

CFG Gemini

***Release Notes***

**Version: GEMINI-20.Q1**

**Revision: 0.0**

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CFG Gemini 20.Q1 Release Notes

About This Document

This document lists the release notes for CFG Gemini. 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 Gemini User Manual
* CFG Gemini IP Integration Spec

Customer Support

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

Revision History

|  |  |  |
| --- | --- | --- |
| Revision | Date | Updates |
| 0.0 | Jan 29, 2020 | Initial Version |

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# 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
  1. NocStudio User Manual: The User Guide describes how to set up a system using NocStudio and how to use it to generate CFG IP.
  2. IP Integration Spec: The Integration Manual describes how to integrate a configured network into a larger subsystem.
  3. 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.

# Installation

## 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](mailto: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.

## 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 1910 release: netspeed-<release>.<package>.tar.gz

**Tarball name Description Category**

netspeed-1910.tar.gz NocStudio Base  
netspeed-1910.iculibpkg.tar.gz Unicode ICU lib package Base

netspeed-1910.cruxpkg.tar.gz Crux IP package (non-AMBA) NSIP IP

netspeed-1910.orionpkg.tar.gz Orion IP package AMBA IP  
netspeed-1910.geminipkg.tar.gz Gemini IP package AMBA IP  
netspeed-1910.pegasuspkg.tar.gz Pegasus IP package AMBA IP

netspeed-1910.ocppkg.tar.gz OCP support package Connectivity  
netspeed-1910.daupkg.tar.gz Deadlock Avoidance Unit System

netspeed-1910.syscpkg.tar.gz SysC (PA) support package Flow

netspeed-1910.cpp61pkg.tar.gz C++ Modeling API support Flow  
package for gcc 6.1

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

# Feature Updates

## Router Switch Streaming Bridge (RSSB) Module

In this release, a new router switch streaming bridge module has been introduced which replaces the traditional router switch module. This module is needed to support the CMI and IDI protocols in the NoC and to enable the new RegBus Controller (RBC).

## Regbus Controller

In this release, a new module - Regbus Controller is introduced, which replaces the existing regbus tunnel module. This RBC supports multiple porsts with different protocols, accessing the regbus layer.

* AXI4S port for tunneling requests from the main NoC layer to the Regbus layer.
* APBM interface
* IOSF-SB interface
* IOSF-APB interface
* AXI4LM

This regbus controller has a new regbus master, RBC-RBM, which connects to RBC on the host side and RSSB on the NoC side.

## IOSF Sideband

------------------------------------------------------------------------------------------------

***Preliminary Features***

## CMI Support

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

## IDI Support

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

## OCP Support

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

## UFI Support

In this release, a license controlled UFI support has been added for NocStudio use, but not RTL generation. Please contact CFG support for details.

# Hot Fixes

## CMI Performance Issue

In this release, an issue with the CMI Protocol Handler which affects the performance simulation in NocStudio, has been fixed.

## SCF gen\_rtl failures

In this release, an issue with NocStudio crash on SCF configs, when pipeline\_depth is specified has been fixed.

# EDA Tool Compatibility

* Cadence EDA tools were used for verification and synthesis of this product.
* Xcelium 19.03-s003
* 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 Architrect, 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.

# Errata

None

# Changes to Commands and Properties

## Command Changes

|  |  |
| --- | --- |
| **Property Name** | **Comment** |
| add\_regbus\_controller | This command adds a Regbus Controller (RBC) with its RBM and optional Axi4s bridge to tunnel requests from masters in the NoC, or APBM| AXI4LM| IOSFSB| IOSFSB2APB interfaces to drive external requests into the RBC. |
| vifce\_prop | This command is used to set or view a named property of a particular Interface's virtual interface and an optional direction in/out, w.r.t the host. |
| reset\_mesh | This command resets the previously created mesh. |

## Default Property Changes

|  |  |  |
| --- | --- | --- |
| **Property Name** | **Default Value** | **Comment** |
| cc\_axi4m\_acelite\_conversion | no | Deprecated. Only the bridge property is available. |
| rssb\_router | no | Deprecated. By default all routers are RSSB. |

## Mesh Property Changes

None

## Bridge Property Changes

|  |  |  |
| --- | --- | --- |
| **Property Name** | **Default Value** | **Comment** |
| axi4m\_ar\_max\_beats | 256 | This property is used to set the limit on the burst length for reads. |
| axi4m\_aw\_max\_beats | 256 | This property is used to set the limit on the burst length for writes. |
| axi4s\_memory\_type | device | This property indicates the Memory Type fot the AXI slave as described in the AXI spec. |
| cmi\_rd\_req\_max\_credit\_error\_fatal | no | This property is used to enable the read completion error type functionality in the CMI bridge. |
| cmi\_rdcpl\_max\_credit\_error\_fatal | no | This property is used to control whether the interrupt raise on read credit overflow will be fatal or non-fatal. |
| cmi\_route\_lookup\_error\_fatal | no | This property is used to enable the read completion error type functionality in the CMI bridge. |
| cmi\_rsp\_max\_credit\_error\_fatal | no | This property is control whether the interrupt raise on read credit overflow will be fatal or non-fatal. |
| cmi\_unsupported\_opcode\_error\_fatal | no | This property is used to enable the read completion error type functionality in the CMI bridge. |
| host\_idi\_max\_outstanding\_requests | -1 | This property sets the number of IDI max outstanding requests. |
| host\_upi\_max\_outstanding\_requests | -1 | This property sets the number of UPI max outstanding requests. |
| idi\_c2u\_strap\_data\_header\_sep\_enable | no\_w\_pins | This property is used to enable or disable the C2U straps to support separation of header and data in the IDI bridge and also to control the presence of C2U strap pins on the boundary of the bridge wrapper. |
| idi\_c2u\_strap\_support\_stall\_enable | no\_w\_pins | This property is used to enable or disable the C2U straps to support stalls in the IDI bridge and also to control the presence of C2U strap pins on the boundary of the bridge wrapper. |
| idi\_c2u\_strap\_spare | 4 | This property is used to set the width of the C2U spare strap signals for this bridge. |
| idi\_u2c\_strap\_spare | 5 | This property is used to set the width of the U2C spare strap signals for this bridge. |

## Host Property Changes

|  |  |  |
| --- | --- | --- |
| **Property Name** | **Default Value** | **Comment** |
| cc\_directory\_latency | 1 | This property specifies the latency of the coherency directory RAM array for the target CCC. |
| llc\_data\_ram\_latency | 2 | This property specifies the latency of the data array for this cache. |
| llc\_tag\_ram\_latency | 2 | This property specifies the latency of the tag array for this cache. |
| cc\_default\_snoop\_mode | n/a | This property sets the masters that this CCC will snoop by default. |
| enable\_fine\_grain\_clock\_gating | no | The property, when enabled, will increase fine grain clock gate efficiency, but at the cost of additional time taken within the cycle. |
| conv\_stall\_enable | no | This property is used to determine whether the converter will use tracker storage to store the command properties for requests being sent from the CMIM. |
| conv\_tracker\_storage\_enable | yes | This property is used to determine whether the converter will use tracker storage to store the command properties for requests being sent from the CMIM. |
| conv\_rsp\_fifo\_depth | 16 | This property is used to set depth of the response fifo in the IDI2CMI converter block. |
| conv\_parity\_enable | no | This property is used to enable enhanced parity on the converters. |
| conv\_enh\_parity\_enable | no | This property is used to enable enhanced parity on IDI2AXI or IDI2CMI converters. |

## Interface Property Changes

|  |  |  |
| --- | --- | --- |
| **Property Name** | **Default Value** | **Comment** |
| cmi\_supports\_interleaved\_response | no | For CMIM bridges, indicates whether the CMI VC can accept interleaved read data completion responses. |

## Link Property Changes

None

## Router Property Changes

None

## VC Property Changes

None

## CSB Storage Property Changes

None

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