Base Package Release Notes

Software Release 2.51

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Release Notes for the Base Package

This document describes the most important changes to the base package since release 2.50. In addition, it lists the known open issues and limitations in release 2.51.

For more information regarding the status and workarounds related to any of these issues, please contact ClearSpeed support quoting the relevant CTS number.

You should check the ClearSpeed customer support website (http://support.clearspeed.com) for updates to these release notes.

What's new in Release 2.51

This release includes a number of bug fixes since the 2.50 release.

This release supports the Advance e620 card. If you are using an Advance e620 card, it is *essential* that this software release or a later release is installed and that any earlier version of the software is uninstalled.

Issues fixed in Release 2.51

The following issues have been fixed in this release:

CTS 3047: If you used MKL as your host library, you had to link your application with both MKL and CSXL, putting CSXL first. If this was not done, linking could fail with errors due to symbols not being found.

CTS 3690: The description of the `DGESV` function on page 27 of the *CSXL User Guide* described the Fortran interface as:

```
SUBROUTINE DGETRF( N, NRHS, A, LDA, IPIV, B, LDB, INFO )
```

This has now been changed to:

```
SUBROUTINE DGESV( N, NRHS, A, LDA, IPIV, B, LDB, INFO )
```

The rest of the description of this function is correct.

CTS 3701: When tracing was enabled by defining `CSXL_TRACING`, an error message was printed if `CSXL_TRACING_OUTPUT` was not defined:

```
CSXL Error : No output file specified (CSXL_TRACING_OUTPUT not set).
Tracing to stdout. Enabling console-tracing. Warning : This is not
thread-safe.
```

This should not have been reported as an error. Not defining `CSXL_TRACING_OUTPUT` is a valid option.

CTS 3702: When tracing was enabled by defining `CSXL_TRACING`, if `CSXL_TRACING_OUTPUT` was set and `CSXL_CONSOLE_TRACING` was not, the file name defined by `CSXL_TRACING_OUTPUT` was used as a base to which the host name, process id and thread id were appended. Tracing output was written to this file. CSXL created an additional, empty file with the exact file name specified by `CSXL_TRACING_OUTPUT`. This file should not have been created and could be ignored or deleted.

CTS 3838: The CSXL Mathematica example supplied as part of the CSXL Library package did not work on 32-bit Red Hat Enterprise Linux 3 or Red Hat Enterprise Linux 4 platforms. The file `cs_setup_mathematica` has been corrected in this release.

CTS 3923: Calling `CSAPI_get_symbol_value` too many times resulted in the system running out of file handles causing the function to return `DRVErrno_cannot_open_file`. This could cause `csgdb` to print the error message: `ERROR: Failed to open file` after a period of use.

CTS 4033: The board diagnostics tests described in the software installation guide includes a DGEMM test. This test did not work reliably in the previous releases.

Known Issues

The following issues are currently open.

Runtime

CTS 239: `csrun` or host client applications cannot check whether the CSX processor has been reset. Running code on a processor that has not been reset should not be attempted. It is the responsibility of the user to reset the processor before running code (using `csreset -A`).

CTS 1820: The functions:

```
CSAPI_read_mono_memory_async_wait
CSAPI_read_mono_memory_async_poll
```

and their `CSAPI_write` counterparts will not return an error code if the asynchronous transfer failed.

CTS 1982: The kernel driver for 2.4 kernels (RHEL 3) may cause the kernel's memory space to become fragmented, resulting in out of memory failures after a very long period of continuous use. This can only be recovered by rebooting the system.

CTS 2004: This release includes a script for resetting the Advance Accelerator board when `csreset` fails to do so. This does a 'hard' reset of the processors. This functionality will be incorporated into `csreset` in a future release. Before using the reset script, please gather any diagnostic or debugging information as all state will be lost by the hard reset. For example, the output from `csreset -v.`

Before running the script, first setup your environment if you have not already done so. Under Linux, source the `bashrc` file (usually present in `/opt/clearspeed/csx600_m512_le/bin`). For Windows, start a command prompt using the shortcut from the ClearSpeed Start menu item. If you have more than one board, set the environment variable `LLDINST` to the instance number of the board to be recovered. For example, to reset only the first board under Linux enter `export LLDINST=0`

To run the script, type the command `recover_board`. You should then see some output like this:

```
Board recovery utility

This should only be used:
- when csreset fails to reset your board
- after any useful diagnostic information has been gathered (e.g. the
output from csreset -v).

If you wish to continue, press the return key. Otherwise, press
control-c to exit.

If you are happy to run, then press the return key. You will then see
output as follows:

Starting...
25%
50%
75%
DONE.

Board recovery attempted - you can now re-run csreset.
```

CTS 3102: After the installing a 2.24 or 2.5x release of the runtime software, you may get the error message “FPGA upgrade required” even if you have a compatible version of firmware on your board. If the firmware cannot be upgraded immediately, Linux users should first ensure that the `install-csx` script has been run to correctly install the kernel driver. You can also try running the `csboard_config` utility. If this utility fails to run successfully then you must upgrade the firmware on the board. See the firmware upgrade release notes on the customer support site (http://support.clearspeed.com) for details.

CTS 3161: The 2.24 and 2.5x releases of the runtime software will not work with all versions of the firmware on the Advance boards.

See the firmware upgrade release notes on the customer support site (http://support.clearspeed.com) for details.

The firmware release notes recommend checking and, if necessary, upgrading the firmware *before* installing the new software release. If you have already installed the software and now find you are getting the message: “FPGA upgrade required” then you will not be able to use the `csreset` command to obtain the board serial number and firmware version.

You need the board serial number to determine the board type and revision in order to know which firmware file to use.

If you have access to the board, then you can find the serial number on a label on the underside of the board.

Alternatively, you can uninstall the runtime and reinstall an earlier version (2.23 or earlier). Then you can use `csreset` to find the board serial number.

CTS 4128: The diagram showing the memory map for regions allocatewd by the CSAPI functions on p. 45 of the *Runtime User Guide* does not appear in some versions of the document. The correct diagram is reproduced here.

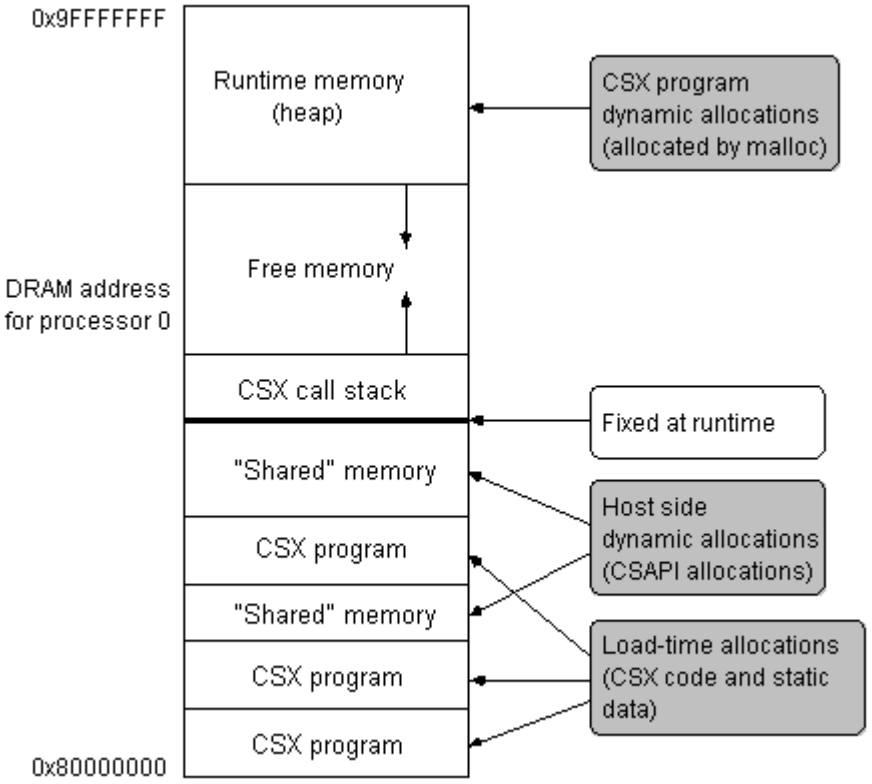

Figure 1. Memory map

CSXL

CTS 1108: If a host application program using the CSXL library is terminated abnormally (for example, by using [Ctrl]+[C]), the Advance Accelerator board may be left in an undefined state. It may be necessary to reset the board (using the `csreset` command) before restarting the application.

CTS 2974: For consistency with the latest implementation of the BLAS library in CSXL, the name of the FFT library has changed:

from `libcsdft.so` to `libcsxl_csdft.so` (Linux)

from `csdft.dll` to `csxl_csdft.dll` (Windows)

Note: *In the 2.24 release, these libraries were incorrectly named `libcsxl_fft.so` and `csxl_fft.dll`.*

In the short term, both library names will be available. The older file names (`libcsdft.so` and `csdft.dll`) are deprecated and will be removed in a future release.

CTS 3003: CSXL does not work with the currently released version of the Goto BLAS host library. Please contact ClearSpeed support (via the support web site http://support.clearspeed.com) for more information on updates and workarounds for this issue.

CTS 3891: This release of CSXL does not work with ACML on Microsoft Windows platforms.

CSDFT

CTS 2483: Using `printfp` in conjunction with the CSDFT library will fail at link time with the error message:

Definition for the symbol 'PRINT_AREA_CONTROL' already found in module default.cso

CTS 2666: When the environment variable `CS_CSAPI_DEBUGGER` is set, the CSDFT host library assumes that the `.csx` file to be loaded has `_debug` appended to the file name. If this file does not exist on the `CSPATH`, the library will fail to find the `.csx` file.

CTS 2679: The CSDFT library does not support 1D natural order to natural order transforms on the board. If this is specified in a plan and the source and destination parameters are both on the board then a call to the `CSDFT_execute_dft` function will return a `CSDftStatus` value of `CSDFT_INVALID_PARAMETER`.

CTS 3308: The function `CSDFT_get_csapi_handle_board` appears in `csapi_support.h` but is not documented in the *CSDFT Reference Manual* nor does it work correctly. Use of this function is not supported in the 2.5x release.