



Intel[®] Ethernet Controller X710/ XXV710/XL710

Dynamic Device Personalization IPSec Protocols

Ethernet Networking Division (ND)

February 2020

Revision 1.0



Revision History

Document Revision	Date	Comments
1.0	February 2020	Initial release (Intel Public).



1.0 Introduction

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

IP Security is an Internet Engineering Task Force (IETF) standard suite of protocols between two communication points across the IP network providing data authentication, integrity, and confidentiality.

For IPsec packets, the parser reports unique PTYPES to differentiate the different types of security headers and unique protocol IDs for IP Encapsulating Security Payload (ESP) and IP Authentication Header (AH) headers. Note that the profile ignores the *AH Payload Length* field and instead uses a fixed header length of 12 bytes. Therefore, if flexible payload extraction is used on AH packets, the offset should start from the *ICV* field of the AH header.

The DDP profile (0x80000009) contains the X710/XXV710/XL710 parser graph for IPsec protocols.

Table 1. Terms and Definitions

Term	Definition
DDP	Dynamic device personalization.
IPsec	IP Security Protocols (ESP, AH).
IPv4	Internet Protocol, version 4.
IPv6	Internet Protocol, version 6.

Table 2. Version History

Version	Description
1.0.0.0	Initial release of IP Security Protocols (ESP, AH) parser graph for the X710/XXV710/XL710.

Table 3. IPsec 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)



Table 3. IPsec Packet Field Vector

Word Num	L3 Protocol Layers			
	IPv4		IPv6	
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	IPv6 destination address		
23:26	0x00			
27:28	Destination IP address			
L4 Protocol Layers				
29:32	First 8-byte of UDP header			
33:36	0x00			
DPDK Outer VLAN for QinQ				
37	S-tag (DPDK)	S-tag (DPDK)	S-tag (DPDK)	S-tag (DPDK)
38:43	0x00			
Security Layer and Flexible Payload				
44:45	ESP/AH SPI			
46:47	ESP/AH Sequence Number			
48	0x00			
50:57	Flexible payload			

Table 4. Packet Classifier Types and Its Input Set

PCTYPE	PCTYPE Description	Hash Input Set	FD Input Set
14	IPv6 ESP	IPv6-SA, IPv6-DA, ESP SPI	IPv6-SA, IPv6-DA, ESP SPI
15	IPv4 ESP	IPv4-SA, IPv4-DA, ESP SPI	IPv4-SA, IPv4-DA, ESP SPI
16	IPv6 AH	IPv6-SA, IPv6-DA, AH SPI	IPv6-SA, IPv6-DA, AH SPI
17	IPv4 AH	IPv4-SA, IPv4-DA, AH SPI	IPv4-SA, IPv4-DA, AH SPI



Table 4. Packet Classifier Types and Its Input Set

PCTYPE	PCTYPE Description	Hash Input Set	FD Input Set
18	IPv6 UDP ESP	IPv6-SA, IPv6-DA, ESP SPI	IPv6-SA, IPv6-DA, ESP SPI
19	IPv4 UDP ESP	IPv4-SA, IPv4-DA, ESP SPI	IPv4-SA, IPv4-DA, ESP SPI

Table 5. Packet Types

PTYPE	Description	PTYPE	Description
173	IPv4AH	176	IPv6 ESP
174	IPv6 AH	177	IPv4 UDP ESP
175	IPv4 ESP	178	IPv6 UDP ESP



LEGAL

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

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.

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.