



**Driver Version: 2.1**  
**Last Modified: 8/23/2004**  
**Hardware Revision: Rev B**

The document outlines the requirement and procedure for building the LAN91C111 (RevB) driver for WindRiver vxWorks 5.4. Full Duplex 10/100 Mbps Ethernet Controller Enhanced Network Driver (END). Specifically, this file contains information concerning installation, caveats, errata and specific documentation that the user must be aware of before using this END.

Additionally, the target board's manual README and target.(txt/nr) file provides boardspecific information necessary to run VxWorks, and should be read before this END is used.

### **Deliverables:**

The files that are delivered with the SMSC LAN91C111 END are

- lan91c111End.c - SMSC LAN91C111 END source file
- lan91c111End.h - SMSC LAN91C111 END header file
- Makefile – SMSC make file for building this driver
- readme.pdf – This file

### **Software Requirements:**

- ✓ vxWorks 5.4
- ✓ Tornado 2.0 for **Intel x86** Platform

### **LAN91C111 Configuration:**

- ✓ Interrupt 11 (0xB)
- ✓ Interrupt Vector (0x2B)
- ✓ IO Base address 0x300

### **Procedure:**

- Add the “lan91c111End.o” to the [MAC\\_EXTRA](#) line in “<tornado install dir>/target/config/pcpentium/makefile”
- Add the following to the “<tornado install dir>/target/config/pcpentium/config.h”  

```
#define INCLUDE_LAN91C111_END
```
- Add the following to the “<tornado install dir>/target/config/pcpentium/confignet.h”  

```
#ifdef INCLUDE_LAN91C111_END
#define END_LAN91C111_LOAD_FUNC lan91c111Load
#define END_LAN91C111_BUFF_LOAN 1
/*<unit>:<IO>:<intVec>:<intLevel>:<offset>:<configValue>*/
#define END_LAN91C111_LOAD_STRING "0x300:0x2B:0xB:0x2:0x3100"
IMPORT END_OBJ * END_LAN91C111_LOAD_FUNC (char *, void*);
#endif /* INCLUDE_LAN91C111_END */
```



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- Add the following to the ethernet [End Device Table](#) in  
“<tornado install dir>/target/config/pcpentium/confignet.h”

```
#ifndef INCLUDE_LAN91C111_END
{0, END_LAN91C111_LOAD_FUNC, END_LAN91C111_LOAD_STRING,
END_LAN91C111_BUFF_LOAD, NULL, FALSE},
#endif /* INCLUDE_LAN91C111_END */
```

- Configure the bootline parameters. The boot device name is “lnc”
- Make the “bootrom\_uncmp” and “vxWorks.st” files

### Changing the Configuration String in ConfigNet.h:

The configuration string is the last parameter in the initialization string defined by END\_LAN91C111\_LOAD\_STRING. This can be used to change the initialization parameters for the 91C111. Listed are the sample values for some combination of initialization.

0x3100 – Auto negotiation enabled and Early Rx and Tx disabled  
0x2200 – Forced 10Mbps Full Duplex and Early Rx and Tx disabled  
0x1300 – Forced 100Mbps Half Duplex and Early Rx and Tx disabled  
0x310f – Auto negotiation enabled and Early Rx disabled and Early Tx Enabled  
0x31f0 – Auto negotiation enabled and Early Rx Enabled and Early Tx Disabled

### Adding Multiple END Devices:

Multiple END devices can be modified by defining the IP\_MAX\_UNITS to the maximum number of units. The default is one (1). If ipattach () is called for a unit that is greater than IP\_MAX\_UNITS, an error is returned.

### Errata:

The SENS for Tornado Release Notes and Component Release Supplement both reference the incorrect location for the "configNet.h" file. It is intended to reside in the BSP directory.

### Revision History:

v2.1, 8/23/2004

- 1) Remove chip reset command when RX overrun happens.
- 2) Remove code that empties TX (software) FIFO, when TX FIFO is full upon sending new packet.
- 3) Add code to check for RX (software) FIFO full within RX interrupt, so that new packet write will not overrun packet read. In case FIFO is full, drop new packet.

v2.0B, 9/13/2001

Reference.