Using MULTI® with the Motorola Picobug Monitor

Version 1.8.9

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INTRODUCTION

The **pbugserv** Debug Server allows developers to download and debug programs on an MCore target board using the Picobug debug monitor over a serial interface.

CONNECTING TO A TARGET WITH pbugserv

To use **pbugserv**, enter the following command either in the MULTI Builder's **Remote**: field or following the **remote** command in the MULTI Debugger.

pbugserv [*-options...*] [*port*] [*baudrate*]

where:

port	Serial port name. Default is com1 on Windows 95/98/NT and /dev/ttya on Solaris.
baudrate	Serial port communication speed: 9600, 19200 (default), or 38400.
-options...	Represents one or more of the following:
-mmc2001	Tells **pbugserv** to use an alternate method of resetting the target board during initialization. See *Alternate Reset*, below.
-no*xxx*	Represents one of the following options. It prevents host-to-target downloading of certain program sections.More than one of these options may be chosen. For example, **-notext -nobss** will prevent downloading of program text and uninitialized data. **-notext** **-nodata** **-nobss** **-noload** The sections actually downloaded or skipped are not limited to **.text**, **.data**, and **.bss**. Instead, **notext** skips all executable sections, **nodata** skips all initialized data, and **nobss** skips all uninitialized data.
-d	Enables host-target debugging. Prints certain requests between the host and the target debug monitor. Requires that MULTI versions 1.8.8 and 1.8.9 be started with the **-X97** option on Windows 95/98/NT to bring up a command window.

The **-nobss** option is particularly useful since the default Green Hills start-up code sets all uninitialized data to zero on program start-up. The Piggyback target monitor does not provide a means to quickly initialize a region of memory to zero. Consequently, **pbugserv** must download blocks of zeros which can be slow at 19200bps.

To specify the **remote:** line in a build (**.bld**) file, Use **Options->Advanced** and use the **Remote** field.

Serial speeds other than 19200bps are supported only if the Picobug resident on the target board supports them.

pbugserv COMMANDS

The following **pbugserv** commands may be entered in the **pbugserv** Target window or by using the **target** command in the MULTI Debugger's command pane.

help Displays a summary of **pbugserv** commands.

noload *text*|*data*|*bss*|*all*

load *text*|*data*|*bss*|*all*

Determines which program sections are downloaded to the target. The list following **load** determines which sections are downloaded. The list following **noload** determines which sections are not downloaded. The default is to download all sections (**load all**).

memread *byte*|*short*|*long* addr

memwrite *byte*|*short*|*long* addr val

Performs a sized memory read or write to the target memory. The size of the access is 1, 2, or 4 bytes when the first (size) argument is byte, word, or long, respectively. For memwrite, the fourth argument specifies the value written to the address.

Both the value and address may be MULTI expressions, using debug symbol labels. The address expression may not contain spaces. Using symbols for which no debugging information exists may yield unexpected results.

Please use byte, halfword (16 bits), or long (32 bits) to designate size. The size designation 'word' is ambiguous because it refers to 32 bits on MCore, but 16 bits on certain other targets.

DETECTING PICOBUG TARGETS

C and C++ programs are able to detect that they are running under the Picobug debug monitor with the **pbugserv** debug server by examining the string pointed to by **envp[0]**, where **envp** is the third argument to **main()** following **argc** and **argv** and is of type **char ****.

For Picobug, **envp[0]**=="PBUG=".

NOTES

NO PROFILING SUPPORT

pbugserv does not support code profiling.

CANNOT HALT A PROCESS

With **pbugserv**, you cannot halt the target system if a program goes into an infinite loop. This is a limitation of the Picobug monitor.

In such cases you must disconnect from the debug server and reset the target board before starting the debug session again.

To disconnect, use the **disconnect** command in the debugger or the **Remote**->**Disconnect** menu item in the Builder or Debugger.

RESET THE TARGET BEFORE STARTING PBUGSERV

We recommend resetting the Picobug target system manually before attempting to connect with **pbugserv**.

The **pbugserv** debug server attempts to perform a software reset by using Picobug's **reset** command. Sometimes the Picobug target monitor fails to respond to the command and appears to freeze.

If **pbugserv** detects this failed **reset** command, it will respond with the following message:

```
pbugserv: Error after sending 'reset' command. Target did
not respond. Please perform a manual reset on the target
and try connecting again.
```

Also, see the following section which discusses an alternate reset method for the MMC2001 PowerStrike system.

ALTERNATE RESET

The **-mmc2001** option should be used when connecting to the MMC2001 MCore evaluation board. With this option, **pbugserv** provides an alternate way of resetting the target by simply branching to **0x2d000040**. Occasionally, the normal Picobug **reset** command causes the target to hang.

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