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An Interface ID Hello Option for PIM  
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## [Abstract](#)

This document defines a new PIM Hello option to advertise an interface id that can be used by PIM protocols to uniquely identify an interface of a neighboring router.

## [Status of this Memo](#)

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## **[1. Introduction](#)**

This document defines a new option for use in PIM Hello messages [\[RFC4601\]](#) to carry an Interface Identifier. A router generates identifiers for each of its PIM enabled interfaces so that each interface has a different identifier. The identifiers can optionally be generated so that they are unique within, e.g., an administrative domain.

An example where this Interface Identifier can be used is with PIM PORT [\[I-D.ietf-pim-port\]](#), where a single Transport connection is used between two routers that have multiple interfaces connecting them. If these interfaces have unnumbered or IPv6 Link local addresses, the Interface Identifier included in the PORT Join/Prune message will identify which interface the message is associated with. For PIM PORT the Router Identifier is not needed, and it can be set to zero.

### **[1.1. Requirements Notation](#)**

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 [\[RFC2119\]](#).

## **[2. Interface Identifier Option](#)**

The Interface Identifier option is used to identify which interface of a neighboring router a PIM Hello [\[RFC4601\]](#) is sent on. This allows PIM protocols to refer to, or identify, a particular interface on a neighboring router.

The Interface Identifier option need only be included in PIM Hello messages if the router supports protocols that require it. An implementation MAY choose to always include it. How exactly the Interface Identifier is used, and the uniqueness requirements, is left

to the specifications of the PIM protocols that make use of it. It is assumed that different protocols may have different minimum requirements for stability and uniqueness, but that they have no maximum requirement. When specified, these protocols should indicate what their minimum requirements are.

The Interface Identifier consists of 64 bits. The lower 32 bits form a Local Interface Identifier, and the high 32 bits a Router Identifier.

### **2.1. Local Interface Identifier**

The 32 bit Local Interface Identifier is selected so that it is unique among the router's PIM enabled interfaces. That is, there MUST NOT be two PIM interfaces with the same Local Interface Identifier. While an interface is up, the Identifier MUST always be the same once it has been allocated. If an interface goes down and up, the router SHOULD use the same Identifier. Many systems make use of an `ifIndex` [\[RFC1213\]](#), which can be used as a Local Interface Identifier.

The Local Interface Identifier MUST be non-zero. The reason for this, is that some protocols may want to only optionally refer to an Interface using the Interface Identifier Hello option, and use the value of 0 to show that it is not referred to. Note that the value of 0 is not a valid `ifIndex` as defined in [\[RFC1213\]](#).

### **2.2. Router Identifier**

The 32 bit Router Identifier may be used to uniquely identify the router. It may be selected to be unique within some administrative domain, or possibly globally unique. The requirements for the scope in which it needs to be unique depend on the protocol that utilizes this. A router implementation MAY choose an IPv4 unicast address assigned to the router as the Router Identifier, but MUST allow the identifier to be configured manually. Protocols like BGP [\[RFC4271\]](#) and OSPFv2 [\[RFC2328\]](#) are other protocols making use of 32 bit identifiers for routers. One may use the same identifier to construct the Interface Identifier option, provided it meets the stability and uniqueness requirements of protocols making use of this option.

The value 0 has a special meaning for the Router Identifier. It means that no Router Identifier is used. If a router only supports protocols that require the Interface Identifier to be unique for one router (only making use of the Local Interface Identifier), then the implementation MAY set the Router Identifier to zero.

## **3. Message Format**

Option Type: Interface Identifier



	<a href="#">Bradner, S.</a> , " <a href="#">Key words for use in RFCs to Indicate Requirement Levels</a> ", BCP 14, RFC 2119, March 1997.
[RFC4601]	Fenner, B., Handley, M., Holbrook, H. and I. Kouvelas, " <a href="#">Protocol Independent Multicast - Sparse Mode (PIM-SM): Protocol Specification (Revised)</a> ", RFC 4601, August 2006.

## 7.2. Informative References

[RFC1213]	<a href="#">McCloghrie, K.</a> and <a href="#">M. Rose</a> , " <a href="#">Management Information Base for Network Management of TCP/IP-based internets:MIB-II</a> ", STD 17, RFC 1213, March 1991.
[RFC2328]	<a href="#">Moy, J.</a> , " <a href="#">OSPF Version 2</a> ", STD 54, RFC 2328, April 1998.
[RFC4271]	Rekhter, Y., Li, T. and S. Hares, " <a href="#">A Border Gateway Protocol 4 (BGP-4)</a> ", RFC 4271, January 2006.
[I-D.ietf-pim-port]	Farinacci, D, Wijnands, I, Venaas, S and M Napierala, " <a href="#">A Reliable Transport Mechanism for PIM</a> ", Internet-Draft draft-ietf-pim-port-09, October 2011.
[HELLO-OPT]	IANA, , "PIM Hello Options", PIM-HELLO-OPTIONS per RFC4601 <a href="http://www.iana.org/assignments/pim-hello-options">http://www.iana.org/assignments/pim-hello-options</a> , March 2007.

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