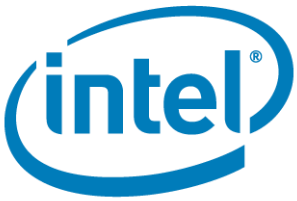

# CFG Orion

## *Release Notes*

**Version: ORION-19.04**

**Revision: 0.0**

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# CFG Orion 19.04 Release Notes

## About This Document

This document lists the release notes for CFG Orion. Using CFG 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 Architects
- NoC Designers
- SoC Architects

## Prerequisite

Before proceeding, you should generally understand:

- Basics of Network on Chip technology
- AMBA interconnect standards

## Related Documents

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

- CFG NocStudio Orion User Manual
- CFG Orion IP Integration Spec

## Customer Support

For technical support about this product and general information, contact CFG Support.

# Revision History

| Revision | Date | Updates |
|---|---|---|
| 0.0 | 04/08/2019 | Initial Version |

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# 1 DELIVERABLES

- CFG NocStudio Package contains N7 version of the tool supporting 16 layers and 256 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 CFG 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.

# 2 INSTALLATION

## 2.1 LICENSING

NocStudio uses FlexLM based licensing hosted by Intel Central Licensing group using two dedicated license servers: one in Santa Clara and the other is located in Israel.

In addition to LM_PROJECT, a linux environmental variable *NETSPD_LICENSE_FILE* shall be set as shown below in order to access the licenses. The LM_PROJECT is essential for users not to check out the wrong combination of license features by accident.

```
setenv NETSPD_LICENSE_FILE
7010@netspeed01p.elic.intel.com:7010@netspeed02p.elic.intel.com
```

For teams without LM_PROJECT defined, a node-locked license file may be issued. Simply copy over the license file under NocStudio installation directory and renamed it as "license.dat". If the license file resides in a separated folder, user may set environment variable *LM_LICENSE_FILE* before opening NocStudio.

## 2.2 DELIVERABLES / TARBALL SET

The CFG IPs and their configuration tool NocStudio have been packaged individually for maximum flexibility allowing mix and match. Each release is tagged with <yy><mm> where yy is the last 2 digits of the year and mm is the month in integer. As an example, release in Jan 2019 will be referenced as 1901 release. Un-tar all individual tarballs delivered as part of the tarball set using the command below.

```
linux% tar zxvf <tarball_name>.tar.gz
```

Here is a snippet of tarball set in 1904 release: netspeed-<release>.<package>.tar.gz

| Tarball name | Description | Category |
|---|---|---|
| netspeed-1904.tar.gz | NocStudio | Base |
| netspeed-1904.iculibpkg.tar.gz | Unicode ICU lib package | Base |
| netspeed-1904.cruxpkg.tar.gz | Crux IP package (non-AMBA) | NSIP IP |
| netspeed-1904.orionpkg.tar.gz | Orion IP package | AMBA IP |
| netspeed-1904.geminipkg.tar.gz | Gemini IP package | AMBA IP |
| netspeed-1904.pegasuspkg.tar.gz | Pegasus IP package | AMBA IP |

| | | |
|---|---|---|
| netspeed-1904.ocppkg.tar.gz | OCP support package | Connectivity |
| netspeed-1904.daupkg.tar.gz | Deadlock Avoidance Unit | System |
| netspeed-1904.syscpkg.tar.gz | SysC (PA) support package | Flow |
| netspeed-1904.cpp61pkg.tar.gz | C++ Modeling API support package for gcc 6.1 | Flow |

**Note**:
The release makes use of Qt libraries covered under LGPL: http://qt-project.org/downloads

# 3 FEATURE UPDATES

## 3.1 GUI SHORTCUTS

Keyboard shortcuts for switching tooltip ON and OFF (Ctrl + t), display nodes as (X,Y) or Grid number (Ctrl + n) and enable web browser to open the noc_reference_manual.html after gen_ip automatically or not (Ctrl + g) have been added in the new release.

## 3.2 CONFIGURABLE SLAVE BLOCK

In the current release, the Configurable Slave Block has been enhanced with low-power and full registers support. This is a feature complete release.

## 3.3 MULTIPLE HASH VALUES TARGETED TO SAME DESTINATION

In this release, NocStudio allows user to define the same member multiple times in a group (ccc, ice, llc, ram, cache, slave groups) which removes the power-of-2 restriction defined in a group in prior releases. As an example, the command below allows user to specify ccc0 twice resulting 50% load and both ccc1 and ccc2 get 25% each using address bits [11:10] as slicing bits.

```
add_ccc_group grp1 -members ccc0 ccc0 ccc1 ccc2 -slice_bits 0xC00
```

## 3.4 SUPPORT FOR FILTERING BASED ON AID

In this release, the performance statistical counter can now filter events based on the transaction IDs. Please refer to the programming model chapter (AXIM_EVENT_CAPTURE_ID_* registers) for details.

## 3.5 MULTIPLE Q-CHANNEL / NSPS DOMAIN SUPPORT ON SLAVE HOST

In this release, NocStudio allows user to define multiple Q-channel interfaces along with its corresponding NSPS (Netspeed Power Supervisor) on an external slave host which is in a single power domain) using “add_qchannel_domain” and bridge property “qchannel_domains_host”. All qchannels are automatically added to the power domain dependency derivation which means all these domains need to be active for transactions destined to this slave host.

## 3.6 NEW MESH PROPERTY “ARSONS” SUPPORT

In this release, user can use this mesh property to map Address Request (AR) channel on NOC using the sideband wires which doesn’t have the limitation of power-of-2 multiplication when

wiring resource is not enough. This can remove un-necessary NOC wire overhead for the AR channel.

## 3.7 STAMPING SUPPORT

### 3.7.1 Clock Domain Stamping Support

In this release, NocStudio supports stamping of Clock domains. However, if two elements of the first node being stamped have the same clock domain, corresponding elements of at every other nodes must also have the same clock domain.

### 3.7.2 Power Domain Stamping Support

In this release, NocStudio supports elements of always-on power domains to be stamped. All the element being stamped must all be always on. Failing this condition lead to gen_ip errors.

## *PRELIMINARY FEATURES*

## 3.8 CMI SUPPORT

In this release, a license controlled CMI support has been added. Please contact CFG support for details.

## 3.9 OCP SUPPORT

In this release, a license controlled OCP support has been added. Please contact CFG support for details.

## 3.10 COLLAGE SUPPORT

In this release, NocStudio has the capability to generate preliminary collaterals for Collage. This is a license-controlled feature, please contact CFG support for details.

# 4 EDA TOOL COMPATIBILITY

- Cadence EDA tools were used for verification and synthesis of this product.
  - Incisive RTL Simulator 15.22.018
  - Design Compiler RTL Synthesis N-2017.09-SP3
  - HAL Linting tool 15.20.027
  - Conformal 16.20.s240
- Compatibility testing has been done with VCS N-2017.12-SP2-4.
- For Platform Architect, used GCC version is gcc-6.1.0a. (Backward compatible upto gcc-5.2.0-64)
- Please refer to IP Integration specification to enable/disable specific CFG checker in order to resolve or workaround any verification related issues, if any.

Contact your CFG or Synopsys support team for assistance.

# 5 ERRATA

None

# 6 CHANGES TO COMMANDS AND PROPERTIES

## 6.1 COMMAND CHANGES

| Command Name | Comment |
|---|---|
| add_qchannel_domain | Command to add a new Q-channel domain |
| del_qchannel_domain | Command to remove a Q-channel domain |
| list_qchannel_domains | Command to list all Q-channel domains |
| add_master_group | Command to add a new master group |
| del_master_group | Command to delete a specific master group |
| list_master_groups | Command to list all the master groups |
| add_csb_range_filter | Command to add a security range filter to a configurable slave block |
| del_csb_range_filter | Command to delete a range filter from a configurable slave block |
| list_csb_range_filters | Command to list all the range filters in one or more configurable slave blocks |

## 6.2 DEFAULT PROPERTY CHANGES

None

## 6.3 MESH PROPERTY CHANGES

| Property Name | Default Value | Comment |
|---|---|---|
| ar_on_sb | no | Command to use sideband to carry ar data |
| b_on_sb | no | Command to use sideband to carry b data |

## 6.4 BRIDGE PROPERTY CHANGES

| Property Name | Default Value | Comment |
|---|---|---|

| | | |
|---|---|---|
| axi4s_drain_b_response | no | Command to indicate whether axi4s device has pre-allocated space for B response packets to drain into the bridge |
| qchannel_domains_host | | Command to set the list of Q-channel domains on the host side of the bridge |
| ocpm_pipelining_level | 0 | Command to set the level of pipelining for timing, latency and area trade-off |

## 6.5 HOST PROPERTY CHANGES

| Property Name | Default Value | Comment |
|---|---|---|
| cc_directory_hash_mode | hash_w_tag_reversed | Command to specify the type of hashing used in the directory for the CCC |

## 6.6 INTERFACE PROPERTY CHANGES

None

## 6.7 LINK PROPERTY CHANGES

None

## 6.8 ROUTER PROPERTY CHANGES

None

## 6.9 VC PROPERTY CHANGES

None

## 6.10 CSB STORAGE PROPERTY CHANGES

None

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