

## Problem Solving

Card detection and driver loading can be observed by opening two console windows and becoming the root user in each. In one window type:

```
#udevmonitor
```

which as its name implies monitors udev activity, and

```
#tail -f /var/log/messages
```

which attaches to the end of the system log file.

Typical outputs, in this case from a Fedora 7 installation with an Edimax Hi-Gain USB stick are:

udevmonitor:

```
UEVENT[1181825624.330671] add    /devices/pci0000:00/0000:00:03.2/usb3/3-3/3-3:1.0
(usb)
UEVENT[1181825624.330686] add    /class/net/rausb0 (net)
UEVENT[1181825624.330698] add    /class/usb_endpoint/usbdev3.2_ep81 (usb_endpoint)
UEVENT[1181825624.330711] add    /class/usb_endpoint/usbdev3.2_ep01 (usb_endpoint)
UEVENT[1181825624.330724] add    /class/usb_device/usbdev3.2 (usb_device)
UDEV [1181825624.461867] add    /devices/pci0000:00/0000:00:03.2/usb3/3-3 (usb)
UDEV [1181825624.478113] add    /class/usb_endpoint/usbdev3.2_ep00 (usb_endpoint)
UEVENT[1181825624.986947] add    /module/cfg80211 (module)
UEVENT[1181825625.006706] add    /module/mac80211 (module)
UEVENT[1181825625.068157] add    /module/rt2x00lib (module)
UEVENT[1181825625.077013] add    /module/rt2x00usb (module)
UEVENT[1181825625.152926] add    /module/rt2500usb (module)
UEVENT[1181825625.155171] add    /bus/usb/drivers/rt2500usb (drivers)
UDEV [1181825625.208621] add    /devices/pci0000:00/0000:00:03.2/usb3/3-3/3-3:1.0
(usb)
UDEV [1181825625.212683] add    /class/usb_endpoint/usbdev3.2_ep81 (usb_endpoint)
UDEV [1181825625.232078] add    /class/usb_endpoint/usbdev3.2_ep01 (usb_endpoint)
UDEV [1181825625.274499] add    /class/usb_device/usbdev3.2 (usb_device)
UDEV [1181825625.415288] add    /class/net/rausb0 (net)
```

/var/log/messages:

```
Jun 14 13:53:44 localhost kernel: usb 3-3: new high speed USB device using ehci_hcd and
address 2
Jun 14 13:53:44 localhost kernel: usb 3-3: configuration #1 chosen from 1 choice
Jun 14 13:53:44 localhost kernel: idVendor = 0x148f, idProduct = 0x2573
Jun 14 13:53:45 localhost kernel: Loading module: rt2x00lib - CVS (N/A) by
http://rt2x00.serialmonkey.com.
Jun 14 13:53:45 localhost kernel: Loading module: rt2x00usb - CVS (N/A) by
http://rt2x00.serialmonkey.com.
Jun 14 13:53:45 localhost kernel: Loading module: rt2500usb - CVS (N/A) by
http://rt2x00.serialmonkey.com.
Jun 14 13:53:45 localhost kernel: usbcore: registered new interface driver rt2500usb
Jun 14 13:53:45 localhost kernel: rt73 driver version - 1.0.3.6 CVS
Jun 14 13:53:46 localhost kernel: ***rt73***: Interface goes up for the first time, activating
permanent MAC
Jun 14 13:53:46 localhost kernel: ***rt73***: Active MAC is: 00:0e:2e:bd:45:f6.
Jun 14 13:53:46 localhost dhclient: DHCPDISCOVER on rausb0 to 255.255.255.255 port 67
interval 6
```

## Problem Solving, continued

```
Jun 14 13:53:47 localhost avahi-daemon[1940]: Joining mDNS multicast group on interface
rausb0.IPv6 with address fe80::20e:2eff:febd:45f6.
Jun 14 13:53:47 localhost avahi-daemon[1940]: New relevant interface rausb0.IPv6 for
mDNS.
Jun 14 13:53:47 localhost avahi-daemon[1940]: Registering new address record for
fe80::20e:2eff:febd:45f6 on rausb0.*.
Jun 14 13:53:52 localhost dhclient: DHCPDISCOVER on rausb0 to 255.255.255.255 port 67
interval 9
Jun 14 13:53:53 localhost dhclient: DHCPOFFER from 192.168.70.127
Jun 14 13:53:53 localhost dhclient: DHCPREQUEST on rausb0 to 255.255.255.255 port 67
Jun 14 13:54:01 localhost dhclient: DHCPREQUEST on rausb0 to 255.255.255.255 port 67
Jun 14 13:54:01 localhost dhclient: DHCPACK from 192.168.70.127
Jun 14 13:54:01 localhost avahi-daemon[1940]: Joining mDNS multicast group on interface
rausb0.IPv4 with address 192.168.1.73.
Jun 14 13:54:01 localhost avahi-daemon[1940]: New relevant interface rausb0.IPv4 for
mDNS.
Jun 14 13:54:01 localhost avahi-daemon[1940]: Registering new address record for
192.168.1.73 on rausb0.IPv4.
Jun 14 13:54:01 localhost NET[27537]: /sbin/dhclient-script : updated /etc/resolv.conf
Jun 14 13:54:01 localhost dhclient: bound to 192.168.1.73 -- renewal in 2784 seconds.
```

If nothing is produced on udevmonitor you should suspect that there is something wrong with, say, the usb port. Sometimes sockets on the front of system boxes are not connected.

If the dhcp discovery fails the wireless device may be failing to associate with the access point.

The state of the interface can be investigated further by opening yet another root console and using:

```
#ifconfig ra0
```

for a PCI or PCMCIA card

or

```
#ifconfig rausb0
```

for a USB stick.

A typical output should look like this:

```
[root@localhost etc]# ifconfig rausb0
rausb0  Link encap:Ethernet  HWaddr 00:0E:2E:BD:45:F6
        inet addr:192.168.1.73  Bcast:192.168.1.255  Mask:255.255.255.0
        inet6 addr: fe80::20e:2eff:febd:45f6/64 Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:26371 errors:0 dropped:0 overruns:0 frame:0
        TX packets:143 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:2434200 (2.3 MiB)  TX bytes:13282 (12.9 KiB)
```

If the inet addr line is absent, you could try another dhcp request:

## Problem Solving, continued

```
#dhclient rausb0 or
```

```
#dhclient ra0
```

Sometimes taking the interface down and up will work:

```
#ifdown rausb0
```

```
#ifup rausb0
```

A good way of checking to see whether the device is working is to use:

```
#iwlist <interface> scan
```

which should give an output like this:

```
[root@localhost ~]# iwlist rausb0 scan
rausb0 Scan completed :
    Cell 01 - Address: 00:30:BD:98:C8:EF
        ESSID:"belkin54g"
        Mode:Managed
        Channel:11
        Encryption key:on
        Bit Rates:0 kb/s
    Cell 02 - Address: 00:0E:2E:C9:1C:3A
        ESSID:""
        Mode:Managed
        Channel:11
        Encryption key:off
        Bit Rates:0 kb/s
    Cell 03 - Address: 00:12:A9:C6:91:47
        ESSID:""
        Mode:Managed
        Channel:11
        Encryption key:on
        Bit Rates:0 kb/s
```

In this example if you were failing to connect to belkin54g then it would be worth checking the essid and key settings.

When a device is successfully associated with an access point the command iwconfig can be used:

```
[root@localhost ~]# iwconfig rausb0
rausb0 RT73 WLAN ESSID:"belkin54g" Nickname:"localhost.localdomain"
        Mode:Managed Frequency=2.462 GHz Access Point: 00:30:BD:98:C8:EF
        Bit Rate=54 Mb/s
        RTS thr:off Fragment thr:off
        Encryption key:5929-5123-9F99-9559-9A9A-8345-E3
        Link Quality=87/100 Signal level:-52 dBm Noise level:-79 dBm
        Rx invalid nwid:0 Rx invalid crypt:0 Rx invalid frag:0
        Tx excessive retries:0 Invalid misc:0 Missed beacon:0
```

The presence of the Link Quality value is an indicator of a successful connection.

## Additional Notes on Fedora 8

The location of networking files in Fedora and RedHat is different from most distributions.

Some basic checks are as follows:

(The example is for a pcmcia card which uses the rt61 module.

To check that the module has been built:

```
# updatedb
# locate rt61.ko
```

and get something like:

```
/lib/modules/2.6.23.1-49.fc8/extra/rt61.ko
/root/ralink/rt61-cvs-2007112109/Module/rt61.ko.cmd
/root/ralink/rt61-cvs-2007112109/Module/rt61.ko
```

To check that the configuration file exists and is sensible:

```
# cat /etc/sysconfig/network-scripts/ifcfg-wlan0
# RaLink RT2561/RT61 802.11g PCI
DEVICE=wlan0
ONBOOT=yes
BOOTPROTO=dhcp
HWADDR=00:0e:2e:b3:be:fd
DHCP_HOSTNAME=amber
TYPE=Wireless
USERCTL=yes
IPV6INIT=no
PEERDNS=yes
MODE=Managed
ESSID=belkin54g
#NWID=
#FREQ
CHANNEL=11
#SENS
RATE=Auto
#RTS
#FRAG
#SPYIPS
#IWCONFIG
SECURITYMODE=open
#IWPRIV
```

To check that a WEP hex key exists:

```
# cat keys-wlan0
KEY=5e8e549b9f99955dd3715d9999
```

To check that the rt61 module is loaded:

```
# lsmod | grep rt61
rt61                184200  1
```

- if it isn't try and do a #modprobe rt61

## Build Problems with Fedora

If you get an error like:

```
make: *** /lib/modules/2.6.22.9-91.fc7/build: No such file or directory. Stop.
```

You need to install or update the kernel-headers:

```
# yum update kernel-headers
```

## Other Errors

Error for wireless request "Set bit rate" (8B20):

```
SET failed on device eth1: input/output error
```

Determining IP information for eth1....

```
SIOCSIFFLAGS: No such file or directory
```

This may occur when the driver build has failed or the installation script has been interrupted.

Check that the driver exists:

```
# updatedb
```

```
# locate rt73.ko (for usb sticks)
```

```
or # locate rt61.ko (for pci and pcmcia cards)
```

Check that the appropriate firmware is in the `/lib/firmware` directory.