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

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3 IMG2 PROTOCOL SUPPORT IN NETSPEED IP

3.1 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.

3.2 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.

3.3 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.

3.4 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.

3.5 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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