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MPLS Label Stack Encoding on LAN Media

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Abstract

'Multi-Protocol Label Switching (MPLS)' [1,2,3] requires a set of procedures for augmenting network layer packets with 'label stacks', thereby turning them into 'labeled packets' [4]. Routers which support MPLS are known as 'Label Switching Routers', or 'LSRs'. In order to transmit a labeled packet on a particular data link, an LSR must support an encoding technique which, given a label stack and a network layer packet, produces a labeled packet. This document

specifies the encoding to be used by an LSR in order to transmit labeled packets on LAN data links.

Table of Contents

| | | |
|---------------------|---|-------------------|
| 1 | Introduction | 2 |
| 1.1 | Specification of Requirements | 2 |
| 2 | Transporting Labeled Packets over LAN Media | 3 |
| 3 | Security Considerations | 3 |
| 4 | Authors' Addresses | 4 |
| 5 | References | 5 |

[1](#). Introduction

"Multi-Protocol Label Switching (MPLS)" [1,2,3] requires a set of procedures for augmenting network layer packets with "label stacks", thereby turning them into "labeled packets" [4]. Routers which support MPLS are known as "Label Switching Routers", or "LSRs". In order to transmit a labeled packet on a particular data link, an LSR must support an encoding technique which, given a label stack and a network layer packet, produces a labeled packet.

This document specifies the encoding to be used by an LSR in order to transmit labeled packets on LAN data links.

[1.1](#). Specification of Requirements

In this document, several words are used to signify the requirements of the specification. These words are often capitalized.

MUST

This word, or the adjective "required", means that the definition is an absolute requirement of the specification.

MUST NOT

This phrase means that the definition is an absolute prohibition of the specification.

SHOULD

This word, or the adjective "recommended", means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications must be understood and carefully weighed before choosing a different course.

MAY

This word, or the adjective "optional", means that this item is one of an allowed set of alternatives. An implementation which does not include this option **MUST** be prepared to interoperate with another implementation which does include the option.

[2.](#) Transporting Labeled Packets over LAN Media

The label stack **MUST** be represented and processed as specified in [\[4\]](#).

Each LAN frame that carries a labeled packet **MUST** carry exactly one labeled packet.

The label stack entries **MUST** immediately precede the network layer header, and **MUST** follow any data link layer headers, including, e.g., any VLAN headers, 802.1Q headers, etc. that may exist.

The ethertype value 8847 hex is used to indicate that a frame is carrying an MPLS unicast packet.

The ethertype value 8848 hex is used to indicate that a frame is carrying an MPLS multicast packet.

These ethertype values can be used with either the ethernet encapsulation or the 802.3 SNAP/SAP encapsulation to carry labeled packets.

The procedures for processing labeled packets are as specified in [\[4\]](#).

[3.](#) Security Considerations

Security considerations are not discussed in this document.

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5. References

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- [3] "Tag Switching Architecture - Overview", 7/97, [draft-rekhter-tagswitch-arch-01.txt](#), Rekhter, Davie, Katz, Rosen, Swallow
- [4] "MPLS Label Stack Encoding", 11/97, [draft-ietf-mpls-label-encaps-00.txt](#), Rosen, Rekhter, Tappan, Farinacci, Fedorkow, Li, Conta.

