EL Serial Port Server Installation Guide Errata

This errata supplies additions to *EL Serial Port Server Installation Guide* (91000932B). EL stands for EtherLite.

To operate your Silicon Graphics Ethernet serial port server (also known as the EL, serial port server, or EL-16) in a Linux environment, you must be running the Linux driver software and Dynamic Host Configuration Protocol (DHCP) server software in your system, and then you must configure the serial port server.

The Linux driver and DHCP software may come preinstalled on your system. If not, you can install the software according to the instructions in your installation guide.

Configuring the Silicon Graphics Ethernet Serial Port Server

After connecting the Silicon Graphics Ethernet serial port server to your system and making sure the Linux driver and DHCP software are installed on your system, you must configure the serial port server.

After configuration, if you power up the serial port server, the serial port server power LED flickers while the system tries to obtain its IP address from a host system via the DHCP. After the IP address is assigned to the serial port server, the serial port server link LED lights, showing that it is operable.

Configuring DHCP

DHCP allows hosts on an IP network to request and to be assigned IP addresses. Once DHCP is installed and functioning on the SGIconsole, you must configure the dhcpd (8) daemon so that the serial port server can obtain an IP address, as follows:

1. Place the serial port server (EL-16) MAC address, which is printed on the cover of the serial port server, in the /etc/dhcpd.conf file; this permits the host system to always assign the same address. The following is an example of an /etc/dhcpd.conf file:

   ```
   # Sample /etc/dhcpd.conf
   # (add your comments here)
   default-lease-time 7200;
   max-lease-time 7200;
   ```

```
option subnet-mask 255.255.255.0;
option broadcast-address 123.112.212.255;
option routers 123.112.212.254;
option domain-name-servers 123.112.186.51, 123.112.186.50;
option domain-name "acme.come";

host el16 {
hardware ethernet 00:a0:e7:01:15:c4;
fixed-address 123.112.212.100;
}

subnet 123.112.212.0 netmask 255.255.255.0 {
range 123.112.212.101 123.112.212.110;
}
```

2. Create the `dhcp.leases` file by entering the following:

   # **touch var/state/dhcp/dhcpd.leases**

3. Start DHCP in one of the following ways:

   - To use `init.d`, enter the following command line:

     # **chkconfig dhcpd on**

   - To start DHCP manually, to specify the display of debug information, and to run DHCP in the foreground, enter the following:

     # **/usr/sbin/dhcpd -d -f eth1**

   The following is sample entry of the **/usr/sbin/dhcpd -d -f eth1** on your command line, followed by a sample output from `dhcpd` running in the foreground:

   ```
   [root@acel /root]# /usr/sbin/dhcpd -d -f eth1
   Internet Software Consortium DHCPD $Name: $
   Copyright 1995, 1996, 1997, 1998 The Internet Software Consortium.
   All rights reserved.
   Multiple interfaces match the same subnet: eth0 eth1
   Multiple interfaces match the same shared network: eth0 eth1
   Multiple interfaces match the same subnet: eth0 eth2
   Multiple interfaces match the same shared network: eth0 eth2
   Listening on Socket/eth1/128.162.212.0
   Sending on Socket/eth1/128.162.212.0
   DHCPDISCOVER from 00:a0:e7:01:15:c4 via eth1
   DHCPOFFER on 128.162.212.100 to 00:a0:e7:01:15:c4 via eth1
   DHCPREQUEST for 128.162.212.100 from 00:a0:e7:01:15:c4 via eth1
   DHCPACK on 128.162.212.100 to 00:a0:e7:01:15:c4 via eth1
   ```

   For more information, see the `dhcpd(8)` man page.

4. Add the serial port server (EtherLite 16) host address and name to the system's `/etc/hosts` file.

5. Power on the serial port server; DHCP will assign it an IP address.

6. Check the `/var/log/messages` file for status messages.

7. You may need to add a host-level route to the serial port server if it is on another interface. For example, to log in to a serial port server named el16 when it is on another interface, you would enter something like the following:

   ```
   [root@ace1 /root]# route add -host 128.162.212.100 dev eth1
   [root@ace1 /root]# rlogin el16
   ```

This entry brings up some output like the following:

```
EL-16 EtherLite module
```

If you then enter

? ver

you get an output like the following:

```
Product:  EL-16
FW Ver:   V7.2

Ethernet:  00:A0:E7:01:15:C4
IP:        128.162.212.100
GW IP:     128.162.212.254
SN Mask:   255.255.255.0
Lease:     0x1BF6
Boot Host: 128.162.212.42
Bootfile:  el16.prm
TFTP of Bootfile timed-out
? exit
? rlogin: connection closed.
#
```

Configuring the Linux Driver

The driver is built during installation so that the driver kernel module works with the kernel that is running. Therefore, the els-2P-6.rpm file must have been installed when the system was running the current kernel.

To configure your Linux driver, follow these steps:

1. Move to the /usr/src/dg/els/drv/linux directory by entering the following:

    # **cd /usr/src/dg/els/drv/linux**

2. Create an empty /etc/bootptab file by entering the following:

    # **touch /etc/bootptab**

3. Make the default tftpboot directory used by the tftpd by entering the following:

    # **mkdir /tftpboot**

4. Uncomment the tftp line in /etc/inetd.conf to enable tftpd.

5. Copy the EtherLite (Silicon Graphics Ethernet serial port server) firmware file into the tftpboot directory by entering the following:

    # **cp /usr/share/el16/el16.prm /tftpboot**

6. Move to the /usr/src/dg/els/drv/linux directory in preparation to run define_etherlites script by entering the following:

    # **cd /usr/src/dg/els/drv/linux**

7. Run the define_etherlites script to load the driver, to build the unit dat database, and to start the cdetherd daemons that support the serial port server units, by entering the following. (If you are updating the driver, skip this step unless you are also adding serial port servers to your system.)

```
[root@linux linux]# ./define_etherlites
```

This command brings up the following example of questions (to which you must answer as shown) and system responses to your answers to these questions:

```
Do you have a Digi EtherLite (R) module to install? (N/y): y
```

```
Is this host now or will this host be BOOTP server? (Y/n) : y
```

```
Enabling bootpd in /etc/inetd.conf
```

Note: This command enables the bootp service. Once you have updated your serial port server firmware, it is not necessary to leave the TFTP server enabled. Unless you are sure that your configuration is secure, SGI recommends that you disable TFTP service by commenting out its entry in the /etc/inetd.conf file. It is okay to leave the bootfile entry in the /etc/bootptab file.

```
Does this host run the driver for EtherLite module? (Y/n) : y
```

```
Is this host the BOOTP server for this EtherLite module (N/y) : y
```

```
Is there a gateway between this module and this host (N/y) : n
    1) EtherLite 2 module (formerly EL-2)
    2) EtherLite 2 EIA422 module (formerly EL-2.2)
    3) EtherLite 2 EIA485 module
    4) EtherLite 8 module (formerly EL-8+)
    5) EtherLite 16 module (formerly EL-16)
    6) EtherLite 32 module (formerly EL-32)
    7) EtherLite 160 module (formerly EL-160)
    8) EtherLite 162 EIA422 module (formerly EL-162)
This module is an (1-8): 5
```

```
The Ethernet address of the module is printed on a sticker on
the underside of the module near the Ethernet port. An example
Ethernet address is '00:a0:e7:24:63:9e'
```

```
The Ethernet address of this module is : 00:a0:e7
```

```
Each EtherLite module must be assigned a unique IP address.
Consult with your network administrator to obtain an IP for
this module. An example IP address is '192.9.200.14'
```

```
The IP address of this module is: 192.0.2.1
```

```
The netmask for this module (default is 255.255.255.0)is:
255.255.255.0
```

```
This host runs the driver for this module: yes
```

```
This host is the BOOTP server for this module: yes
This module's IP address: 192.0.2.1
This module's Ethernet address: 00:a0:e7:21:88:f9
This module's netmask: 255.255.255.0

Is this information correct? (Y/n/q): y
Scanning /etc/els.conf for Digi International ELS devices...
adding unit EL-16
starting cdetherd els00 192.0.2.1
Done, made 32 nodes.
started 1 cdetherd daemons.
Do you have additional Digi EtherLite modules to install? (N/y): n
At this point, you should attach your EtherLite module(s) to the
network if you have not done so already.
Do you want to generate a file of getty commands
that you can edit and add to /etc/inittab? (N/y): y

Scanning /etc/els.conf for Digi International ELS devices...
Etherlite(R) Server 00: EL-16 at 192.0.2.1

Created unit node /dev/els00
Making node /dev/ttyN000, major=254 minor=0x0
Making node /dev/cun000, major=253 minor=0x0
Making node /dev/ttyN001, major=254 minor=0x1
Making node /dev/cun001, major=253 minor=0x1
Making node /dev/ttyN002, major=254 minor=0x2
Making node /dev/cun002, major=253 minor=0x2
Making node /dev/ttyN003, major=254 minor=0x3
Making node /dev/cun003, major=253 minor=0x3
Making node /dev/ttyN004, major=254 minor=0x4
Making node /dev/cun004, major=253 minor=0x4
Making node /dev/ttyN005, major=254 minor=0x5
Making node /dev/cun005, major=253 minor=0x5
Making node /dev/ttyN006, major=254 minor=0x6
Making node /dev/cun006, major=253 minor=0x6
Making node /dev/ttyN007, major=254 minor=0x7
Making node /dev/cun007, major=253 minor=0x7
Making node /dev/ttyN008, major=254 minor=0x8
Making node /dev/cun008, major=253 minor=0x8
```

```
Making node /dev/ttyN009, major=254 minor=0x9

Making node /dev/cun009, major=253 minor=0x9

Making node /dev/ttyN00a, major=254 minor=0xa

Making node /dev/cun00a, major=253 minor=0xa

Making node /dev/ttyN00b, major=254 minor=0xb

Making node /dev/cun00b, major=253 minor=0xb

Making node /dev/ttyN00c, major=254 minor=0xc

Making node /dev/cun00c, major=253 minor=0xc

Making node /dev/ttyN00d, major=254 minor=0xd

Making node /dev/cun00d, major=253 minor=0xd

Making node /dev/ttyN00e, major=254 minor=0xe

Making node /dev/cun00e, major=253 minor=0xe

Making node /dev/ttyN00f, major=254 minor=0xf

Making node /dev/cun00f, major=253 minor=0xf

Created diag node /dev/elsdiag

Done, made 32 nodes.

started 0 cdetherd daemons.

Created ./els.getty with getty entries for inittab.
```

8. Open the `/etc/bootptab` file with a text editor and add **:bf=el16.prm:** at the end of each line in the file. The following is a sample file line with **:bf=el16.prm:** added at the end of the line:

    els0:sm=255.255.255.0:ht=ether:la=00a0e7ffffff:ip=198.26.0.1:bf=el16.prm:

9. Modify your startup to load the EtherLite driver and start the driver (after Ethernet starts) every time your system boots. To do this, enter the following for these Linux distributions:

    Red Hat:

    # **chkconfig --add els**

    Caldera Systems:

    # **ln -s /etc/rc.d/init.d/els /etc/rc.d/rc5.d/s85els**

    SuSE:

    # **ln -s /etc/rc.d/init.d/els /etc/rc.d/rc2.d/s85els**

10. If you have updated the driver, you can start running it by entering the following:

    # **sh etc/rc.d/init.d/els restart**

    Later, you can run `define_etherlites` to install new serial port server (EtherLite) units without rebooting. If you want to change the serial port servers, you must edit the `/etc/els.conf` database file and reboot.