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**Advertising Encapsulation Capability Using IS-IS  
draft-xu-isis-encapsulation-cap-01**

**Abstract**

In a particular network environment where MPLS-SPRING-enabled routers are partially deployed, it needs to transport MPLS traffic through an IP-based tunnel between two MPLS-SPRING-enabled routers so as to traverse non-MPLS routers. The ingress of the IP-based tunnel must know which encapsulation type is supported by the egress of that IP-based tunnel. This document describes how to advertise the encapsulation capability of MPLS-SPRING-enabled routers using IS-IS. Note that this encapsulation capability advertisement could be applicable to other use cases besides that as mentioned above as well.

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## Table of Contents

<a href="#">1.</a>	Introduction . . . . .	<a href="#">2</a>
<a href="#">1.1.</a>	Requirements Language . . . . .	<a href="#">2</a>
<a href="#">2.</a>	Terminology . . . . .	<a href="#">3</a>
<a href="#">3.</a>	Advertising Encapsulation Capability . . . . .	<a href="#">3</a>
<a href="#">4.</a>	Acknowledgements . . . . .	<a href="#">3</a>
<a href="#">5.</a>	IANA Considerations . . . . .	<a href="#">3</a>
<a href="#">6.</a>	Security Considerations . . . . .	<a href="#">4</a>
<a href="#">7.</a>	References . . . . .	<a href="#">4</a>
<a href="#">7.1.</a>	Normative References . . . . .	<a href="#">4</a>
<a href="#">7.2.</a>	Informative References . . . . .	<a href="#">4</a>
	Authors' Addresses . . . . .	<a href="#">4</a>

## [1.](#) Introduction

[I-D.xu-spring-islands-connection-over-ip] describes a particular network environment where MPLS-SPRING-enabled routers are partially deployed and therefore it needs to transport MPLS traffic through an IP-based tunnel between two MPLS-SPRING-enabled routers so as to traverse non-MPLS routers. The ingress of the IP-based tunnel (i.e., tunnel encapsulator) must know which encapsulation type is supported by the egress of the IP-based tunnel (i.e., tunnel decapsulator). This document describes how to advertise the encapsulation capability of MPLS-SPRING-enabled routers using IS-IS. Note that this encapsulation capability advertisement could be applicable to other use cases besides that as mentioned above as well.

### [1.1.](#) Requirements Language

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](#)].



## **2. Terminology**

This memo makes use of the terms defined in [[RFC4971](#)] and [[I-D.xu-spring-islands-connection-over-ip](#)].

## **3. Advertising Encapsulation Capability**

MPLS-SPRING-enabled routers need to advertise the encapsulation type(s) they support by using a new sub-TLV of the IS-IS Router CAPABILITY TLV [[RFC4971](#)], referred to as Encapsulation Capability sub-TLV. The Encapsulation Capability sub-TLV could not appear more than once within a given IS-IS Router CAPABILITY TLV. The scope of the advertisement depends on the application but it is recommended that it SHOULD be domain-wide. The Type code of the Encapsulation Capability sub-TLV is TBD, the Length value is variable, and the Value field contains one or more Encapsulation Type sub-TLVs with each indicating a particular encapsulation format that the advertising router supports.

This document defines the following types of Encapsulation Type sub-TLV:

1. MPLS-in-IP tunnel [[RFC4023](#)] : Type code=TBD1; Length=0
2. MPLS-in-GRE tunnel [[RFC4023](#)]: Type code=TBD2; Length=0
3. MPLS-in-L2TPv3 tunnel [[RFC4817](#)]: Type code=TBD3; Length=0
4. MPLS-in-UDP tunnel [[I-D.ietf-mpls-in-udp](#)]: Type code=TBD4; Length=0
5. MPLS-in-IP tunnel with IPsec Transport Mode [[RFC5566](#)]: Type code=TBD5; Length=0

## **4. Acknowledgements**

The authors would like to thank Carlos Pignataro for his valuable comments on this draft.

## **5. IANA Considerations**

This memo includes a request to IANA for allocating the type codes for Encapsulation Capability sub-TLV and Encapsulation Type sub-TLVs.



## **6. Security Considerations**

This document does not introduce any new security risk.

## **7. References**

### **7.1. Normative References**

- [I-D.xu-spring-islands-connection-over-ip]  
Xu, X., Sivabalan, S., Raszuk, R., Chunduri, U., and V. Lopezalvarez, "Connecting MPLS-SPRING Islands over IP Networks", [draft-xu-spring-islands-connection-over-ip-01](#) (work in progress), August 2014.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC4971] Vasseur, JP., Shen, N., and R. Aggarwal, "Intermediate System to Intermediate System (IS-IS) Extensions for Advertising Router Information", [RFC 4971](#), July 2007.

### **7.2. Informative References**

- [I-D.ietf-mpls-in-udp]  
Xu, X., Sheth, N., Yong, L., Pignataro, C., and F. Yongbing, "Encapsulating MPLS in UDP", [draft-ietf-mpls-in-udp-05](#) (work in progress), January 2014.
- [RFC4023] Worster, T., Rekhter, Y., and E. Rosen, "Encapsulating MPLS in IP or Generic Routing Encapsulation (GRE)", [RFC 4023](#), March 2005.
- [RFC4817] Townsley, M., Pignataro, C., Wainner, S., Seely, T., and J. Young, "Encapsulation of MPLS over Layer 2 Tunneling Protocol Version 3", [RFC 4817](#), March 2007.
- [RFC5566] Berger, L., White, R., and E. Rosen, "BGP IPsec Tunnel Encapsulation Attribute", [RFC 5566](#), June 2009.

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