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# ***HUNT ENGINEERING***

## ***Stdio Server/Loader Example***

### ***For RTOS-32***

***Document Rev A***  
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***J.Thie 27-01-04***

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# TABLE OF CONTENTS

|  |          |
|--|----------|
| <b>THE STUDIO EXAMPLE.....</b>                         | <b>4</b> |
| <b>COMPILING, LINKING AND RUNNING THE EXAMPLE.....</b> | <b>5</b> |
| SERVER/LOADER EXECUTABLE .....                         | 5        |
| RUNNING THE EXAMPLE .....                              | 5        |
| <b>COMMAND LINE.....</b>                               | <b>7</b> |
| THE SERVER/LOADER COMMAND LINE.....                    | 7        |
| FLOPPY ACCESS.....                                     | 7        |
| <b>TECHNICAL SUPPORT .....</b>                         | <b>8</b> |

The stdio example is a Server/Loader example program that shows how most of the standard I/O functions of the Server/Loader work. The Server/Loader will boot the first processor in the system with “stdio.out”. This booted program will then request the Server/Loader (which is running on RTOS-32) to execute a number of standard I/O functions, such as printf, fwrite, fread and ftell.

(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

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### 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 'stdtest\rtos32' 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 ..\stdio.c a:
copy stdio2.out a:           (if you have a HERON2 module in slot 1)
copy stdio4.out a:           (if you have a HERON4 module in slot 1)
```

(To help you start up faster, we have included 4 prepared out files, stdio2.out for use with a HERON2 and an HEPC9, stdio4.out for use with a HERON4 and an HEPC9, stdio1p8.out for use with HERON1 and HEPC8, and stdio4p8.out for use with a HERON4 and an HEPC8. Please change the 'network' file to suit the module type you have in slot 1 and the board type you use. But usually the \*.out file 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 and insert it into the target machine's floppy disk. Reboot. The machine should now boot from disk. You should see something that ends like:

```
...
fread : 2048 / 2048   feof: 0
fread :    1 / 4096   feof: 16

WRITE 64Kbytes BLOCK

Written 64 kBytes

SYSTEM test

Trying "dir "
float (1.2e-4): 0.000120, 0.00012
double (2.4e-8): 0.000000, 2.4e-008
Leaving server mode
(Press key to continue)
```

Probably the output goes too fast for you to see it all scroll by. The program may not be able to find 'stdio.out'. In that case **either** (1) change 'stdio.out' to 'a:\stdio.out' in the network file on the floppy disk, **or** (2) copy 'stdio.out' to 'c:\' of your target machine. Similarly, the (dsp) program may not be able to find 'stdio.c'. In that case, **either** (1) change 'stdio.c' the line that opens 'stdio.c' to 'a:\stdio.c', **or** (2) copy stdio.c 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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