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H-bit Support for OSPFv2
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Abstract

OSPFv3 [[RFC5340](#)] defines an option field for router-LSAs known as a R-bit. If the R-bit is clear, an OSPFv3 router can participate in OSPF topology distribution without acting as a forwarder to forward the transit traffic. In such cases, an OSPF router would only accept traffic intended for local delivery. This draft defines R-bit functionality for OSPFv2 defined in [[RFC2328](#)].

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[1.](#) Introduction

OSPFv3 [[RFC5340](#)] defines an option field for router-LSAs known as a R-bit. If the R-bit is clear, an OSPF router can participate in OSPFv3 topology distribution without acting as a forwarder to forward the transit traffic. In such cases, an OSPF router would only accept traffic intended for local delivery.

This functionality is particularly useful for BGP Route Reflectors known as virtual Route Reflectors (vRRs) that are not in the forwarding path but are in central location such as data centers. Such Route Reflectors typically are used for route distribution and are not capable of forwarding data traffic. However, they need to participate in the IGP routing for: 1) computing SPFs for Optimal Route Reflection functionality defined in [I-D.ietf-idr-bgp-orr], and 2) resolving reachability for its Route Reflector Clients.

This draft defines R-bit functionality for OSPFv2 defined in [[RFC2328](#)] by introducing a new Router LSA bit known as a "H-bit".

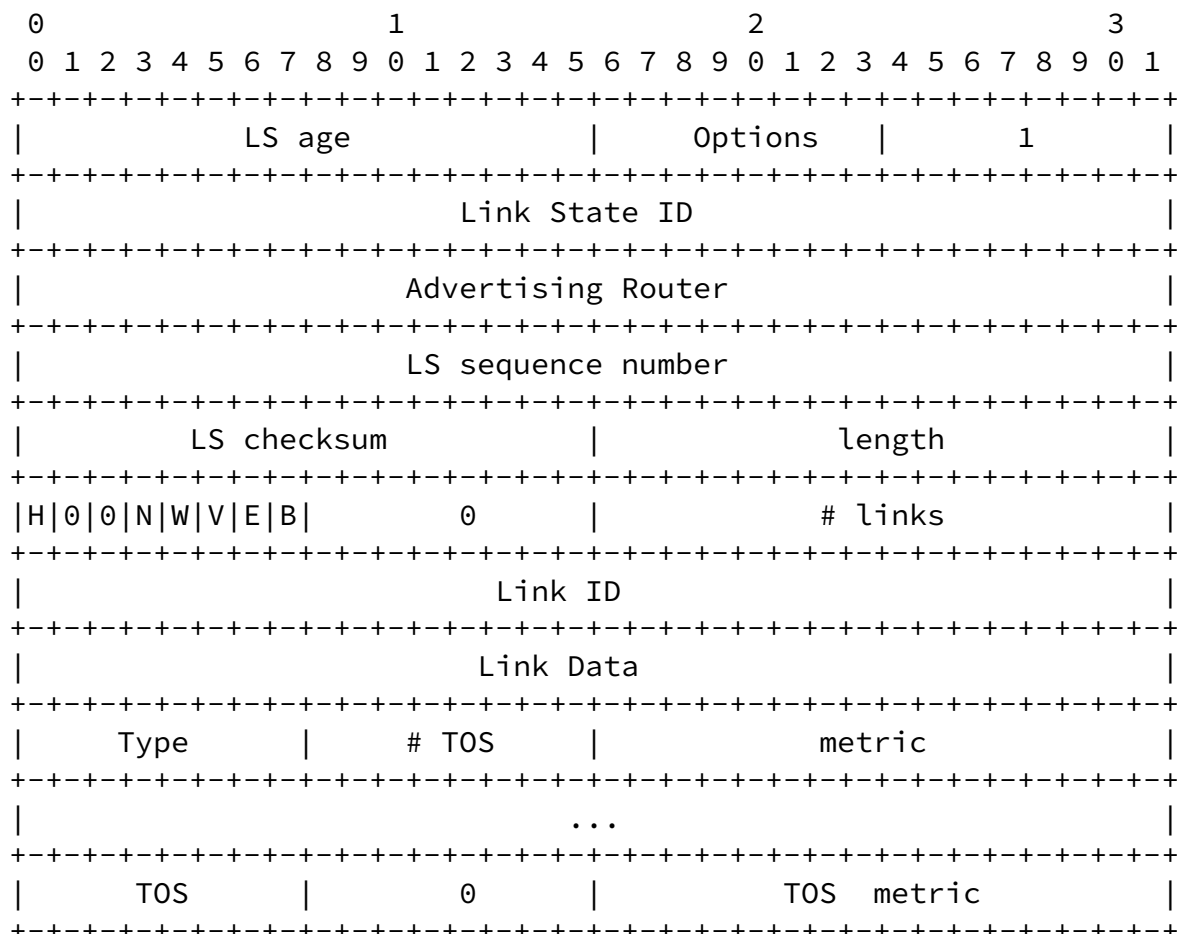
[2.](#) Requirements Language

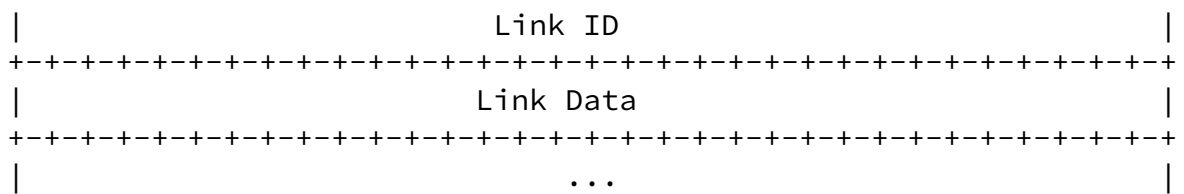
The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",

"SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" are to be interpreted as described in [RFC2119] only when they appear in all upper case. They may also appear in lower or mixed case as English words, without any normative meaning.

3. H-bit Support

This draft defines a new Router-LSA bit known as a Host Bit or a H-bit. The H-bit indicates the OSPFv2's capability of acting as a forwarder router. When set, the OSPFv2 router indicates that the forwarding capability is disabled. The bit value usage of the H-bit is reversed as opposed to the R-bit value defined in OSPFv3 [RFC5340] to support backward compatibility. The OSPFv2 Router LSA format is defined as:





immediatately. If this is a router-LSA, and bit V of the router-LSA (see Section A.4.2) is set, set Area A's TransitCapability to TRUE. In any case, each link described by the LSA gives the cost to an adjacent vertex. For each described link, (say it joins vertex V to vertex W):

[5.](#) Auto Discovery and Backwards Compatibility

To avoid the possibility of any routing loops due to partial deployments, this draft defines a new OSPF Router Functional Capability known as a Host Support Capability. The value of this capability is a bit value to be assigned by IANA from OSPF Router Functional Capability Bits registry [[I-D.ietf-ospf-rfc4970bis](#)].

The Auto Discovery via announcement of the Host Support Functional Capability ensures that the H-bit functionality and its associated SPF changes SHOULD only take effect if all the routers in a given OSPF area support this functionality.

Implementations are encouraged to provide a knob to manually override enforcement of the H-bit functionality in partial deployment scenarios for cases where the topology gurantees that the router supporting the H-bit will not cause routing loops.

[6.](#) IANA Considerations

This draft defines a new Router LSA bit known as a H-bit. This draft requests IANA to 1) Create a new OSPF Router LSA bits registry and 2) assign a H-bit code type from the newly allocated OSPF Router LSA bit registry.

This draft defines a new Router Fucntional Capability known as a Host Support Functional Capability. This draft requests IANA to allocate the value of this capability from the Router Functional Capability Bits TLV.

[7.](#) Security Considerations

This document introduces no new security considerations above and beyond those already specified in [\[RFC2328\]](#) and [\[RFC5340\]](#).

[8.](#) Acknowledgements

The authors would like to acknowledge Acee Lindem, Abhay Roy, David Ward, and Burjiz Pithawala for their comments.

[9.](#) Change Log

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