[RFC4970] with a Type code to be assigned by IANA and a Length of
one. The Value field is set to the maximum readable label stack
deepth in the range between 1 to 255. The scope of the advertisement
depends on the application but it is RECOMMENDED that it SHOULD be
domain-wide. If a router has multiple linecards with different
capabilities of reading the maximum label stack deepth, the router
MUST advertise the smallest one in the RLSDC TLV. This TLV is
applicable to both OSPFv2 and OSPFv3.

5. Acknowledgements

The authors would like to thank Yimin Shen and George Swallow for
their comments.

6. IANA Considerations

   This memo includes a request to IANA to allocate two TLV types from
   the OSPF RI TLVs registry.

7. Security Considerations

   This document does not introduce any new security risk.

8. References

8.1. Normative References

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8.2. Informative References

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