



Restoring a Corrupt Bolo/Lolo with an ARM Multi-ICE JTAG

Application Note 248

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Abstract

This document describes the procedure using the ARM Multi-ICE for restoring the bootloader (LogicLoader) on a card engine that has had its boot sectors overwritten (block 0 of on-board flash memory).

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REVISION HISTORY

REV	EDITOR	DESCRIPTION	APPROVAL	DATE
A	Aaron Stewart	Release	HAR	7/13/2004
B	Aaron Stewart	Added JTAG jumper settings diagram; Added Required Component: GNU Tools must be installed	HAR	9/10/04

1 Introduction

Logic Product Development has released this document to help customers restore bolo/lolo on a Sharp-ARM based card engine with corrupted flash memory. The applicable card engines include: LH75401-10, LH79520-10, LH7A400-10, LH7A404-10, LH7A404-11.

Note: This document is only applicable for use with an ARM Multi-ICE JTAG.

2 Restoring a Corrupt Bolo/Lolo with ARM Multi-ICE

Required Components:

- Cygwin
- Logic's GNU Tools Toolchain Build
- ARM Multi-ICE Software
- Mice.bat

Important Note: Please confirm that the JTAG jumper settings are correctly configured on the SDK for JTAG Operation.

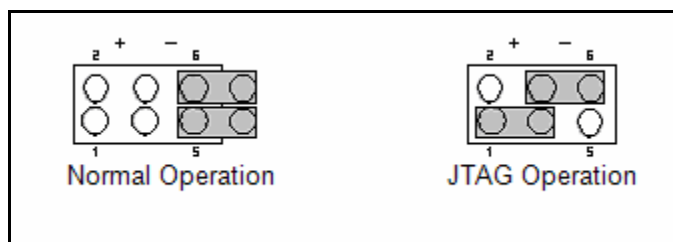


Figure 2.1: JTAG Settings

1. Run the installation CD that comes with the ARM Multi-ICE JTAG programmer. After running the installation CD and installing the software per on-screen instructions, an .ARM\Multi-ICE folder will be created in the location you have designated.
2. The following files need to be added to the 'Multi-ICE' folder. These files are available in a .zip file under software development tools on Logic Product Developments' Product Downloads page:
 - mice.bat
 - multi-ice-gdb-server.exe
 - Multi-ICE.dll
 - onchiptrace.dll
 - cygwin1.dll
 - toolconf.dll
3. Start up Multi-ICEServer.exe by double clicking the icon or selecting it from a Start menu icon.
4. Press the '#?' button in the upper left hand corner (under 'file') to auto-configure.
5. Run '**mice.bat**' by double clicking the file in the .ARM\Multi-ICE folder referenced above. A window, like Figure 2.2 below, will appear. Set your initialization parameters according to the card engine you are using.

Please note the following card engine specific initialization parameters:

- LH75401-10: You don't need to enter any settings for the LH79520-10. Click 'OK.'
- LH79520-10: You don't need to enter any settings for the LH79520-10. Click 'OK.'
- LH7A400: Under 'Processor Settings' configure Multi-ice to start at: **b0010000**. Then, under the 'Advanced' tab, select '**disable cache**' on startup.
- LH7A404: Under 'Processor Settings' configure Multi-ice to start at: **b0010000**. Then, under the "Advanced" tab, select '**disable cache**' on startup.

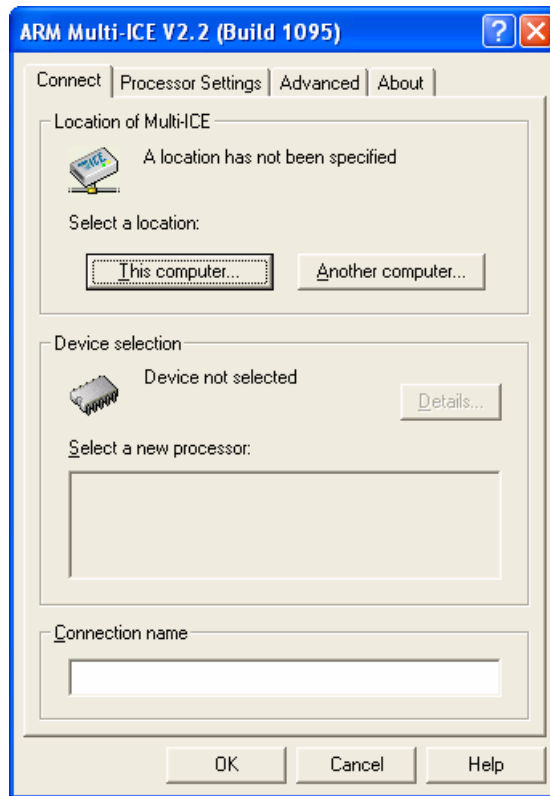
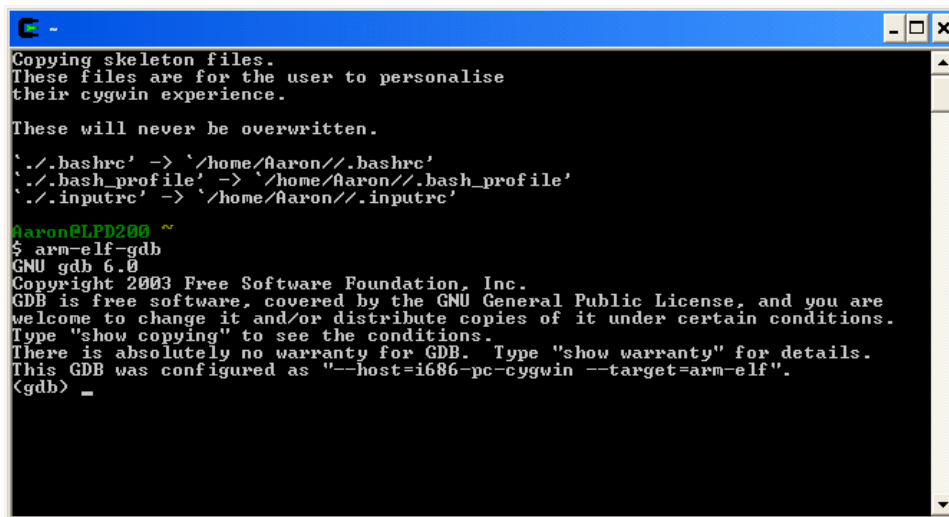


Figure 2.2: Run 'mice.bat'

6. Open a Cygwin Window. See Figure 2.3, below.

(For specifics regarding Cygwin and GNU Tools installation and configuration, please refer to Logic's *Zoom Starter Development Kit User's Manual*.)



```
Copying skeleton files.
These files are for the user to personalise
their cygwin experience.

These will never be overwritten.

'./bashrc' -> '/home/Aaron//.bashrc'
'./bash_profile' -> '/home/Aaron//.bash_profile'
'./inputrc' -> '/home/Aaron//.inputrc'

Aaron@LPD200 ~
$ arm-elf-gdb
GNU gdb 6.0
Copyright 2003 Free Software Foundation, Inc.
GDB is free software, covered by the GNU General Public License, and you are
welcome to change it and/or distribute copies of it under certain conditions.
Type "show copying" to see the conditions.
There is absolutely no warranty for GDB. Type "show warranty" for details.
This GDB was configured as "--host=i686-pc-cygwin --target=arm-elf".
(gdb) _
```

Figure 2.3: Open a Cygwin Window

7. Type 'cd /'. This command will take you to your Cygwin root directory. ('/' means cygwin root, or the cygwin folder.)
8. Next, type 'arm-elf-gdb'. This command will start up the gdb server and present you with a 'gdb' prompt.

Important Note: Make sure to copy the necessary files to your cygwin root directory before launching gdb -- this will allow gdb to locate them for the load.

9. From the 'gdb' prompt enter the following commands. See Figure 2.4, below.
 - 'target remote localhost:9000'
 - load bootstrap file: load <filename>
 - click 'c' to continue
 - click 'Ctrl-C' after 1 second to stop continuation
 - load bolo Ram file: load <filename>
 - open a 'TeraTerm' window
 - click 'c' to continue, a bolo prompt will appear in your Tera Term window.

```
Aaron@LPD200 ~
$ cd /

Aaron@LPD200 /
$ arm-elf-gdb
GNU gdb 6.0
Copyright 2003 Free Software Foundation, Inc.
GDB is free software, covered by the GNU General Public License, and you are
welcome to change it and/or distribute copies of it under certain conditions.
Type "show copying" to see the conditions.
There is absolutely no warranty for GDB. Type "show warranty" for details.
This GDB was configured as "--host=i686-pc-cygwin --target=arm-elf".
(gdb) target remote localhost:9000
Remote debugging using localhost:9000
0x00000000 in ?? (<)
(gdb) load bs_7400_dbg.elf
Loading section .text, size 0x248 lma 0xb0000000
Start address 0xb0000000, load size 584
Transfer rate: 4672 bits in <1 sec, 146 bytes/write.
(gdb) c
Continuing.

Program received signal SIGINT, Interrupt.
0xb00000b8 in ?? (<)
(gdb) load bolo_HEAD-pre1.4_LLH7a400_10_LCE_0009_R_strip.elf
Loading section .boot, size 0x2b8 lma 0xc00c0000
Loading section .text, size 0xe4e8 lma 0xc00c02b8
Loading section .data, size 0x7dc lma 0xc00ce7a0
Loading section .rodata, size 0x2e4c lma 0xc00cef7c
Start address 0xc00c0038, load size 73160
Transfer rate: 58528 bits/sec, 158 bytes/write.
(gdb) c
Continuing.
-
```

Figure 2.4: From the 'gdb' Prompt, Enter the Following Commands

10. In your Tera Term window, complete the following commands:

- type 'load elf' after the losh prompt
- use **File | Send** file functionality to send bolo flash file to board
- type burn, yes, and confirm to burn bolo flash to board
- load lolo flash with the same method as described above.
- Reset the board and the updated version of LogicLoader will appear.

11. Upon completing step 10, above, your corrupt Bolo/Lolo will be restored in the card engine flash memory.