



**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.demon.co.uk  
<http://www.hunteng.co.uk>  
<http://www.hunt-dsp.com>



# ***HUNT ENGINEERING***

## ***Remote Server/Loader Example***

### ***For VxWorks***

***Document Rev A***  
***Server/Loader Remote 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](http://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](http://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](mailto: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

<b>THE REMOTE EXAMPLE .....</b>	<b>4</b>
<b>COMPILING, LINKING AND RUNNING THE EXAMPLE .....</b>	<b>5</b>
COMPILING/LINKING THE EXAMPLE .....	5
RUNNING THE EXAMPLE .....	5
<b>COMMAND LINE.....</b>	<b>7</b>
THE SERVER/LOADER COMMAND LINE.....	7
<b>VXWORKS NETWORK FILE .....</b>	<b>8</b>
THE VXWORKS NETWORK FILE .....	8
<b>TECHNICAL SUPPORT .....</b>	<b>9</b>

The remote example is a simple Server/Loader example program that shows how to boot a 2-board network where each board has 1 processor module, and the two boards are connected via Inter-Board Connectors. The example shows how 1 of the boards can be 'remote'. Keyword 'remote' identifies a board that is non-local, for example an embedded board or a board that is in another PC. The processor on the 'remote' board will get booted via the local board. The booted programs don't do a lot, they just pass a small message 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').)

(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"
```

The example assumes two HERON4's, in slot 1 and slot 2. If you don't use two HERON4 modules, but 1 or 2 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 and mod2\_h4.out (HERON4 on HEPC9),
- mod1\_h2.out and mod2\_h2.out (HERON2 on HEPC9),

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

You should see something that ends like:

Trying to serve 1 boards.  
Server thread 0 (hep9a 0, fifo 0 in, 0 out <=> node moda)  
Entering Server mode.  
first HERON module has started running  
HERON module id 2 has replied  
Bitwise echo test completed successfully.  
Leaving server mode.  
Serving 1 nodes completed.

### 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](http://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](http://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](mailto: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.