

NetSpeed IMG2 Protocol Support

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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

For general information about NetSpeed products refer to: www.netspeedsystems.com

1 CONTENTS

About This Document	2
Audience	2
Prerequisite	2
Related Documents	2
Customer Support	2
2 IMG2 Protocol Support in NetSpeed IP	4
2.1 IMG Protocol 2.0 Signal Implementation	4
2.2 New Bridge Properties To Support IMG 2.0 Bus Protocol	4
2.3 Removed Interface Properties	5
2.4 Existing Interface Properties Which Support IMG 2.0 Bus Protocol	5
2.5 Existing Bridge Properties Which Support IMG 2.0 Bus Protocol	5

2 IMG2 PROTOCOL SUPPORT IN NETSPEED IP

2.1 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.

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.

2.2 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.

2.3 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`.

2.4 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.

2.5 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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