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NetSpeed IMG2 Protocol Support

About This Document

This document describes the IMG2 protocol support in NetSpeed IP.

Audience

This document is intended for users of NocStudio:

* NoC Architects
* NoC Designers
* SoC Architects
* SoC Designers

Prerequisite

Before proceeding, you should generally understand:

* IMG2 interconnect standard

Related Documents

The following documents can be used as a reference to this document.

* NetSpeed NocStudio User Manual

Customer Support

For technical support about this product, please contact [support@netspeedsystems.com](mailto:support@netspeedsystems.com)

For general information about NetSpeed products refer to: [www.netspeedsystems.com](http://www.netspeedsystems.com)

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# IMG2 Protocol Support in NetSpeed IP

## IMG Protocol 2.0 Signal Implementation

The table below provides a high level summary of IMG Bus Protocol 2.0 signals implemented by NetSpeed IP.

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| IMG2 Signal | Supported Values |
| img2\_addr[P\_SLV\_ADDRS\_WIDTH-1:0] | 14-60 |
| img2\_wdata[P\_IMG2\_DATA\_WIDTH-1:0] | 64,128,256,512 |
| img2\_rdnwr[0] | 0,1 |
| img2\_data\_mask[P\_IMG2\_DATA\_WIDTH/8-1:0] | 8,16,32,64 (1/8 width of img2\_wdata) |
| img2\_burst\_length[4:0] | 0-31 (1-32 transfers) |
| img2\_burst\_start[0] | 0,1 |
| img2\_burst\_end[0] | 0,1 |
| img2\_burst\_type[1:0] | 0 (Fixed), 1 (Increment), 2 (Wrap) |
| img2\_burst\_width[2:0] | 0-7 (1-8 bytes) |
| img2\_tag\_id[P\_IMG2\_TAG\_ID\_WIDTH-1:0] | 0-64 (set by tag\_width) |
| img2\_tag\_sb[P\_IMG2\_TAG\_SB\_WIDTH-1:0] | Set by tag\_sb\_width\_trans/tag\_sb\_width\_per\_byte |
| img2\_cache\_snoop[0] | 0,1 |
| img2\_rdata[P\_IMG2\_DATA\_WIDTH-1:0] | 64,128,256,512 |
| img2\_rd\_tag\_id[P\_IMG2\_TAG\_ID\_WIDTH-1:0] | 0-64 (set by tag\_width) |
| img2\_rd\_tag\_sb[P\_IMG2\_TAG\_SB\_WIDTH-1:0] | Set by tag\_sb\_width\_trans/tag\_sb\_width\_per\_byte |
| img2\_noreorder[0] | Tied-off and unused |
| img2\_tte[7:0] | Tied-off and unused |
| img2\_user | If img2s\_simple\_sideband is TRUE, this signal exists and carries the user bit information. If img2s\_simple\_sideband is false, the standard img2\_tag\_sb/img2\_rd\_tag\_sb signals carry the user bits. |

## New Bridge Properties To Support IMG 2.0 Bus Protocol

The following bridge properties have been added to NocStudio:

* tag\_width: Sets the width of the per-transaction tag field. Allowed values are 0-64, the default value is 4.
* tag\_sb\_width\_trans: Sets the width of the tag sideband bits for read/write commands. The default value is 0.
* tag\_sb\_width\_per\_byte: Sets the width of the tag sideband bits, per byte of the data fields associated with read and write commands. The default value is 0.
* img2s\_simple\_sideband: Controls the variant of sideband bits enabled. Allowed values are {yes,no}. If yes, use img2\_user for sideband width, and tag\_sb\_width\_per\_byte will be set to 0. If no, use the standard rd\_tag\_sb for sideband bits. The default value is no.

## Removed Interface Properties

The properties listed below have been removed for IMG protocol. They are replaced by the properties listed above:

* user\_width\_trans
* user\_width\_per\_byte.

## Existing Interface Properties Which Support IMG 2.0 Bus Protocol

The following existing NocStudio interface properties may be used to configure IMG Bus 2.0 interfaces:

* data\_width: Allowed values are 64, 128, 256, 512.

## Existing Bridge Properties Which Support IMG 2.0 Bus Protocol

The following existing bridge properties support IMG2 bridge interfaces:

* axi4\_addr\_width: Used to set the width of address busses.
* img2s\_max\_outstanding\_read\_requests: Defines storage allocated for read data. Allowed values are 1-256, the default value is 2.
* img2s\_supports\_multibeat\_bursts: Allows img2 slave bridges to generate multi-beat burst requests. Allowed values are {yes, no}. The default value is yes.

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