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L. Andersson
Bronze Dragon Consulting
T. Saad
Juniper Networks
M. Chen
Huawei Technologies
C. Pignataro
Cisco Systems
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Updating the IANA MPLS LSP Ping Parameters
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Abstract

This document updates [RFC 8029](#) and [RFC 8611](#) that define IANA registries for MPLS LSP Ping. The updates are mostly for clarification and to align this registry with recent developments..

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[1.](#) Introduction

When [RFC 8029](#) [[RFC8029](#)] was published it contained among other things updates to the "Multiprotocol Label Switching (MPLS) Label Switched Paths (LSPs) Ping Parameters" IANA name space [[IANA-LSP-PING](#)].

[RFC 8611](#) [[RFC8611](#)] updated the LSP Ping IANA registries to match [RFC 8029](#), but the registrations can be further clarified and their definitions more precise.

This document updates [RFC 8029](#) [[RFC8029](#)] and [RFC 8611](#) [[RFC8611](#)] by updating two groups of registries.

First the registries for Message Types [[IANA-MT](#)], Reply Modes [[IANA-RM](#)] and Return Codes [[IANA-RC](#)]. The changes to these registries are minor.

Second, this document updates the TLV and sub-TLV registries.

- o TLVs [[IANA-TLV-reg](#)]

- o Sub-TLVs for TLVs 1, 16 and 21 [[IANA-Sub-1-16-21](#)]
- o Sub-TLVs for TLV 6 [[IANA-Sub-6](#)]
- o Sub-TLVs for TLV 11 [[IANA-Sub-11](#)]
- o Sub-TLVs for TLV 20 [[IANA-Sub-20](#)]
- o Sub-TLVs for TLV 23 [[IANA-Sub-23](#)]
- o Sub-TLVs for TLV 27 [[IANA-Sub-27](#)]

The registry for sub-TLVs for TLV 9 [[IANA-Sub-9](#)] is not updated.

1.1. Requirement Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [BCP 14](#) [[RFC2119](#)] [[RFC8174](#)] when, and only when, they appear in all capitals, as shown here.

2. Updating the Message Types, Reply Mode and Return Codes Registries

The following changes are made to the Message Types, Reply Modes and Return Codes [[IANA-MT](#)] registries.

- o a small set of code points (4 code points) for experimental use is added, actually they are taken from the range for "Private Use".
- o the registration procedure "Specification Required" is changed to "RFC Required" and the note "Experimental RFC needed" is removed
- o In the listing of assignments the term "Vendor Private Use" is changed to "Private Use"
- o the registration procedures "Private Use" and "Experimental Use" are added to the table of registration procedures
- o A note "Not to be assigned" is added for the registration procedures "Private Use" and "Experimental Use"
- o In the list that capture the assignment status, the fields that are reserved, i.e. 0, Private Use and Experimental Use are clearly marked.

- * In the Return Codes [[IANA-RC](#)] registry the code point "0" already been assigned. This assignment is not changed and this registry will not have the "0" value "Reserved".

The new Registration Procedures layout and the new assignments for these registries will be found in [Section 5.1](#).

3. Updating the TLV and sub-TLV registries

When a new LSP Ping sub-TLV registry were created by [RFC 8611](#) [[RFC8611](#)] this registry "Sub-TLVs for TLV Type 6" [[IANA-Sub-6](#)] was set up following the intentions of [RFC 8029](#).

The registry for "Sub-TLVs for TLV Type 6" will serve as a model to change/update the rest of the TLV and sub-TLV registries in this name space.

The registration procedures in the current registry for "Sub-TLVs for TLV Type 6" looks like this (2019-06-20). This will be used as a base-line and some additions/changes will be made as captured in the Appendixes:

Range	Registration Procedures	Note
0-16383	Standards Action	This range is for mandatory TLVs or for optional TLVs that require an error message if not recognized.
16384-31743	RFC Required	This range is for mandatory TLVs or for optional TLVs that require an error message if not recognized.
31744-32767	Private Use	Not to be assigned
32768-49161	Standards Action	This range is for optional TLVs that can be silently dropped if not recognized.
49162-64511	RFC Required	This range is for optional TLVs that can be silently dropped if not recognized.
64512-65535	Private Use	Not to be assigned

Sub-TLVs for TLV Type 6 Registration Procedures

This document adds small ranges of code points for Experimental Use to this registry and to registries listed in [Section 5.2](#).

All registries will be changed to reflect the same model.

3.1. General principles the LSP Ping TLV and sub-TLV registries

The following principles are valid for all the LSP Ping TLV and sub-TLV IANA registries

- o all mandatory TLVs and sub-TLVs requires a response if the are not recognized
- o some optional TLVs and sub-TLVs requires a response if the are not recognized
- o some optional TLVs and sub-TLVs may be silently dropped if the are not recognized

The range of each TLV and sub-TLV registry is divided into to blocks, one with a range from 0 to 49161 for TLVs and sub-TLVs that require a response if not recognized. Another block in the range from 49161 to 65535, this block is for TLVs and sub-TLVs that may be silently dropped if not recognized.

Each of the blocks have code point spaces with the following registration procedures:

- o Standards Action
- o RFC Required
- o Experimental Use
- o Private Use

The exact defintion of registration procedures for IANA registries are found in [[RFC8126](#)]

3.1.1. Unrecognized Experimental and Private TLVs and sub-TLVs

Unrecognized TLVs and sub-TLVs for Expereimetal USe and Privagte Use are handled as any other unrecognized TLV or sub-TLV.

- o If the unrecognized TLV or sub-TLV is from the Experimental Use range (37144-37147) or from the Private Use range (31748-32767) a the Return Code of 2 ("One or more of the TLVs was not understood") will be sent in the echo response.

- o If the unrecognized TLV or sub-TLV is from the Experimental Use range (64512-64515) or from the Private Use range (64515-65535) the TLVs SHOULD be silently ignored.

IETF does not prescribe how recognized or unrecognized Experimental Use and Private Use TLVs and sub-TLVs are handled in experimental or private networks, that is up to the agency running the experiment or the private network. The statement above relates to how standard compliant implementations will treat the unrecognized TLVs and sub-TLVs from these ranges.

3.2. Changes to the LSP Ping registries

This section lists the changes to each MPLS LSP Ping Registry, in [Section 5.1](#), [Section 5.2](#) and [Section 5.3](#) the changes are detailed and it is shown what the IANA registry version of the registration procedures and assignments would look like.

3.2.1. Common changes to the TLV and sub-TLV registries

The following changes are made to the TLV and sub-TLV registries.

- o two small set of code points (2 times 4 code points) for experimental use is added, actually they are take from the range for "Private Use".
- o the registration procedure "Specification Required" is changed to "RFC Required" and the note "Experimental RFC needed" is removed
- o In the listing of assignments the term "Vendor Private Use" is changed to "Private Use"
- o In the listing of assignments the range for "Experimental Use" is added
- o the registration procedures "Private Use" and "Experimental Use" are added to the table of registration procedures
- o A note "Not to be assigned" is added for the registration procedures "Experimental Use" and "Private Use"
- o In the list that capture assignment status, the fields that are reserved, i.e. 0, Experimental Use and Private Use are clearly marked.

The new Registration Procedures description and the new assignments for these registries will be found in [Section 5.2](#) and [Section 5.3](#).

4. Security Considerations

TBA

5. IANA Considerations

IANA is requested to update the LSP Ping name space as described in this document and documented in the Appendixies.

5.1. New Message Type, Reply Mode and Return Codes registries

This section details the updated registration procedures for Message Type, Reply Mode and Return Codes registries.

Range	Registration Procedures	Note
0-191	Standards Action	
192-247	RFC Required	
248-251	Experimental Use	Not to be assigned
252-255	Private Use	Not to be assigned

New common registration procedures

Value	Meaning	Reference
0	Reserved	This document
1-247	No changes to the existing assignments	
248-251	Reserved for Experimental Use	This document
252-255	Reserved for Private Use	[RFC8029]

Common Assignments for the Message Types, Reply Mode and Return Code registries

Note that for the Return Code registry the assignment for code point zero has been previously assigned, it is not changed but will remain:

Value	Meaning	Reference
0	No return code	[RFC8029]

Assignment for code point 0 in the Return Code registry

5.2. Common Registration Procedures for TLVs and sub-TLVs

This section describes the new registration procedures for the TLV and sub-TLV registries. The registry for sub-TLV 9 ([\[IANA-Sub-9\]](#)) is not changed.

Range	Registration Procedures	Note
0-16383	Standards Action	This range is for mandatory TLVs or for optional TLVs that require an error message if not recognized.
16384-31743	RFC Required	This range is for mandatory TLVs or for optional TLVs that require an error message if not recognized.
37144-37147	Experimental Use	Not to be assigned
31748-32767	Private Use	Not to be assigned
32768-49161	Standards Action	This range is for optional TLVs that can be silently dropped if not recognized.
49162-64511	RFC Required	This range is for optional TLVs that can be silently dropped if not recognized.
64512-64515	Experimental Use	Not to be assigned
64515-65535	Private Use	Not to be assigned

TLV and sub-TLV Registration Procedures

5.3. IANA assignments for TLVs and sub-TLVs

The two tables in this section describes the updated IANA assignments for the TLV and sub-TLV registries. The registry for sub-TLV 9 ([\[IANA-Sub-9\]](#)) is not changed.

Type	TLV name	Reference	sub-TLV registry
0	Reserved	This document	
1-31743	[any]	No changes to the current registry	[any]
37144-37147	Reserved for Experimental Use	This document	NA
31748-32767	Reserved for Private Use	This document	NA
32768-64511	[any]	No changes to the current registry.	[any]
64512-64515	Reserved for Experimental Use	This document	NA
64515-65535	Reserved for Private Use	This document	NA

TLV Assignments

Updated Sub-TLV assignments

Type	TLV name	Reference
0	Reserved	This document
1-31743	[any]	No changes to the current registry
37144-37147	Reserved for Experimental Use	This document
31748-32767	Reserved for Private Use	This document
32768-64511	[any]	No changes to the current registry.
64512-64515	Reserved for Experimental Use	This document
64515-65535	Reserved for Private Use	This document

Sub-TLV Assignments

6. Acknowledgements

TBA

7. References

7.1. Normative References

[IANA-LSP-PING]

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[IANA-MT] "Message Types", <<https://www.iana.org/assignments/mpls-lsp-ping-parameters/mpls-lsp-ping-parameters.xhtml#message-types>>.

[IANA-RC] "Return Codes", <<https://www.iana.org/assignments/mpls-lsp-ping-parameters/#return-codes>>.

[IANA-RM] "Reply Modes", <<https://www.iana.org/assignments/mpls-lsp-ping-parameters/#reply-modes>>.

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"Sub-TLVs for TLV Types 1, 16, and 21",
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"Sub-TLVs for TLV Type 11",
<<https://www.iana.org/assignments/mpls-lsp-ping-parameters/mpls-lsp-ping-parameters/mpls-lsp-ping-parameters.xhtml#sub-tlv-11>>.

[IANA-Sub-20]

"Sub-TLVs for TLV Type 20",
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"Sub-TLVs for TLV Type 23",
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"TLVs", <<https://www.iana.org/assignments/mpls-lsp-ping-parameters/mpls-lsp-ping-parameters.xhtml#tlvs>>.

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7.2. Informative References

[IANA-Sub-9]

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<<https://www.iana.org/assignments/mpls-lsp-ping-parameters/mpls-lsp-ping-parameters/mpls-lsp-ping-parameters.xhtml#sub-tlv-9>>.

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Authors' Addresses

Loa Andersson
Bronze Dragon Consulting

Email: loa@pi.nu

Tarek Saad
Juniper Networks

Email: tсад.net@gmail.com

Mach Chen
Huawei Technologies

Email: mach.chen@huawei.com

Carlos Pignataro
Cisco Systems

Email: cpignata@cisco.com

