



PCI-SIG ENGINEERING CHANGE NOTIFICATION

TITLE:	NOP DLLP
DATE:	Initial Draft: November 21, 2013 Member Review: April 3, 2014 Last Update: June 11, 2014 Final Approval: June 17, 2014
AFFECTED DOCUMENT:	PCI Express Base Specification Version 3.1
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Part I

1. Summary of the Functional Changes

This ECN accomplishes two housekeeping tasks associated with DLLP encoding.

No functional changes are involved to any hardware or software. Optional (and simple) changes may be reasonable in the Link / Transaction Test Specification.

2. Benefits as a Result of the Changes

Define a NOP DLLP to permit future hardware Tx implementation optimizations.

Consolidate the list of assigned DLLP Type Encodings in a single location. Currently this information is spread across multiple specifications.

3. Assessment of the Impact

Almost insignificant.

4. Analysis of the Hardware Implications

No effect.

New hardware is permitted to send NOP DLLPs. Recivers are already required to ignore them. This ECN means that the PCI-SIG will not define another meaning for this Type Encoding.

NOP DLLPs contain an arbitrary 24 bit payload field. This field may contain implementation-specific debug or log information.

Table 3-1 is changed to include a reference to the Multi-Root I/O Virtualization and Sharing specification for the DLLP Type Encodings defined in that specification. This makes Table 3-1 a complete list of all currently defined encodings.

5. Analysis of the Software Implications

No effect

6. Analysis of the C&I Test Implications

No required changes. Optional change to the Link Test Specification.

Test 52-160 of the *PCI Express Architecture Link Layer and Transaction Layer Test Specification Revision 3.0* verifies that the DUT silently drops DLLPs with an undefined encoding. This test does not define the “undefined” encoding(s) that should be used when executing the test.

This Test Specification could be updated to:

1. Indicate that Type Encoding 1110 1111 is used in Test 52-160 (based on feedback from the Gen3 PTC Vendor).
2. Define a new test almost identical to Test 52-160 that extends the test to include all undefined encodings.
3. Define a new test almost identical to Test 52-160 that specifically tests the NOP DLLP Type Encoding as defined in this ECN.

Part II

Detailed Description of the change

Note: Page numbers are relative to [PCI_Express_Base_r3.1_November07-2013_NCB2.pdf](#).

In Section 3.4.1, page 185, modify Table 3-1: DLLP Type Encodings as follows:

...

Table 3-1: DLLP Type Encodings

Encodings	DLLP Type
0000 0000	Ack
<u>0000 0001</u>	<u>MRInit – See the MR-IOV Specification¹</u>
0001 0000	Nak
0010 0000	PM_Enter_L1
0010 0001	PM_Enter_L23
0010 0011	PM_Active_State_Request_L1
0010 0100	PM_Request_Ack
0011 0000	Vendor Specific — Not used in normal operation
<u>0011 0001</u>	<u>NOP</u>
0100 0v ₂ v ₁ v ₀	InitFC1-P (v[2:0] specifies Virtual Channel)
0101 0v ₂ v ₁ v ₀	InitFC1-NP
0110 0v ₂ v ₁ v ₀	InitFC1-Cpl
<u>0111 0v₂v₁v₀</u>	<u>MRInitFC1 (v[2:0] specifies Virtual Link) – See the MR-IOV Specification²</u>
1100 0v ₂ v ₁ v ₀	InitFC2-P
1101 0v ₂ v ₁ v ₀	InitFC2-NP
1110 0v ₂ v ₁ v ₀	InitFC2-Cpl
<u>1111 0v₂v₁v₀</u>	<u>MRInitFC2 – See the MR-IOV Specification²</u>
1000 0v ₂ v ₁ v ₀	UpdateFC-P
1001 0v ₂ v ₁ v ₀	UpdateFC-NP
1010 0v ₂ v ₁ v ₀	UpdateFC-Cpl
<u>1011 0 v₂v₁v₀</u>	<u>MRUpdateFC – See the MR-IOV Specification²</u>
All other encodings	Reserved

¹ The MR-IOV protocol uses this encoding for the MRInit negotiation. The MR-IOV protocol assumes that non-MR-IOV components will silently ignore these DLLPs.

² The MR-IOV protocol uses these encodings after the successful completion of MRInit negotiation.

In Section 3.4.1, page 186, line 6, make the following changes:

- ...
- Vendor Specific DLLP (see Figure 3-10)
 - It is recommended that receivers silently ignore Vendor Specific DLLPs unless enabled by implementation specific mechanisms.
 - It is recommended that transmitters not send Vendor Specific DLLPs unless enabled by implementation specific mechanisms.
 - NOP DLLP (see Figure 3-10a)
 - Receivers shall discard this DLLP without action after checking it for Data Integrity.³

In Section 3.4.1, on page 187, insert a new Figure 3-10a immediately after Figure 3-10:

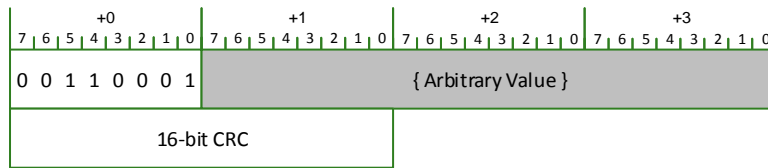


Figure 3-10a: NOP Data Link Layer Packet Format

In Section 3.5.2.1, on page 199, line 11, modify the “Recommended Priority of Scheduled Transmission” Implementation Note as follows:

... Note that the priority of the NOP DLLP and the ~~v~~Vendor sSpecific DLLP ~~is~~ are not listed, as this usage of these DLLPs is completely implementation specific, and there is no recommended priority. ...

In Section 3.5.2.2, page 201, line 4, make the following changes:

- Received NOP DLLPs are discarded
- Received FC DLLPs are passed to the Transaction Layer

³ This is a special case of the more general rule for unsupported DLLP Type encodings (see Section 3.5.2.2).