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3Heron Server/Loader Example

For RTOS-32

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The 3heron example is a simple Server/Loader example program that shows how to boot a 3-processor network. The booted programs don't do a lot, they just pass several small messages between them, and then the programs exit. (Plural is used, as 1 program is loaded to the first processor ('module1.out') and another to the second processor ('module2.out'), and 'module3.out' to the third processor.)

(This example will **not** work with TIM-40 carrier boards such as the HEPC2E, HEPC3, HEPC4 or HECPCI1. It will also **not** work with the HEPC6, a one 'C6x processor board.)

Compiling, linking and running the example

Server/Loader executable

The Server/Loader executable is delivered as a 'sl.exe' file, plus standard configuration files ('sl.cfg' and 'pcdemo.cfg'). The Server/Loader RTB file ('sl.rtb') is included as well. For this example, you can simply use the RTB file. The files are all located in the 'hesl\bin\rtos32' sub-directory of your API&Tools installation (default 'c:\heapi'). An environment variable 'HEAPI_DIR' will point to your installation directory (this has been set up by the API&Tools installation program). Environment variable 'HESL_DIR' will point to the 'hesl' sub-directory within your API&Tools installation directory.

Running the example

To run the example, prepare a floppy disk and insert it into the 'a:' drive. Open a DOS-box, and change directory to the '3heron' directory. Then type:

```
bootdisk $(HESL_DIR)\bin\rtos32\sl a:
```

Next, copy the network file and *.out file to the floppy disk as well:

```
copy network a:
copy mod1_h4.out a:
copy mod2_h4.out a:
copy mod3_h4.out a:
```

if you have an HEPC9 with three HERON4 modules, or

```
copy network a:
copy mod1_h2.out a:
copy mod2_h2.out a:
copy mod3_h2.out a:
```

if you have an HEPC9 with three HERON2 modules.

(To help you start up faster, we have included 12 prepared out files, 3 for use with HEPC9 and three HERON4's, 3 for use with HEPC9 and three HERON2's, 3 for use with HEPC8 and three HERON1's, and 3 for use with HEPC8 and three HERON4's, in the rtos32 sub-directory. But usually the three *.out files must first be created using Code Composer Studio. Please refer to the document in the lower (upper?) directory how to do this.) After completion, remove the floppy disk; insert it into the target machine's floppy drive. Reboot. The machine should now boot from disk. You should see something that ends like:

```
Trying to serve 1 boards.
Entering Server mode.
  First HERON module has started running
HERON module id 0 has replied
HERON module id 1 has replied
HERON module id 2 has replied
Leaving server mode
(Press key to continue)
```

The program may not be able to find 'mod1_h4.out', 'mod2_h4.out', and/or 'mod3_h4.out', assuming three HERON4 modules. In that case **either** (1) change 'mod1_h4.out' to '**a:**\mod1_h4.out', 'mod2_h4.out' to '**a:**\mod2_h4.out', and 'mod3_h4.out' to '**a:**\mod3_h4.out' in the network file on the floppy disk, **or** (2) copy 'mod1_h4.out', 'mod2_h4.out', and 'mod3_h4.out' to 'c:\' of your target machine.

The Server/Loader command line

The Server/Loader uses a command line so that a user can specify the name of a network file and a number of parameters. The most common parameters are `-r`, (reset), `-l` (load), `-s` (serve) and `-v` (verbose). The Server/Loader RTB file in `$(HESL_DIR)\bin\rtos32` has a default command line of:

```
CommandLine "a:\sl.exe -rlsv a:\network"
```

As you can see, with this command line the Server/Loader will expect to find a network description file on the floppy drive. By default, this RTB file will reset the system, boot all processors, and then serve standard I/O requests (`printf`, `fwrite`, etc) coming from the first processor in the system. The verbose option will cause booting information to be show on the screen.

There may be situations where this command line is not what you want. Therefore the Server/Loader is also delivered as an exe file ('sl.exe') plus two configuration files ('sl.cfg' and 'pcdemo.cfg'). You can now change configuration parameters as needed.

Floppy access

To access files on a floppy disk, not only do you need to link with RTFILES-32 libraries, you also need to allocate a DMA buffer for the floppy driver in your configuration file. We added the following line to the 'sl.cfg' configuration file:

```
Locate Nothing FloppyDMA HighMem 18k 32k ReadWrite
```

Please refer to the RTOS-32 manual (Part III, ch. 7, page 300) for more information.

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