



# **MatchLib Connections Release Notes**

Software Version v1.2.2

December 2019



Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Table of Contents

**Release 1.2.2..... 2**  
    *Enhancements.....2*  
    *Corrected Issues.....2*

**Release 1.2.1..... 3**  
    *Enhancements.....3*  
    *Corrected Issues.....3*

**Release 1.2.0..... 4**  
    *Enhancements.....4*  
    *Corrected Issues.....5*

**Supported Compilers..... 6**



## Release 1.2.2

---

The following topics describes the changes that were made to the *MatchLib Connections* library since the last release. This release provides new functionality, enhancements and bug fixes. This version of *MatchLib Connections* was included in Catapult releases 10.6a.

### Enhancements

Formatted with AStyle

### Corrected Issues

N/A

## Release 1.2.1

---

The following topics describes the changes that were made to the *MatchLib Connections* library since the last release. This release provides new functionality, enhancements and bug fixes. This version of *MatchLib Connections* was included in Catapult releases 10.6.

### Enhancements

None

### Corrected Issues

The following bugs were fixed:

- **(no bug #):** Corrected p2p\_checker to be sync\_checker

# Release 1.2.0

---

The following topics describes the changes that were made to the *MatchLib Connections* library since the last release. This release provides new functionality, enhancements and bug fixes. This version of *MatchLib Connections* was included in Catapult releases 10.5c.

## Enhancements

This update to the Connections library contains significant enhancements to support multiple clocks and resets, as well as enhanced error checking. User models written using earlier version of the Connections library should work with this updated version without any modifications.

### Multiple clocks are now supported.

Prior versions of the library only supported a single global clock, specified via the `set_sim_clk()` call. It is no longer necessary for user models to make this call, however if they do it is silently ignored.

Now, all clocks (`sc_clock` instances) are automatically discovered in the entire design.

For each SystemC process using Connections ports, the Connections library automatically determines the associated clock, sync reset, and async reset signals.

Dynamic resets are properly handled by the Connections library.

### Error Reporting

Important errors are now automatically detected and reported by the connections library. The library checks:

- that every process sensitive to a clock consistently use the sync reset and async reset signals.
- that every process using Connections is reset at the start of simulation, and that every port or channel that such processes use have their Connections Reset methods called.
- that all message passing calls (Push, Pop, PushNB, PopNB) occur exactly at the time of the correct clock edge.

### Channel Logging

The channel logging feature now supports both buffered and unbuffered output.

The `channel_logs` class enables logging information to be output from all Connections channel instances in a design.

There is a new optional argument to the `channel_logs::enable(std::string file_name, bool unbuffered = false)` call. For designs where simulation "hangs" or deadlocks, it is useful to set the unbuffered option to true. This will immediately flush all channel transactions to the output, making it easy to identify the last transactions in the system that occurred immediately before the design deadlocked.

### Marshaller Changes

Marshalling support added for `ac_fixed`, `sc_fixed`, `ac_complex`, `ac_std_float`, and `ac::bfloat`.

### Connections Pin-level Signal Names

Connections pin level signal names were changed to be compatible with Catapult naming scheme rdy/vld/dat used with C++ designs. To continue using the original naming (rdy/val/msg), set the compiler flag `-DCONNECTIONS_NAMING_ORIGINAL`

## Removed P2P Dependency

Removed dependency on Catapult's p2p\_sync types for data-less Connections SyncIn/SyncOut ports and SyncChannel.

## Random Stall

Add Connections input port methods to allow user override of randomization parameters when using `CONN_RAND_STALL` feature. Connections by defaults randomizes the Pacer stall and hold bounds. Use `set_rand_stall_prob(float&)` and `set_rand_hold_stall_prob(float&)` to override.

## Corrected Issues

The following bugs were fixed:

- CAT-25216: Change Connections interface pins to match naming of `ac_channel` for the C++ flow.
- CAT-25338: Add connections support for `ac_std_float` and `ac::bfloat`
- CAT-25473: Sign bit needs to be handled properly in marshaller `SpecialWrapper2`
- CAT-25488: Merge MatchLib toolkit `mc_connections.h`, macros, tracing, and logging into Connections
- CAT-25772: Multiple clock and error message enhancements
- CAT-25773: Update Connections with new `channel_logs` class
- CAT-24885: MatchLib connections support for `ac_fixed` and `sc_fixed`
- CAT-24940: Support marshalling in `ac_complex.h`
- CAT-25256: Matchlib connection support for C datatypes
- CAT-25279: `ac_channel bind()` fails with more than three template parameters for `ac_fixed`



## Supported Compilers

---

The MatchLib Connections package requires a C++ compiler that supports the C++11 or newer language standard.