Internet Draft
Category: BCP
Expires: October 2004

Node ID based RSVP Hello: A Clarification Statement
draft-ietf-ccamp-rsvp-node-id-based-hello-00.txt

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Abstract

Use of node-id based RSVP Hello messages is implied in a number of cases, e.g., when data and control plan are separated, when TE links are unnumbered. Furthermore, when link level failure detection is performed by some means other than RSVP Hellos, use of node-id based Hellos is optimal for detecting signaling adjacency failure for RSVP-TE. Nonetheless, this implied behavior is unclear and this document
formalizes use of node-id based RSVP Hello sessions as a best current practice (BCP) in some scenarios.

Conventions used in this document

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].

Routing Area ID Summary

(This section to be removed before publication.)

SUMMARY

This document clarifies use of node-id based RSVP Hellos.

WHERE DOES IT FIT IN THE PICTURE OF THE ROUTING AREA WORK?

This work fits in the context of [RFC 3209] and [RFC 3473].

WHY IS IT TARGETED AT THIS WG?

This document is targeted at ccamp as it clarifies procedures in [RFC 3209] and [RFC 3473], related to use of RSVP-TE Hello protocol.

RELATED REFERENCES

Please refer to the reference section.

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1. Terminology

Node-id: Router-id as advertised in the Router Address TLV for OSPF [OSPF-TE] and Traffic Engineering router ID TLV for ISIS [ISIS-TE].

Node-id based Hello Session: A Hello session such that local and remote node-ids are used in the source and destination fields of the Hello packet, respectively.

Interface bounded Hello Session: A Hello session such that local and remote addresses of the interface in question are used in the source and destination fields of the Hello packet, respectively.

2. Introduction

The RSVP Hello message exchange was introduced in [RFC 3209]. The usage of RSVP Hello has been extended in [RFC 3473] to support RSVP Graceful Restart (GR) procedures. Specifically, [RFC 3473] specifies the use of the RSVP Hellos for GR procedures for Generalized MPLS (GMPLS). GMPLS introduces the notion of control plane and data plane separation. In other words, in GMPLS networks, the control plane information is carried over a control network whose end-points are IP capable, and which may be physically or logically disjoint from the data bearer links it controls. One of the consequences of separation of data bearer links from control channels is that RSVP Hellos are not terminated on data bearer links interfaces even if (some of) those are numbered. Instead RSVP hellos are terminated at the control channel (IP-capable) end-points. The latter MAY be identified by the value assigned to the node hosting these control channels i.e. Node-Id. Consequently, the use of RSVP Hellos for GR applications introduces a need for clarifying the behavior and usage of node-id based Hellos.

Even in the case of packet MPLS, when link failure detection is performed by some means other than RSVP Hellos (e.g., [BFD]), the use of node-id based Hellos is also optimal for detection of signaling adjacency failures for RSVP-TE. Similarly, when all TE links between neighbor nodes are unnumbered, it is implied that the nodes will use node-id based Hellos for detection of signaling adjacency failures. This document also clarifies the use of node-id based Hellos when all or a sub-set of TE links are unnumbered. This draft also clarifies use of node-id based Hellos in these scenarios.

3. Node-id based RSVP Hellos
A node-id based Hello session is established through the exchange of RSVP Hello messages such that local and remote node-ids are respectively used in the source and destination fields of Hello packets. Here, node-id refers to a router-id as defined in the Router Address TLV for OSPF [OSPF-TE] and the Traffic Engineering router ID TLV for ISIS [ISIS-TE]. This section formalizes a procedure for establishing node-id based Hello sessions.

If a node wishes to establish a node-id based RSVP Hello session with its neighbor, it sends a Hello message with its node-id in the source IP address field of the Hello packet. Furthermore, the node also puts the neighbor’s node-id in the destination address field of the IP packet.

When a node receives a Hello packet where the destination IP address is its local node-id as advertised in the IGP-TE topology, the node MUST use its node-id in replying to the Hello message. In other words, nodes must ensure that the node-ids used in RSVP Hello messages are those derived/contained in the IGP-TE topology. Furthermore, a node can only run one node-id based RSVP Hello session per IGP instance (i.e., per node-id pair) with its neighbor.

In the case of packet MPLS, when link failure detection is performed by some means other than RSVP Hellos, use of node-id based Hellos is also optimal in detecting signaling adjacency failures, e.g., for RSVP GR procedure. Similarly, if all interfaces between a pair of nodes are unnumbered, the optimal way to use RSVP to detect signaling adjacency failure is to run node-id based Hellos. Furthermore, in the case of optical network with single or multiple, numbered or unnumbered control channels, use of node-id based Hellos for detecting signaling adjacency failure is also optimal. Therefore, when link failure detection is performed by some means other than RSVP Hellos, or if all interfaces between a pair of nodes are unnumbered, or in GMPLS network with data and control plane separation, a node MUST run node-id based Hellos for detection of signaling adjacency failure for RSVP-TE. Nonetheless, if it is desirable to distinguish between signaling adjacency and link failures, node id based Hellos can co-exist with interface bound Hellos messages. Similarly, if a pair of nodes share numbered and unnumbered TE links, node id and interface based Hellos can co-exist.

4. Backward Compatibility Note

The procedure presented in this document is backward compatible with both [RFC3209] and [RFC3473].
5. Security Considerations

This document does not introduce new security issues. The security considerations pertaining to the original [RFC3209] remain relevant.

6. Acknowledgements

We would like to thank Anca Zamfir, Jean-Louis Le Roux, Arthi Ayyangar and Carol Iturralde for their useful comments and suggestions.

7. IANA Considerations

None.

8. Full Copyright Statement

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10. IPR Disclosure Acknowledgement

By submitting this Internet-Draft, I certify that any applicable patent or other IPR claims of which I am aware have been disclosed, and any of which I become aware will be disclosed, in accordance with RFC 3668.

11. Reference

11.1 Normative Reference


11.2 Informative Reference


12. Author’s Addresses

Zafar Ali  
Cisco Systems Inc.  
100 South Main St. #200  
Ann Arbor, MI 48104, USA.  
Phone: (734) 276-2459  
Email: zali@cisco.com

Reshad Rahman  
Cisco Systems Inc.  
2000 Innovation Dr.,  
Kanata, Ontario, K2K 3E8, Canada.  
Phone: (613)-254-3519  
Email: dprairie@cisco.com

Danny Prairie  
Cisco Systems Inc.  
2000 Innovation Dr.,  
Kanata, Ontario, K2K 3E8, Canada.  
Phone: (613)-254-3519  
Email: rrahman@cisco.com

Dimitri Papadimitriou (Alcatel)  
Fr. Wellesplein 1,  
B-2018 Antwerpen, Belgium  
Phone: +32 3 240-8491  
Email: dimitri.papadimitriou@alcatel.be