OSPFv2 Host Capability Support

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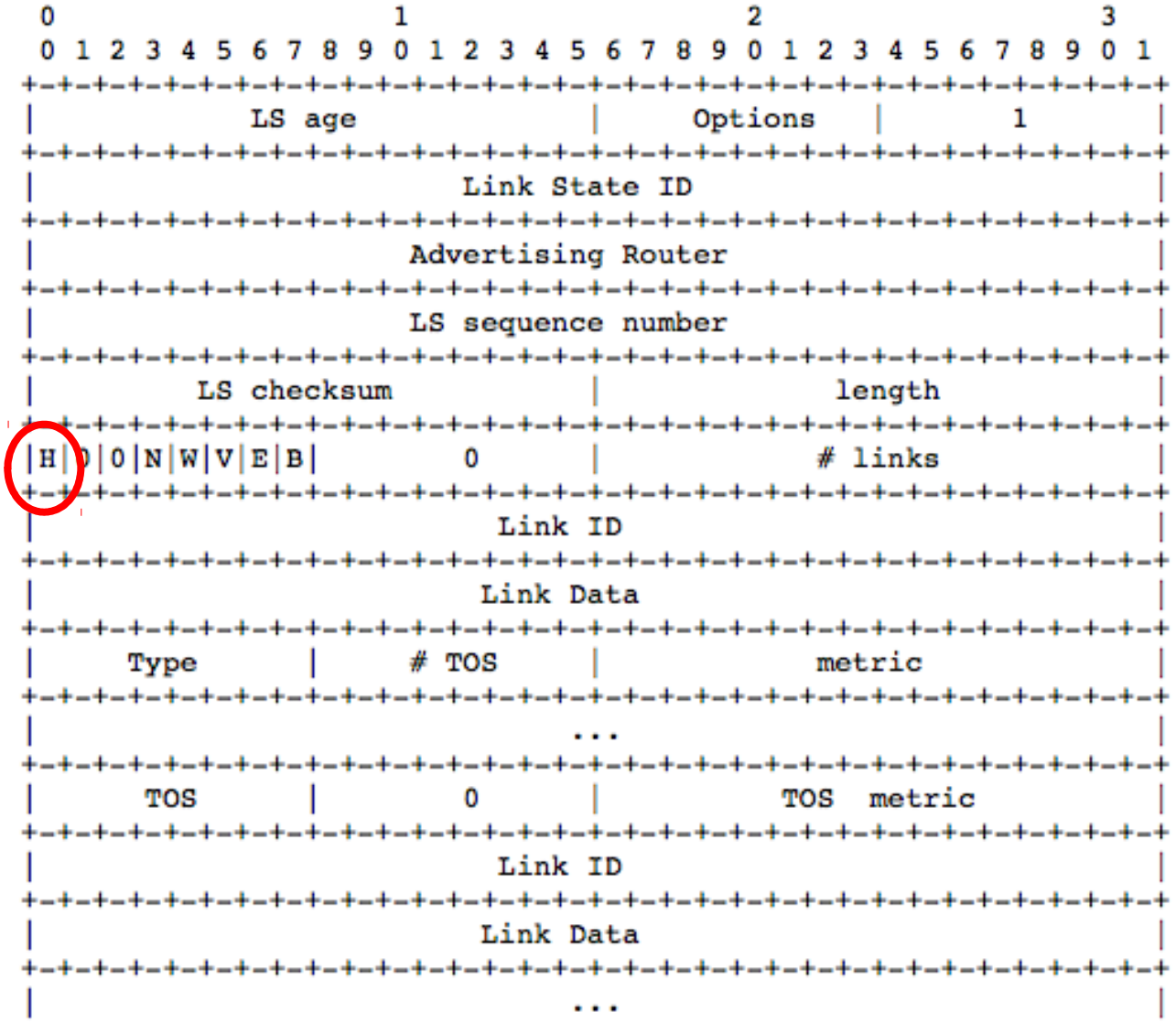
draft-keyupate-ospf-ospfv2-hbit-01

Serpil Bayraktar serpil@cisco.com
Manish Bhardwaj manbhard@cisco.com
Keyur Patel keyupate@cisco.com
Padma Pillay-Esnault ppe@cisco.com

Problem Statement

- **A node participating in an OSPFv2 topology cannot prevent other node to compute a path via itself.**
- **If there is no other alternate path, OSPFv2 will forward traffic to the most desirable node even if it is the max-metric.**
- **In a number of scenarios, it is desirable to prevent transit traffic on a node all the time such as BGP Virtual Route Reflectors or Hubs.**
- **Any solution must be backward compatible**

H-Bit in Router-lsa



Changes in Router link State and other types of LS advertisement

When the H-bit is set in the router-LSA, the router will no longer act a forwarder :

1. **It SHOULD advertise its local Link with MaxLinkMetric cost as defined in Section 3 of [RFC6987]**
2. **Only IPv4 prefixes associated with local interfaces MAY be advertised in Summary LSAs and AS External LSAs (type 3, 5, 7). Non-local IPv4 prefixes, e.g., those advertised by other routers and installed during the SPF computation, MUST NOT be advertised in summary-LSAs and AS External LSAs(type 3, 5, 7).**
3. **If ABR then it MUST advertise a consistent H-bit setting in its self-originated router-LSAs for all attached areas.**

Changes in SPF

Step 2 of the SPF calculation (section 16.1 of RFC2328) is modified as follows:

2) Call the vertex just added to the tree vertex V. Examine the LSA associated with vertex V. This is a lookup in the Area A's link state database based on the Vertex ID. If this is a router-LSA, and the H-bit of the router-LSA is set, and vertex V is not the root, then the router should not be used for transit and step (3) should be executed immediately. 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):

Auto Discovery and Backward compatibility

To avoid the possibility of any routing loops due to partial deployments, a new OSPF Router Functional Capability known as a Host Support Capability is defined.

Request a value for this capability to be assigned by IANA from OSPF Router Functional Capability Bits registry

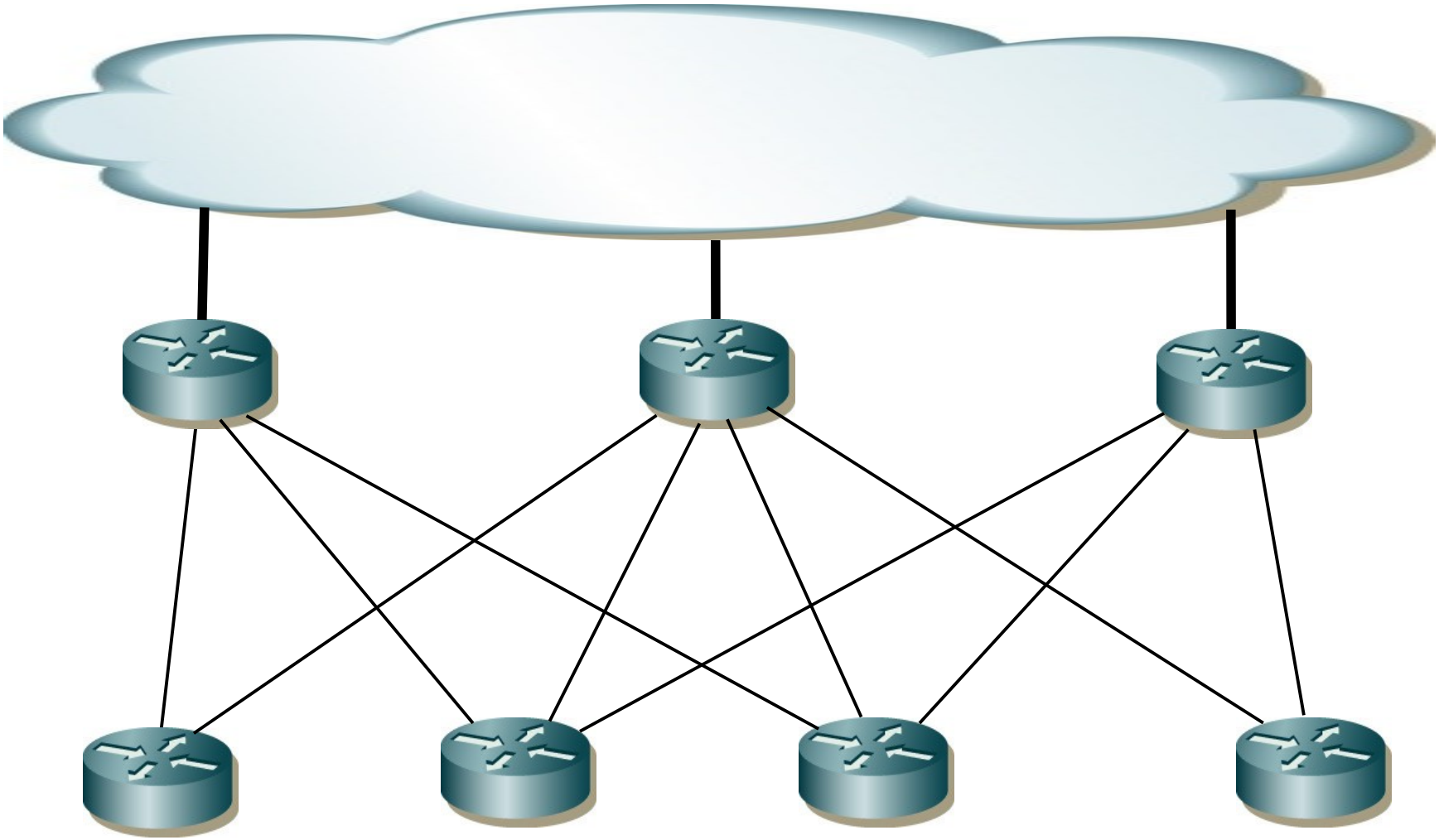
The Auto Discovery via announcement of the Host Support Functional Capability ensures that the H-bit functionality and its associated SPF changes SHOULD only take effect if all the routers in a given OSPF area support this functionality.The feature is backward compatible and will not take effect unless all routers in the area understand Host Support Capability.

Next steps

- **Request to become a WG document.**

- **Comments welcome.**

Sample Topology



Failed node

Causes spoke to act as transit