MATLAB Link for Code Composer Studio Development Tools Release Notes

The "MATLAB Link for Code Composer Studio™ Development Tools 1.0 Release Notes" on page 1-1 describe Version 1.0 of the MATLAB Link for Code Composer Studio™ Development Tools.

These Release Notes discuss the following topics:

- "New Features" on page 1-2
- "Upgrading from an Earlier Release" on page 1-4
- "Known Software and Documentation Problems" on page 1-5

Printing the Release Notes

If you would like to print the Release Notes, you can link to a PDF version.

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New Features

This section is organized into the following subsections:

- "Product Restructuring" on page 1-2
- "Added Support For All C6000 and C5000 DSP Families" on page 1-2
- "New MATLAB Objects for Accessing Data on the Target" on page 1-2
- "New Profile Reporting Capability" on page 1-3

Product Restructuring

The Developer's Kit for Texas Instruments™ DSP has been restructured into two products with distinct feature sets:

- MATLAB Link for Code Composer Studio™ Development Tools 1.0 — Use MATLAB with RTDX™-enabled Texas Instruments digital signal processors
- Embedded Target for TI TMS320C6000™ DSP Platform 1.0 — Deploy and validate DSP designs on Texas Instruments C6000 digital signal processors

Together, the products provide capability beyond what was provided by the former product, the Developer's Kit for Texas Instruments DSP 1.2.

Added Support For All C6000 and C5000 DSP Families

MATLAB Link for Code Composer Studio works with both the C6000 and C5000 DSP families.

New MATLAB Objects for Accessing Data on the Target

Using a new object constructor function `createobj`, you can make MATLAB objects that represent data in DSP memory or in DSP registers in CCS projects. These new objects let you access complex data stored in many forms on your target, such as:

- Enumerated data types in DSP memory
- Pointers in DSP memory
- Strings in DSP memory

- Enumerated data stored in DSP registers
- Pointers stored in DSP registers
- Strings stored in DSP registers
- Bitfields stored in memory
- Structures

In addition to the new objects, new functions (methods) and overloading of existing functions lets you manipulate the new objects and their contents.

New Profile Reporting Capability

Using the existing `profile` function, you get a profile report in HTML. When you choose the `'report'` input option to `profile` with your CCS project, the report contains information about the operation of your project. The new report contains the same information returned in a MATLAB structure by function `profile`.

Upgrading from an Earlier Release

This section describes the upgrade issues involved in moving from the Developer's Kit for Texas Instruments ™ DSP 1.2 to MATLAB Link for Code Composer Studio™ Development Tools 1.0.

Note The Developer's Kit for Texas Instruments™ DSP has been repackaged as two separate products, including the MATLAB Link for Code Composer Studio™ Development Tools. See the discussion of that repackaging in the section called "Developer's Kit for Texas Instruments DSP."

To upgrade your current Developer's Kit to MATLAB Link for Code Composer Studio™ Development Tools 1.0, do the following tasks in any order:

- Install the appropriate version of Texas Instruments Code Composer Studio 2.0.
  - To link to C6000 hardware, install the Code Composer Studio Version 2 for TMS320C6000.
  - To link to C5000 hardware, install the Code Composer Studio Version 2 for TMS320C5000.
  - Apply the patch for Code Composer Studio 2.1.
- Install MATLAB Link for Code Composer Studio™ Development Tools 1.0.

Known Software and Documentation Problems

This section includes a link to a description of known software and documentation problems in Version 2.0.

Linking and Code Composer Studio Limitations

- Having CCS visible on your desktop during CCS read or write operations slows down the data transfer process. Generally, transfer rates fall by a factor of four when CCS IDE is visible. When you do not need to interact with CCS IDE, use the function `visible` to force CCS to the background to avoid the slowdown, as shown in this example.

  ```
  cc = ccsdsp;
  visible(cc,0); % Pushes CCS IDE to the background.
  ```

  When your work requires that you interact with CCS IDE during linking operations, place the CCS IDE in the background temporarily while your program transfers large amounts of data in either direction. For example, the following code demonstrates changing the CCS IDE visibility state before and after read and write operations.

  ```
  cc = ccsdsp:
  .
  .         % Interact with CCS IDE.
  .
  .
  vstate = isvisible(cc); % Store visibility state for CCS.
  cc.visible(0);          % Force CCS to the background.
  x = cc.read('FF00','int32',[20 20],20); % Large read transfer.
  cc.write('FF00',int32(randn(20)),20); % Large write transfer.
  cc.visible(vstate); % Return CCS to its previous visibility state.
  .
  .         % Continue to interact with CCS IDE.
  .
  .
  ```

- CCS limits CCS target memory read and write data transfers to 32 KB. This restriction does not affect RTDX links and data transfers.

- During memory transfer operations, you may receive a time-out error telling you that the time allowed for the operation expired. In most cases, the transfer was successful in spite of the error message. Once the transfer operation starts, it cannot be stopped or changed. Time may expire if the transfer completes but the completion message is delayed. Try setting the time-out value to a large number of seconds to avoid the error message.
- When you configure your target code to perform RTDX write operations (write data from the target to the host) on the C5402 DSK, you must poll the "successful emptying of the write buffer" status. The C6000, which allows polling or host-initiated interrupts, does not require polling.

  The following code provides an example of the polling syntax, where `ochan` is the write channel.

```
write(&ochan, &data, sizeof(data));
while ( RTDX_writing != NULL ) {
#if RTDX_POLLING_IMPLEMENTATION
    RTDX_Poll();
#endif
}
```

- On some occasions, CCS opens information dialogs in the background, with your desktop focus on MATLAB. You must respond to the dialogs before you can continue to work in MATLAB or CCS. Until you respond to the dialogs, MATLAB will not respond to input.