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Abstract

This document introduces a method to advertise multicast source information. The information will be flooded all over the network by OSPF, ISIS and Babel extension. This allows PIM Sparse Mode routers with connected receivers to build a Shortest Path Tree straight away, with no need for a shared a tree.

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[1.](#) Terminology

RP: Rendezvous Point.

RPF: Reverse Path Forwarding.

SPT: Shortest Path Tree.

FHR: First Hop Router, directly connected to the source.

LHR: Last Hop Router, directly connected to the receiver.

SG Mapping: Multicast source to group mapping.

MSGI: Multicast Source and group Information as abbreviation.

[2.](#) Introduction

[RFC4601] and [[RFC7761](#)] introduces that RP can be used to collect the receiver and source information. Obviously, RP may be bottleneck in some busy network. Though the RP-mapping mechanism [[RFC6226](#)] is used to make different RP in charge of different groups, it makes the network management more difficult and complex.

[I-D.ietf-pim-source-discovery-bsr] defines an effective way to deliver multicast information by the way of PIM packet flooding.

This function is very useful in network with the routers that are all credible and controllable.

Some routers may be attacked or forged in some networks. In these networks, the source information announcement may be forged. There

is authentication method in IGP advertisement, such as OSPF, ISIS and Babel. Authentication can prevent a router from injecting messages with non-existing multicast sources. So the source information announcement may be carried in OSPF, ISIS and Babel extension.

[3.](#) Advertisement mechanism

OSPF and ISIS are deployed widely in internet. And the two protocols are the most popular and important routing protocol. The flooding feature is an effective way to advertise the change of network topology. In order to advertise the MSGI, the IGP flooding feature is beneficial to spread the information to PIM routers that have, or potentially may have, connected receivers.

Babel [[RFC6126](#)] is a loop-avoiding distance-vector routing protocol that is robust and efficient both in ordinary wired networks and in wireless mesh networks. And multicast service is useful in wired networks and wireless networks. [[RFC7298](#)] defines the authentication method of Babel. Babel extension can be used to delivery MSGI.

When a router starts receiving packets from a directly connected source, it should advertise a MSGI for the source in the IGP, and keep doing so as long as the source is active. Along with the IGP flooding, the MSGI will quickly spread all over the network.

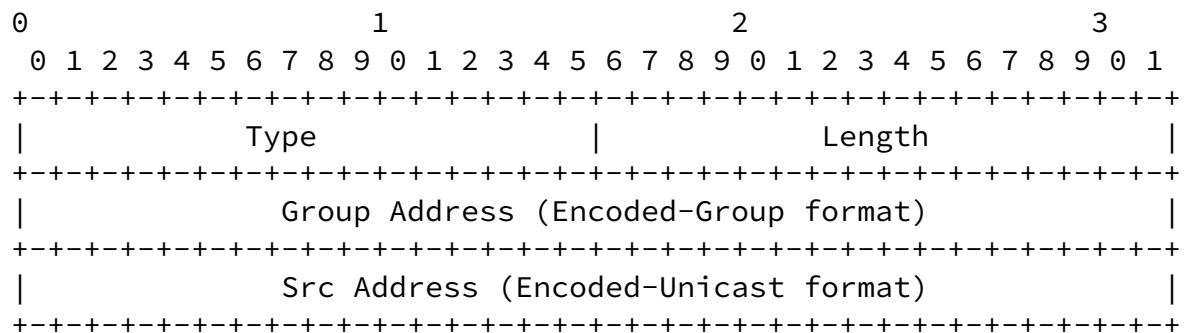
All routers receive the advertisement of the MSGI after flooding. A router that is a LHR, joins the SPT towards the announced source according to standard PIM Sparse Mode procedures, by sending a join to the RPF neighbor towards the source.

Routers that do not have any connected receivers store the MSGI, such that they can immediately join the SPT if they later should become a LHR.

[4.](#) IGP extension

4.1. OSPF extension

A new type of the OSPF Opaque LSA is defined for OSPF MSGI capability. And the same for OSPFv2 and OSPFv3. The format is:



- o Type : The value is TBD. 12 or later digit can be used.
- o Length: The length of the value.
- o Group Address: The group we are announcing sources for. The format for this address is given in the Encoded-Group format in [\[RFC7761\]](#).
- o Src Address: The source address for the corresponding group. The format for these addresses is given in the Encoded-Unicast address in [\[RFC7761\]](#).

The TLV repeats for many groups and groups. In the case where a source stops sending, the FHR simply stops announcing the TLVs. Then the other routers delete the source information.

4.2. ISIS extension

A new ISIS TLV is defined for the MSGI advertisement. The format of

the TLV is same as OSPF.

[4.3.](#) Babel extension

A new Babel TLV is defined for MSGI advertisement according to [\[RFC7557\]](#). The format is same as OSPF.

[5.](#) Security Consideration

OSPF and ISIS protocol have the capability of authentication. The security function can be used unchanged for the MSGI advertisement.

The authentication method defined in Babel [\[RFC7298\]](#) can be used unchanged for MSGI advertisement.

[6.](#) IANA Considerations

A new OSPF Opaque LSA need to be added for carrying OSPF MSGI TLV.

A new MSGI TLV need to be added for ISIS MSGI advertisement.

A new Babel TLV is defined for MSGI advertisement according to [\[RFC7557\]](#).

[7.](#) Normative References

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