

Network Working Group
Internet Draft
Expiration Date: July 2001
File name: [draft-ietf-ospf-restart-00.txt](#)

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November 2000

OSPF Restart Signaling
draft-ietf-ospf-restart-00.txt

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Abstract

OSPF is a link-state intra-domain routing protocol used in IP networks. Routers find new and detect unreachable neighbors via Hello subprotocol. Hello OSPF packets are also used to ensure two-way connectivity within time. When a router restarts its OSPF software, it may not know its neighbors. If such a router sends a hello packet on an interface, its neighbors are going to reset the adjacency, which may not be desirable in certain conditions. This memo provides a mechanism that allows OSPF routers to inform their neighbors about the restart process. Note that this mechanism requires support from neighboring routers.

1 Motivation

While performing a graceful restart of OSPF software [OSPF], routers need to prevent their neighbors from resetting their adjacencies. However, after a reload, routers may not be aware of the neighbors they had adjacencies with in their previous incarnations. If such a router sends a Hello packet on an interface and this packet does not list some neighbors, those neighbors will reset the adjacency with restarting router.

This document describes a technique that allows restarting routers to inform their neighbors that they may not know about some neighbors yet and the absence of some router-IDs in the Hello packets should be ignored.

2 Proposed solution

A new bit, called RS (restart signal) is introduced into Extended Options TLV in the LLS block (see [LLS]). The value of this bit is TBD (temporarily used value is 0x00000002, see Figure 1 below).

```

+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
| * | * | * | * | * | * | * |...| * | * | * | * | * | * | RS| OR|
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+

```

Figure 1. Bits in Extended Options TLV

OSPF routers should set the RS-bit in the EO-TLV attached to a Hello packet when this is not clear that all neighbors are listed in this packet, but the restarting router wants them to preserve their adjacencies. The RS-bit may not be set in Hello packets longer than RouterDeadInterval seconds.

For a definition of the OR bit, see [OOB].

2.2 Receiving Hello Packets with RS-bit set

When an OSPF router receives a Hello packet, containing the LLS block with the EO-TLV which has the RS-bit set, the router should skip the two-way connectivity check with the announcing neighbor (i.e., the router should not generate a 1-WayReceived event for the neighbor if it does not find its own router ID in the list of neighbors as described in 10.5 of [OSPF]), provided that the neighbor FSM for this neighbor is in the Full state.

It is also recommended that a unicast Hello is sent back to the sender in reply to a Hello packet with RS bit set. This is to speed up learning of previously known neighbors. When sending such a reply packet, care must be taken to ensure that the RS bit is clear in it.

[3](#) Compatibility Issues

The described technique requires cooperation from neighboring routers. However, if neighbors do not support this technique, they will just reset the adjacency.

[4](#) Security Considerations

The described technique does not introduce any new security issues into OSPF protocol.

[5](#) Acknowledgements

The authors would like to thank Russ White, Don Slice, and Alvaro Retana for their valuable comments.

[6](#) References

[OSPF] J. Moy. OSPF version 2. Technical Report [RFC 2328](#), Internet Engineering Task Force, 1998. <ftp://ftp.isi.edu/in-notes/rfc2328.txt>.

[LLS] Zinin, Friedman, Roy, Nguyen, Yeung, "OSPF Link-local Signaling", [draft-ietf-ospf-lls-00.txt](#), Work in progress.

[OOB] Zinin, Roy, Nguyen, "OSPF Out-of-band LSDB resynchronization", [draft-ietf-ospf-oob-resync-00.txt](#), Work in progress.

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