MULTOS SmartDeck
RELEASE 3.4.0

Changes since 3.3.0

<u>Compiler (hcc)</u>
- New command line option **–no_locals_opt** to disable optimisation of the layout of stack variables (locals) when using Compact Instructions.
- New command line option **–no_notes** to suppress notes separately to warnings.
- Improve the encoding of function pointers.
- Block the declaration of local variables in code branches as it is not properly supported by the whole tool chain.

<u>C Library</u>
- Fix strstr() function.

<u>Debugger (mdb)</u>
- New interface to hsim for faster debugging.
- Log file contains extra information about the hzx files loaded by the debugger.
- Fix bug when debugging codelets with ID >= 0x0100.
- Added ability to add a breakpoint whilst waiting for an APDU to be executed.
- Fix handling of *Exit To MULTOS and Restart* primitive.
- Fix crash when hovering over function names during debugging session.
- Fix breakpoint listing bug in Eclipse 2018-12 and later.
- Fix crash when a function has many local variables.

<u>File Dump tool (meldump)</u>
- New -codehash option to include the SHA-1 hash of the code section of an ALU.

<u>Object file decoder (hls)</u>
- Fix a source of potential crashes.
- -perso option now reports on the contents of static if no melperso section is declared.

<u>Simulator (hsim)</u>
- Implement new simulator debugging interface.
- Fix bug when using –ifd command line option.

<u>Certificate Generator (melcertgen)</u>
- Support for Multos International step/one cards added: -cardtype MI-S4

<u>Terminal Emulator (hterm)</u>
- Fix bug when creating default DIR record entries.
- Support for "Master ALCs" - sizes come from the ALU, not the ALC.
- App loading support for Multos International step/one cards added: -cardtype MI-S4

Reminders

<u>C Library (libc.hza)</u>
This library now has three different versions which can be built using the batch files provided. The following details can also be found in src\libc\README.txt..

Option (2) is built and installed by default with SmartDeck. If you want
to use another version you must run the relevant build script and copy the resulting libc.hza file to the

lib folder.

1. build_legacy.bat: Compatible with all MULTOS implementations ever. i.e. the library shipped with previous SmartDeck versions.
2. build.bat: Compatible with all MULTOS 4.5.1 and later implementations. Includes faster versions of:
    a. The shift operators (<< and >>) when shifting by a variable number of bits
    b. strcpy, strncat and strncpy
3. build_optimised.bat: For platforms that support the prototype BITTEST and CMPBRA instructions.

The type QWORD previously defined as a struct containing two DWORD values was redefined to be a uint64_t in version 3.2.2. This requires you to modify old code referring to QWORD. Most notably this will be when using the multosGetRandom() function.

IMPORTANT: In order to use this version of SmartDeck you will also need (if not already installed):

Eclipse 2018-12 for C/C++ Developers (or later):

Copy the MULTOS Eclipse plugin (com.multos.cdt.toolchain*.jar) from the SmartDeck installation folder to the *plugins* folder of your Eclipse installation.

Java Runtime Environment – JRE v8 or later

Environment variables
To make the tools available, you must add the bin directory, where the executable program files are installed, to your PATH environment variable.   You do this by setting the "System Environment Variables" on your PC. Usually SmartDeck is installed to c:\program files\smartdeck or c:\program files (x86)\smartdeck

Likewise, you must add the path to your include directory to the INCLUDE environment variable.

Please refer to the *Getting Started* Guide in **doc\smartdeck-manual.pdf** for full instructions on setting up the environment.

NOTE: The SmartDeck Installation Manager will set up all of this for you. A link for this can be found in the email sent to you following registration at https://app.multos.com

---

If you wish to continue using the legacy (unsupported) debugger and the Java tools then please use SmartDeck 2.3.1.