



HUNT ENGINEERING
Chestnut Court, Burton Row,
Brent Knoll, Somerset, TA9 4BP, UK
Tel: (+44) (0)1278 760188,
Fax: (+44) (0)1278 760199,
Email: sales@hunteng.co.uk
<http://www.hunteng.co.uk>
<http://www.hunt-dsp.com>



HUNT ENGINEERING

3Heron Server/Loader Example

For VxWorks

Document Rev A
Server/Loader 3Heron Example Rev 4.10
J.Thie 05-01-04

COPYRIGHT

This documentation and the product it is supplied with are Copyright HUNT ENGINEERING 1999. All rights reserved. HUNT ENGINEERING maintains a policy of continual product development and hence reserves the right to change product specification without prior warning.

WARRANTIES LIABILITY and INDEMNITIES

HUNT ENGINEERING warrants the hardware to be free from defects in the material and workmanship for 12 months from the date of purchase. Product returned under the terms of the warranty must be returned carriage paid to the main offices of HUNT ENGINEERING situated at BRENT KNOLL Somerset UK, the product will be repaired or replaced at the discretion of HUNT ENGINEERING.

Exclusions - If HUNT ENGINEERING decides that there is any evidence of electrical or mechanical abuse to the hardware, then the customer shall have no recourse to HUNT ENGINEERING or its agents. In such circumstances HUNT ENGINEERING may at its discretion offer to repair the hardware and charge for that repair.

Limitations of Liability - HUNT ENGINEERING makes no warranty as to the fitness of the product for any particular purpose. In no event shall HUNT ENGINEERING'S liability related to the product exceed the purchase fee actually paid by you for the product. Neither HUNT ENGINEERING nor its suppliers shall in any event be liable for any indirect, consequential or financial damages caused by the delivery, use or performance of this product.

Because some states do not allow the exclusion or limitation of incidental or consequential damages or limitation on how long an implied warranty lasts, the above limitations may not apply to you.

TECHNICAL SUPPORT

Technical support for HUNT ENGINEERING products should first be obtained from the comprehensive Support section www.hunteng.co.uk/support/index.htm on the HUNT ENGINEERING web site. This includes FAQs, latest product, software and documentation updates etc. Or contact your local supplier - if you are unsure of details please refer to www.hunteng.co.uk for the list of current re-sellers.

HUNT ENGINEERING technical support can be contacted by emailing support@hunteng.demon.co.uk, calling the direct support telephone number +44 (0)1278 760775, or by calling the general number +44 (0)1278 760188 and choosing the technical support option.

TABLE OF CONTENTS

THE 3HERON EXAMPLE.....	4
COMPILING, LINKING AND RUNNING THE EXAMPLE	5
COMPILING/LINKING THE EXAMPLE	5
RUNNING THE EXAMPLE	5
COMMAND LINE.....	7
THE SERVER/LOADER COMMAND LINE.....	7
VXWORKS NETWORK FILE	8
THE VXWORKS NETWORK FILE	8
TECHNICAL SUPPORT	9

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 ('mod1_h4.out') and another to the second processor ('mod2_h4.out'), and 'mod3_h4.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

Compiling/Linking the Example

The Server/Loader is delivered as a 'vxwsl.o' file. This file contains both the Server/Loader library ('hesl' interface), the Server/Loader executable ('vxwsl') and HeartConf. The file is located in the 'vxworks' directory of your HUNT ENGINEERING API installation (default 'c:\heapi').

The 3 components in 'vxwsl.o' are also available separately as 'main.o' (Server/Loader executable) in the 'hesl\bin' sub-directory of your Server/Loader installation, 'vxwsl.lib.o' (Server/Loader library) in the 'hesl\lib' sub-directory, and 'heartconf.o' (HeartConf) in the 'heartconf\vxworks' sub-directory.

An environment variable 'HESL_DIR' points to the 'hesl' installation sub-directory. 'HESL_DIR' has been created and initialised by the HUNT CD installation program. Include files are located in the 'inc' directory of 'HESL_DIR'.

Running the example

The Server/Loader needs file access to the network file and the DSP executables (the *.out files). Copy the network file and the *.out files onto a floppy disk, or copy them onto a hard disk if you have a VxWorks boot image with support for that. To be able to run the example successfully you must have included the dosfs module in your VxWorks BOOT ROM configuration. Set your default path to the location of the *.out files using the VxWorks system command `ioDefPathSet("location")`, where `location` is the VxWorks style path to the *.out file.

Make sure you have loaded the API, hrn_fpga, and the Server/Loader.

```
ld<heapi.o
ld<hrnfpga.o
ld<vxwsl.o
```

The reason for loading 'hrn_fpga.o' as well is that the Server/Loader supports loading of FPGA bit-streams. But the implementation of the Server/Loader uses hrn_fpga to do the actual loading. Given that hrn_fpga is also a stand-alone utility, we have chosen to supply the Server/Loader and hrn_fpga as two separate items.

Next, for a HEPC9, run the example as follows:

```
sp vxwsl, "-rlsv network"
```

With an HEPC8 use the HEPC8 specific files:

```
sp vxwsl, "-rlsv netw4pc8"
```

The example assumes three HERON4's, in slot 1, 2 and 3. If you don't use three HERON4 modules, but 1, 2 or 3 different HERON modules such as HERON1, you will have to change the *.out file used in the network file. Some standard *.out files are supplied: -

- mod1_h4.out, mod2_h4.out, mod3_h4.out (HERON4 on HEPC9),
- mod1_h2.out, mod2_h2.out, mod3_h4.out (HERON2 on HEPC9),
- mod1_4p8.out, mod2_4p8.out and mod3_4p8.out (HERON4 on HEPC8), and

mod1_1p8.out, mod2_1p8.out and mod3_1p8.out (HERON1 on HEPC8).

For any other configuration, please create a new project and build a new *.out file.

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
```

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), but there are others as well (please have a look at the Server/Loader manual). The VxWorks Server/Loader has a default command line of:

```
sp vxwsl, "-rlsv networkfile"
```

With this command line the Server/Loader will expect to find a network description file on the drive specified by `ioDefPathSet`. (In addition, it will then expect to find the `*.out` files and bit-streams as specified in the network file on the same drive.) By default, this will reset the system, boot all processors, and then serve standard I/O requests (`printf`, `frwrite`, etc) coming from the first processor in the system. The verbose option will cause booting information to be show on the screen.

The VxWorks network file

Note that a VxWorks network file uses a few extra parameters in board definitions.

The usual way to define a board, for example a HEPC9, you would write:

```
BD API HEP9A 0 0
```

But for VxWorks you need to add three parameters:

```
BD API HEP9A 0 0 on on 12
```

The three extra parameters need to be there for any board type, whether 'hep9a', 'hep8a', 'hep3b', 'hep2e' or any other. The first extra parameter is the master mode switch, "on" in this example. The second extra parameter is interrupts, "on" in this example. The third extra parameter is the IRQ, "12" in this example. The extra third parameter is not used with PCI boards, such as the HEPC9, HEPC8 and HEPC3. But the syntax requires there's a value anyway.

Note that with an HEPC8, master mode is not supported, so you would define: -

```
BD API HEP8A 0 0 off on 12
```

Apart from this, a VxWorks network file is identical to the 'standard' network file.

1. Technical support for HUNT ENGINEERING products should first be obtained from the comprehensive Support section www.hunteng.co.uk/support/index.htm on the HUNT ENGINEERING web site. This includes FAQs, latest product, software and documentation updates etc. Or contact your local supplier - if you are unsure of details please refer to www.hunteng.co.uk for the list of current re-sellers.
2. HUNT ENGINEERING technical support can be contacted by emailing support@hunteng.co.uk, calling the direct support telephone number +44 (0)1278 760775, or by calling the general number +44 (0)1278 760188 and choosing the technical support option.