



# Intel<sup>®</sup> Ethernet Controller X710/ XXV710/XL710

Dynamic Device Personalization MPLS Payload

---

Ethernet Products Group (EPG)

*May 2020*

**Intel Confidential**

Revision 1.0



## Revision History

---

Revision	Date	Comments
1.0	May, 2020	Initial release (Intel Confidential).



## 1.0 Introduction

This document describes the Dynamic Device Personalization (DDP) functionality supported by the Intel® Ethernet Controller X710/XXV710/XL710 starting with firmware version 6.01.

The DDP mpls-pay profile (0x80000011) contains the X710/XXV710/XL710 parser graph for MPLS packets. The MPLS profile uses the MPLS labels for directing traffic into multiple queues, which can later be processed by multiple cores. The profile supports up to 2 MPLS headers, either directly after the L2 header or tunneled in UDP. The packets are not parsed beyond the MPLS headers.

**Table 1. Terms and Definitions**

Term	Definition
DPDK	Data Plane Development Kit
MPLS	Multiprotocol Label Switching

**Table 2. Version History**

Version	Description
0.0.0.3	Initial release of mpls pay parser graph for the X710/XXV710/XL710.

**Table 3. MPLS Packet Field Vector**

Word Num	Protocol Layers			
	<b>L2 Protocol Layers</b>			
0:2	Destination MAC address (in outer or single L2 header).			
3:5	Source MAC address (in outer or single L2 header).			
6	0x00			
7	0x00			
8	0x00			
	<b>L3 Protocol Layers</b>			
	<b>IPv4</b>	<b>IPv6</b>		
9	First eight words of the IPv4 header (up to including the source IP address)	First four words of the IPv6 header (up to including the hop limit)		
10				
11:12				
13:16				
17:20	0x00	IPv6 source address		
21:22	0x00			
23:26	0x00			
27:28	Destination IP address			
	<b>L4 Protocol Layers</b>			
	<b>TCP</b>	<b>UDP</b>	<b>SCTP</b>	<b>ICMP</b>



**Table 3. MPLS Packet Field Vector [continued]**

29:30	First 16 bytes of the TCP header.	First 8 bytes of the UDP header.	First 8 bytes of the SCTP header.	Words 0, 1 of the header.
31:32				0x00
33:36				
	DPDK Outer VLAN for QinQ			
37	S-tag (DPDK)	S-tag (DPDK)	S-tag (DPDK)	S-tag (DPDK)
	MPLS			
38:41	0x00			
42:43	First MPLS label			
44:45	Second MPLS label			
	MPLS Payload			
46:49	0x00			
50:57	Outer destination IP address or flexible payload.			

**Note:** DPDK (up to release 17.11) forces flexible payload to the first 16 bytes of the payload and overrides the outer destination IP address. Starting from DPDK 18.02, the flexible payload is extracted only if enabled by the flow director configuration.

**Table 4. Packet Classifier Types and Its Input**

PCTYPE	PCTYPE Description	Hash Input Set	FD Input Set
24	One MPLS label	MPLS label	MPLS label
25	Two MPLS label	Both MPLS labels	Both MPLS labels

**Table 5. Packet Types**

PTYPE	Description
167	MAC, MPLS, PAYLOAD
168	MAC, MPLS, MPLS, PAYLOAD
169	MAC, IPv4, UDP, MPLS, PAYLOAD
170	MAC, IPv4, UDP, MPLS, MPLS, PAYLOAD
171	MAC, IPv6, UDP, MPLS, PAYLOAD
172	MAC, IPv6, UDP, MPLS, MPLS, PAYLOAD



## LEGAL

---

No license (express or implied, by estoppel or otherwise) to any intellectual property rights is granted by this document.

This document (and any related software) is Intel copyrighted material, and your use is governed by the express license under which it is provided to you. Unless the license provides otherwise, you may not use, modify, copy, publish, distribute, disclose or transmit this document (and related materials) without Intel's prior written permission. This document (and related materials) is provided as is, with no express or implied warranties, other than those that are expressly stated in the license.

Intel disclaims all express and implied warranties, including without limitation, the implied warranties of merchantability, fitness for a particular purpose, and non-infringement, as well as any warranty arising from course of performance, course of dealing, or usage in trade.

This document contains information on products, services and/or processes in development. All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest forecast, schedule, specifications and roadmaps.

The products and services described may contain defects or errors which may cause deviations from published specifications.

Copies of documents which have an order number and are referenced in this document may be obtained by calling 1-800-548-4725 or by visiting [www.intel.com/design/literature.htm](http://www.intel.com/design/literature.htm).

Intel and the Intel logo are trademarks of Intel Corporation in the U.S. and/or other countries.

\* Other names and brands may be claimed as the property of others.

© 2020 Intel Corporation.