# NetSpeed Orion

## *Release Notes*

**Version: ORION-18.10**

**Revision: 0.0**

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# NetSpeed Orion 18.10 Release Notes

## About This Document

This document lists the release notes for NetSpeed Orion. Using NetSpeed NocStudio, users can define NoC architectures, describe specifications and requirements, optimize the NoC design and finally generate the NoC IP files such as RTL, testbench, synthesis scripts, NoC IP documentation etc.

## Audience

This document is intended for users of NocStudio:

- NoC Designers
- NoC Architects
- SoC Architects

## Prerequisite

Before proceeding, you should generally understand:

- Basics of NetSpeed Orion IP Technology

## 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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# Revision History

| Revision | Date | Updates |
|---|---|---|
| 0.0 | Nov 02, 2018 | Initial Release |
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# Contents




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# 1 Deliverables

- NetSpeed NocStudio Package and one of the license options:
  - N7 version supporting 8 layers and 256 bridges
  - N6 version supporting 4 layers and 128 bridges
  - N5 version supporting 4 layers and 60 bridges
  - N4 version supporting 2 layers and 32 bridges
  - N3 version supporting 1 layers and 12 bridges
- NocStudio executable with interactive GUI.
- Verification checkers to be used in the DV environment.
- Sanity Test Bench.
- Documentation
  a. NocStudio User Manual: The User Guide describes how to set up a system using NocStudio and how to use it to generate NetSpeed IP.
  b. IP Integration Spec: The Integration Manual describes how to integrate a configured network into a larger subsystem.
  c. Technical Reference Manual: The Technical Reference Manual describes how the functionality of the various NoC elements, the features and functions available, and how to dynamically change the functions using the programmer's mode.

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# 2 Installation

- NocStudio uses FlexLM based licensing.
  - Linux CentOS 5.5 or higher
  - For node-locked license file, copy over the license file under NocStudio installation directory and renamed it as "license.dat". If the license file resides in a separated folder, please set environment variable LM_LICENSE_FILE with the proper path.
  - For floating licensing scheme, please download and extract netspeed.flexlmpkg.tar.gz for 32- or 64-bit license daemon and follow FlexLM documentation.
  - 
  - NOTE: Please use a Linux machine to unpack release tarball set. Unpack Linux tarball set on Windows machines may cause problems with symbolic links.
  - 
- The release makes use of Qt libraries covered under LGPL:
  - http://qt-project.org/downloads

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# 3 Feature Update: Design Methodology

## 3.1 RTL Grouping visible in GUI

In the new release, the users can view the RTL Groups created, in the GUI. This feature enables the users to highlighting the rtl groups using the highlight command.

Syntax:

*highlight –rtl_group <name_of_the_group> -color <color>*

## 3.2 Increase in Number of AXI Bridges

In the new release, the maximum number of bridges for AXI nocs has been increased to 1024 from the previous limit of 256 bridges.

## 3.3 Limited Stamping Capability

Stamping is a process of simplifying physical design by combining all NoC elements into a single RTL module which can be hardened once and instantiated multiple times to fulfill the interconnect requirements.

The new release has limited stamping capabilities for Orion NoC. Contact NetSpeed Support for more details.

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# 4 Feature Updates: System Interconnect

## 4.1 Reorder Buffer Shareability

The new release provides users the ability to share the reorder buffer entries, when the burst sizes are smaller than the reorder buffer provisioned. This improves efficiency of the reorder buffers when the bursts are smaller. This shareability can be enabled using the following bridge props:

*max_rd_splits_in_shared_entry*

*max_wr_splits_in_shared_entry*

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# 5 Feature Updates: Non-Coherent Components

None

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# 6 EDA Tool Compatibility

- Cadence EDA tools were used for verification and synthesis of this product.
  - Incisive RTL Simulator 15.22-s018
  - Genus RTL Synthesis 16.22-s033_1
  - HAL Linting tool 15.20-s027
  - Conformal 16.20-s240
- Compatibility testing has been done with VCS vcs-mx/L-2016.06 and Synopsys Design Compiler L-2016.03-SP5

Please contact NetSpeed support team (support@netspeedsystems.com) for additional platform and tool compatibility details.

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# 7 Errata: System Interconnect

## 7.1 Mesh Properties changed to Default Properties

In the process of enabling or disabling the presence of registers globally at all the routers in the NoC, the mesh properties, *router_registers_enabled* and *bridge_amba_registers_enabled* have been changed to default properties (prop_default).

Replace mesh_prop *router_registers_enabled* and mesh_prop *bridge_amba_registers_enabled* with prop_default *router_registers_enabled* and prop_default *bridge_amba_registers_enabled* respectively, in the config file before running NocStudio.

## 7.2 Running Partial Traffic Flows Within A Profile

During performance simulation, running partial traffic flows within a profile eases system level debug. In 1810, this feature is only supported when rate scale != 1.

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# 8 Errata: Non-Coherent Components

None

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# 9 Changes to Commands and Properties

## 9.1 Command Changes

| Command Name | Comment |
|---|---|
| color_no_credit_blames | New command to color channels in the GUI based on no_credit blocked cause blame after performance simulation |
| reset_hide_warning | New command to reset all warnings hidden by the hide_warning command |

## 9.2 Mesh Property Changes

| Property Name | Comment |
|---|---|
| router_registers_enabled | Deprecated. This property has been replaced by prop_default router_registers_enabled |
| bridge_amba_registers_enabled | Deprecated. This property has been replaced by prop_default bridge_amba_registers_enabled |

## 9.3 Host Property Changes

| Property Name | Comment |
|---|---|
| llc_data_width | New property to control the data width of the LLC and its master and slave bridges |
| llc_tag_ram_1r1w | New property to enable/disable the use of dual port rams for the tag memory in the LLC and ICCC |

## 9.4 Bridge Property Changes

| Property Name | Comment |
|---|---|
| axi4m_ar_reorder_entries | Deprecated |
| axi4m_ar_reorder_bypass_enable | Deprecated |
| amba_registers_enabled | New property to control the presence of registers per AXI bridge |

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| | |
|---|---|
| max_rd_splits_in_shared_entry | New property to control the number of read split transactions that share a common AID table tracking entry |
| max_wr_splits_in_shared_entry | New property to control the number of write split transactions that share a common AID table tracking entry |

## 9.5 Interface Property Changes

None

## 9.6 Link Property Changes

None

## 9.7 Router Property Changes

| Property Name | Comment |
|---|---|
| registers_enabled | New property to control the presence of registers per router |

## 9.8 VC Property Changes

None

## 9.9 Default Property Changes

| Property Name | Comment |
|---|---|
| router_registers_enabled | New property to set the default value of the router property registers_enabled to enable or disable presence of registers at a router. This property replaced mesh property router_registers_enabled. |
| bridge_amba_registers_enabled | New property to set the default value of the bridge property amba_registers_enabled to enable or disable presence of registers at an AXI bridge. This property replaced mesh property bridge_amba_registers_enabled. |
| no_credit_blame_tracking | New property to enable or disable tracking of the cause of no_credit blocked causes at TX interfaces during NocStudio performance simulation |

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|---|---|
| floorplan_view_snapping | New property to enable or disable the automatic snapping of hosts and bridges at a fixed granularity when they are drawn or moved in the floorplan view |
| floorplan_view_snapping_granularity | New property to control the granularity of snapping of hosts and bridges at a fixed granularity when they are drawn or moved in the floorplan view |

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# 10 Hot Fixes

None

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