Intel® Ethernet Controller X710/XXV710/XL710

Dynamic Device Personalization for Radio Fronthaul

June 2019

Revision 1.1
June 2019

Revision History

Revision	Date	Comments
1.1	June 25, 2019	Final version.
1.0	June 6, 2019	Initial release.

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 profile (0x8000000E) contains the X710/XXV710/XL710 parser graph for Radio Fronthaul.

This Classification offload is required for FlexRAN fronthaul to enable filtering of data packets based on their unique subtype (Timing packets, PUSCH and PRACH packets).

In FlexRAN LTE packets VLAN ID represent Cell ID and need to be filtered based on the packet SubType. This filtering is expected to be offloaded to NIC in order to free additional CPUs.

Table 1-1.   Terms and Definitions

Term	Definition
DPDK	Data Plane Development Kit

Table 1-2.   Version History

Version	Description
1.0.0.0	Initial release of radio front haul parser graph for the X710/XXV710/XL710.

Table 1-3.   Firmware/NVM Support Matrix

FW Version	NVM Map Version	Description
6.01	6.36	Operating system and device independent.
6.02	6.48	
7.0	8.77	

Table 1-4. Fronthaul Packet Field Vector

Word Num	Protocol Layers			
	L2 Protocol Layers			
0:2	Destination MAC address (in outer or single L2 header)			
3:5	Source MAC address (in outer or single L2 header)			
6	Default S-tag (DPDK: word 37)			
7	0x00.			
8	Inner or single VLAN tag (in outer or single L2 header)			
	L3 Protocol Layers			
9	First eight words of the session ID			
10				
11:12				
13:16				
17:20	0x00			
21:22	0x00			
23:26	0x00			
27:28	0x00			
	L4 Protocol Layers			
29:30	0x00			
31:32	0x00			
33:36	0x00			
	DPDK Outer VLAN for QinQ			
37	S-tag (DPDK)	S-tag (DPDK)	S-tag (DPDK)	S-tag (DPDK)
	Pseudo-wire Layer and Flexible Payload			
38:43	0x00			
44:45	0x00			
46	0x00			

Table 1-4.   Fronthaul Packet Field Vector

	Tunnel Layer and Flexible Payload
46:49	0x00
50:57	0x00

Table 1-5.   Packet Classifier Types and Its Input Set

PCTYPE	PCTYPE Description	Hash Input Set	FD Input Set
1	Subtype 0	FV[15-12]	FV[15-12]
2	Subtype 1	FV[9]	FV[9]
3	Subtype 2	FV[9]	FV[9]
4	Subtype 3	FV[11-10]	FV[11-10]
5	Subtype 4	FV[9]	FV[9]
6	Subtype 5	FV[9]	FV[9]
7	Subtype 6	FV[9]	FV[9]
8	Subtype 7	FV[9]	FV[9]
9	Subtype 8	FV[9]	FV[9]
10	Subtype 9	FV[9]	FV[9]
11	Subtype 0x0A	FV[9]	FV[9]
12	Subtype 0x0B	FV[9]	FV[9]
13	Subtype 0x0C	FV[11-10]	FV[11-10]

Table 1-6. Packet Types

PTYPE	Description
154	MAC-> FH SubType 0 -> PAYLOAD2
155	MAC-> FH SubType 1 -> PAYLOAD2
156	MAC-> FH SubType 2 -> PAYLOAD2
157	MAC-> FH SubType 3 -> PAYLOAD2
158	MAC-> FH SubType 4 -> PAYLOAD2
159	MAC-> FH SubType 5 -> PAYLOAD2
160	MAC-> FH SubType 6 -> PAYLOAD2
161	MAC-> FH SubType 7 -> PAYLOAD2
162	MAC-> FH SubType 8 -> PAYLOAD2
163	MAC-> FH SubType 9 -> PAYLOAD2
164	MAC-> FH SubType 0x0A -> PAYLOAD2
165	MAC-> FH SubType 0x0B-> PAYLOAD2
166	MAC-> FH SubType 0x0C -> PAYLOAD2

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