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## IANA Registries for LSP Ping Code Points

### Abstract

RFCs 4379 and 6424 created name spaces for Multi-Protocol Label Switching (MPLS) Label Switched Path (LSP) Ping. However, those RFCs did not create the corresponding IANA registries for Downstream Mapping object Flags (DS Flags), Multipath Types, Pad TLVs, and Interface and Label Stack Address Types.

There is now a need to make further code point allocations from these name spaces. This document updates RFCs 4379 and 6424 in that it creates IANA registries for that purpose.

### Status of This Memo

This is an Internet Standards Track document.

This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Further information on Internet Standards is available in Section 2 of RFC 5741.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at <http://www.rfc-editor.org/info/rfc7537>.

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## 1. Introduction

[RFC4379] and [RFC6424] created name spaces for MPLS LSP Ping. However, those RFCs did not create the corresponding IANA registries for DS Flags, Multipath Types, Pad TLVs, and Interface and Label Stack Address Types.

There is now a need to make further code point allocations from these name spaces. In particular, [ENTROPY-LSP-PING] and [LSP-PING-LAG] request new DS Flags and Multipath Type allocations.

This document updates [RFC4379] and [RFC6424] in that it creates IANA registries for that purpose.

Note that "DS Flags" and "Multipath Type" are fields included in two TLVs defined in the "Multi-Protocol Label Switching (MPLS) Label Switched Paths (LSPs) Ping Parameters - TLVs" registry: Downstream Mapping (DEPRECATED) (value 2) and Downstream Detailed Mapping (value 20). Modification to either registry will affect both TLVs.

## 2. IANA Considerations

Per this document, IANA has created new registries within the "Multi-Protocol Label Switching (MPLS) Label Switched Paths (LSPs) Ping Parameters" [IANA-MPLS-LSP-PING] registry to maintain DS Flags, Multipath Types, Pad TLVs, and Interface and Label Stack Address Types fields. The registry names and initial values are described in the immediate subsections that follow.

### 2.1. DS Flags

[RFC4379] defines the Downstream Mapping (DSMAP) TLV, which has Type 2 assigned from the "Multi-Protocol Label Switching (MPLS) Label Switched Paths (LSPs) Ping Parameters - TLVs" registry.

[RFC6424] defines the Downstream Detailed Mapping (DDMAP) TLV, which has Type 20 assigned from the "Multi-Protocol Label Switching (MPLS) Label Switched Paths (LSPs) Ping Parameters - TLVs" registry.

DSMAP has been deprecated by DDMAP, but both TLVs share a field: DS Flags.

IANA has created and now maintains a registry entitled "DS Flags".

The registration policy for this registry is Standards Action [RFC5226].

IANA has made the following initial assignments:

Registry Name: DS Flags

Bit number	Name	Reference
7	N: Treat as a Non-IP Packet	RFC 4379
6	I: Interface and Label Stack Object Request	RFC 4379
5-0	Unassigned	

### 2.2. Multipath Types

IANA has created and now maintains a registry entitled "Multipath Types".

The registration policies [RFC5226] for this registry are as follows:

0-250	Standards Action
251-254	Experimental Use
255	Standards Action

IANA has made the following initial assignments:

Registry Name: Multipath Types

Value	Meaning	Reference
0	no multipath	RFC 4379
1	Unassigned	
2	IP address	RFC 4379
3	Unassigned	
4	IP address range	RFC 4379
5-7	Unassigned	
8	Bit-masked IP address set	RFC 4379
9	Bit-masked label set	RFC 4379
10-250	Unassigned	
251-254	Experimental Use	This document
255	Reserved	This document

### 2.3. Pad Type

IANA has created and now maintains a registry entitled "Pad Types".

The registration policies [RFC5226] for this registry are:

0-250	Standards Action
251-254	Experimental Use
255	Standards Action

IANA has made the following initial assignments:

Registry Name: Pad Types

Value	Meaning	Reference
0	Reserved	This document
1	Drop Pad TLV from reply	RFC 4379
2	Copy Pad TLV to reply	RFC 4379
3-250	Unassigned	
251-254	Experimental Use	This document
255	Reserved	This document

## 2.4. Interface and Label Stack Address Type

IANA has created and now maintains a registry entitled "Interface and Label Stack Address Types".

The registration policies [RFC5226] for this registry are:

0-250	Standards Action
251-254	Experimental Use
255	Standards Action

IANA has made the following initial assignments:

Registry Name: Interface and Label Stack Address Types

Value	Meaning	Reference
0	Reserved	This document
1	IPv4 Numbered	RFC 4379
2	IPv4 Unnumbered	RFC 4379
3	IPv6 Numbered	RFC 4379
4	IPv6 Unnumbered	RFC 4379
5-250	Unassigned	
251-254	Experimental Use	This document
255	Reserved	This document

## 3. Security Considerations

This document simply creates IANA registries for code points defined in [RFC4379] and [RFC6424]. Thus, there are no new security concerns.

## 4. References

### 4.1. Normative References

- [RFC4379] Kompella, K. and G. Swallow, "Detecting Multi-Protocol Label Switched (MPLS) Data Plane Failures", RFC 4379, February 2006, <<http://www.rfc-editor.org/info/rfc4379>>.
- [RFC6424] Bahadur, N., Kompella, K., and G. Swallow, "Mechanism for Performing Label Switched Path Ping (LSP Ping) over MPLS Tunnels", RFC 6424, November 2011, <<http://www.rfc-editor.org/info/rfc6424>>.

### 4.2. Informative References

- [ENTROPY-LSP-PING]  
Akiya, N., Swallow, G., Pignataro, C., Malis, A., and S. Aldrin, "Label Switched Path (LSP) and Pseudowire (PW) Ping/Trace over MPLS Network using Entropy Labels (EL)", Work in Progress, draft-ietf-mpls-entropy-lsp-ping-00, December 2014.
- [IANA-MPLS-LSP-PING]  
IANA, "Multi-Protocol Label Switching (MPLS) Label Switched Paths (LSPs) Ping Parameters", <<http://www.iana.org/assignments/mpls-lsp-ping-parameters>>.
- [LSP-PING-LAG]  
Akiya, N., Swallow, G., Litkowski, S., Decraene, B., and J. Drake, "Label Switched Path (LSP) Ping/Trace Multipath Support for Link Aggregation Group (LAG) Interfaces", Work in Progress, draft-ietf-mpls-lsp-ping-lag-multipath-00, January 2015.
- [RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 5226, May 2008, <<http://www.rfc-editor.org/info/rfc5226>>.

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