

MPLS Label Forwarding with No Swapping

draft-fang-mpls-label-forwarding-no-swap-02

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Changes from -01

- Added Zhenbin, Rob, and Andrew as co-authors
- Animated discussion on the list

Label forwarding operation as defined in RFC3031

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Section 3.10 states:

“The "Next Hop Label Forwarding Entry" (NHLFE) is used when forwarding a labeled packet. It contains the following information:

1. the packet's next hop
2. the operation to perform on the packet's label stack; this is **one of the following operations**:
 - a) **replace the label at the top of the label stack with a specified new label**
 - b) pop the label stack
 - c) replace the label at the top of the label stack with a specified new label, and then push one or more specified new labels onto the label stack.”

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Label Swapping defined in RFC 3031

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“3.13 Label Swapping

Label swapping is the use of the following procedures to forward a packet.

In order to forward a labeled packet, a LSR examines the label at the top of the label stack. It uses the ILM to map this label to an NHLFE. Using the information in the NHLFE, it determines where to forward the packet, and **performs an operation on the packet's label stack**. It then encodes the new label stack into the packet, and forwards the result.”

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“Forward without Swap” option is missing

- This is for historical reasons: in 2001, when RFC3031 was published, labels were only locally meaningful, thus the three forwarding options were sufficient.
- Today, with domain-wide labels being used in many new use cases (HSDN, SR, ...), the label operation “forward without swap” is a reality
- “Replace the label at the top of the label stack with a specified new label” != Forward without Swap
- It is simply English, time to update RFC3031
- This is not a local optimization issue.
- An additional label forwarding operation referred to as No Swap needs to be added to the current standard

Proposed text to update RFC3031

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 - a) replace the label at the top of the label stack with a specified new label
 - b) pop the label stack
 - c) replace the label at the top of the label stack with a specified new label, and then push one or more specified new labels onto the label stack.”
 - d) keep the label at the top of the label stack unchanged**

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Next Steps

- Ask for WG adoption