Conexant/Rockwell modem HOWTO

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A guide to using Conexant and Rockwell chipset based Software modems under Linux.

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1. Introduction

1.1. Purpose of the howto

If you've got a Rockwell or Conexant chipset based modem and you can't seem to get the modem to work with Linux, then you've come to the right place. Chances are that you've got a Software modem (also known as a "winmodem") and you'll need a driver to get the modem working under Linux.

If you've got a Software modem whose chipset is not made by Conexant or Rockwell then you should see the *linmodem howto*.

Note that this guide has no information about using Conexant/Rockwell modems for operating systems other then Linux except for the following: There are no known drivers for FreeBSD or BeOS, Windows drivers can be obtained from Conexant.

1.2. About the howto

This HOWTO originally started out as a website about installing Conexant HSF modems under linux, but after several months of being online the number of hits on the website was rapidly growing (100 hits/day at time of writing this HOWTO) and so were the number of requests for information about Rockwell/Conexant modems that were being posted to the linmodem mailing list, usenet and various web based forums. This lead me to decide that the information needed another distribution medium which would be more accessible to users. The result of this was this HOWTO which has expanded to include a far larger range of information then the original website had, in order to cover all the questions being asked on the internet.

At the same time as the increase in demand for information about Rockwell/Conexant modems under linux a number of non−english webpages appeared explaining how to setup the drivers in languages as diverse as Portuguese and Japanese, these webpages often lacked all the current information which was available making it harder for users to get their modems to work. I decided to release this HOWTO under the GNU Free Documentation License, so that native speakers of other language can translate this document into their own language and redistribute it freely, thus ensuring that all users get all the information regardless of what language they speak. If you're interested in making a translation of this HOWTO please contact me.

The HOWTO assumes a basic knowledge of Linux, you should be familiar with the basics of how to use a console/terminal, how to use common commands like less and be familiar with a text editor.When the howto needs you to type something in at the console, the console prompt will look like this:
`'[user@localhost]$ '`

Some parts of the howto rely upon a greater knowledge of Linux, but those section will mainly apply if you have a non−standard Linux distribution.

1.3. Feedback

If you have any feedback on how I can improve this HOWTO or are interested in translating this HOWTO into another language please contact me via email at *ImranG@btinternet.com*(if you don't get a reply within a week resend the message to *imran@bits.bris.ac.uk)*.

If you need some help in getting your modem to work, rather then contacting me for help directly see the Getting Help section as you are more likely to be able to get a faster answer from the places indicated then if you email me direct.

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1.5. Acknowledgments

Thanks to:

- Olitec for distributing and Conexant for producing the original HSF driver
- Marc Boucher for writing a wrapper for 2.4.* kernels
- Denis Havlik for bringing the Olitec driver to the attention of the rest of the Linmodem community
- Thomas Iversen for mirroring the drivers

1.6. Getting Help

If after following this HOWTO you still can't get your modem to work and you haven't already done so, check the troubleshooting section at the end of this HOWTO as it covers the most common problems. If you are still stuck then there are three main places where you can get help,

Linmodem mailing list

> The Linmodem mailing list is the main place on the internet for discussion of the use of Software modems under Linux. If someone else has had the same problem as you chances are that someone on the Linmodem mailing list knows about it. To join the mailing list send a blank email to *discuss−subscribe@linmodems.org*, the mailing lists homepage is at *www.linmodems.org*.

SoftModems IRC channel

> If you want to talk to someone real time your best bet is the #SoftModems channel on the OpenProject's IRC network. See *www.openprojects.org* for details or connect to eu.opirc.nu on port 6667.

Newsgroups

> The newsgroups *comp.os.linux.hardware* and *comp.os.linux.setup* often have people familiar with software modems. If you speak Italian the newsgroup *it.comp.os.linux.iniziare* has people familiar with Conexant/Rockwell neewsgroups.

Remember when asking for help to include your modems Device ID, Vendor ID and any error message you got.

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2. Quick Start guide

This section tries to get you up and running as soon as possible, if you can follow the steps given in this section and they work for you, you can ignore the rest of this howto. This section is updated more often then the rest of the HOWTO so will contain the most up to date information.

First you need to find out if your modem is an HSF or HCF modem. You can find out from your modem by looking at it's Windows drivers or looking at the label on it's chipset, or alternatively you can download the >

Quick Starting with an HSF modem

[1]

- Run the program **hsfconfig** and just follow the on−screen instructions and it should automatically detect your modem and install the driver. If you have any problems consult the documentation that comes with the driver.

You will now be able to setup your internet connection software, you may need to tell it that your modem can be found at `/dev/modem`. If your internet connection software can't access it you may need to change the permissions on it.

[Technical note: If you have a modem with device ID 2005, then you will need to choose the option to manually configure it before it will work]

If the above steps don't work for you or the above mentioned driver doesn't work with your system (for instance if you have an SMP machine) then read the rest of the howto which explains how to use the older driver in greater detail.

2.1. Quick Starting with an HCF modem

1. Download the driver from *http://www.mbsi.ca/hcflinux/*, the following instruction are for the Binary RPM driver which is the easiest to install, if you want to install it using another method consult the README file.
2. Load up a terminal (or go to a console), change to the root user and enter the directory you downloaded the driver to and use the command "rpm –i" followed by the name of the driver. For instance if it is called `hcflinmodem−0.9mbsibeta02030801−1.i586.rpm` you would enter,

   `[user@localhost]$` **rpm –i hcflinmodem−0.9mbsibeta02030801−1.i586.rpm**

3. Run the program **hcfconfig** and just follow the on−screen instructions and it should automatically detect your modem and install the driver. If you have any problems consult the documentation that comes with the driver.

You will now be able to setup your internet connection software, you may need to tell it that your modem can be found at `/dev/modem`. If your internet connection software can't access it you may need to change the permissions on it.

[Technical note: If you have an older modem, i.e one with the Rockwell brand name rather then Conexant then you will not be able to use this driver at present. You will also not be able to use modems which use SmartDAA. See *http://www.mbsi.ca/hcflinux/latest/BUGS.txt* for updates.]

---

3. Identifying your modem type

The first task you will need to do is to identify whether your modem's chipset is HCF or HSF. Unfortunately the traditional way of doing this (by using /proc/pci, lspci or KDE's control center) won't work for us here due to errors in the pci.ids file which can cause a misidentification of the modem. There are three main ways which you can use to identify your modem's chipset:

1. If you've got your modem working under Windows then you can identify your chipset by downloading and running *Conexant's ListModem Application*. When you run it, the program will give the information we want under "MODEM TYPE".
2. If you've opened your computer up chances are that the modem's chipset will have either the letters "HSF" or "HCF" printed on it.
3. You can identify your type of modem from it's device ID and vendor ID, the easiest way get this information is from the command **lspci –n** (or **less /proc/pci** on older Linux distributions) this command tells you all of the Vendor IDs and Devices IDs for all of the PCI cards in your machine. You will be able to identify your modems' IDs as it will have a vendor ID of either 14F1 (Conexant) or 127A (Rockwell). Ignore any information that the lspci command tells you about your modem being a HSF or HCF as it could be wrong.

   The information is often presented in the form VVVV:DDDD where VVVV is the vendor ID and DDDD is the device ID, for instance if it listed 127a:2005 it would mean the that the Vendor ID is 127a and device ID is 2005.

   If your modem is a HCF modem it will have one of the following Device IDs:

   1033 / 1034 / 1035 / 1036 / 10b3 / 10b4 / 10b5 / 10b6 / 1003 / 1004 / 1005 / 1023 / 1024 / 1025 / 1f10 / 1f11 / 1f14 / 1f15

   If your modem is a SmartHCF modem it will have one of the following Device IDs:

   1052 / 1053 / 1054 / 1055 / 1056 / 1057 / 1058 / 1059 / 1063 / 1064 / 1065 / 1066

   If your modem is a HSF modem it will have one of the following Device IDs:

   2013 / 2014 / 2015 / 2016 / 2003 / 2004 / 2005 / 2006 / 2f10 / 2f12 / 2f00

   If your modem is a SmartHSF modem it will have one of the following Device IDs:

   2043 / 2044 / 2045 / 2046 / 2053 / 2054 / 2055 / 2056

If you have a HCF or SmartHCF modem goto to the HCF section, if you have a HSF or SmartHSF modem go the to the HSF section.

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4. HCF chipset based modems

4.1. History

Unfortunately at the present time there is no HCF modem driver for linux. Conexant have indicated in section 11 of their FAQ (*http://www.conexant.com:80/cnxt/customer/md_faqs.htm*) that they are currently developing one.

Several people have reported that they have got a HCF modem (in particular chipsets with the device ID of 1025) to work under Linux by using the HSF driver, however little firm information is known about this. If you successfully manage to use an HCF modem under linux please contact me to tell me about it.

One person has reported that if you get the "No Dialtone" error when trying to use a HSF driver with a HCF modem you can correct it by using the AT command "AT S7=45 S0=0 L1 V1 X4 &c1 E1 Q0".

4.2. Miscellaneous information

If you wish to embark on writing your own driver you might find the following files useful,

Information on how to edit the INF file

http://users.freenet.am/~hcfconf/advdocs/country.zip

Modem command guide

http://users.freenet.am/~hcfconf/advdocs/100498C.zip

Designers notes and specifications

http://www.unitronic.de/Hersteller/conexant/Modem.htm

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5. HSF

5.1. History

A HSF driver first appeared out of the blue in mid−2000 when Olitec released unto the world a binary only driver for their Olitec PCI modem for 2.2.14 kernel, it wasn't long before someone realized that the Olitec modem was based on the Rockwell/Conexant HSF Chipset. Inquiries to Olitec revealed that the driver should work with any HSF chipset as there was nothing in the driver that was specific to the Olitec modems. Many people tried to get the driver to work with non−Olitec modem unfortunately without success, however a few months later and after many hours of work by many people trying a variety of tricks to get the driver to work, several people managed to stumble across the solution. It was a simple one line change to file which solved the problem and the world was left with a working HSF driver, at the time it only worked on 2.2.14 Kernels and Olitec had refused to release the source code to let others try to get it to work with other kernels.

A few months later Olitec released the driver for 2.2.16 and 2.2.17 kernels, this kept the HSF winmodem community satisfied until we came to the day when the 2.4 kernel was released. None of the previous drivers appeared to work with the 2.4 kernel and this caused problems for all those who wanted to upgrade and also for the large number of new users who were using 2.4.* kernel based distributions such as Mandrake 8 and RedHat 7.1. Not a word had been heard out of Olitec since the 2.4 kernel was released, but Conexant had announced that they intended to develop a Linux driver. After many months of waiting for a 2.4.* driver Marc Boucher decided to something about it and wrote a wrapper which allowed an old version of the driver to be used with 2.4.* kernels.

That's where we are now, Marc's wrapper is still in experimental development stage but it works and many people are using it to connect to the internet under Linux.

From the history you'll understand why the next section has to be split into two sections one for 2.2.14 – 2.2.18 kernels and one for 2.4.* kernels. If you don't know what kernel version you have you can find out by using the '**uname –r**' command at the console window before proceeding to the appropriate section of this HOWTO.

5.2. Kernel 2.2.14 – 18

5.2.1. Requirements

Having either a 2.2.14, 2.2.16 or 2.2.17 kernel. It has been reported that the driver for 2.2.17 kernels also works with 2.2.18 kernels.

5.2.2. Getting IDs

To get the modem to work you'll need to get the Vendor ID and Device ID. The easiest way to do this is to use the command "**less /proc/pci**" and scroll until you find the PCI card which has a vendor ID of either 14F1 (Conexant) or 127A (Rockwell) and note the Device ID.

You'll need to make an %HSFModem% line.

Copy down the following line somewhere,

%HSFModem% = ModemX, PCI\VEN_XXXX&DEV_YYYY&SUBSYS_YYYYXXXX

Replacing the XXXX's with your Vendor ID and the YYYY's with your Device ID, so if your Vendor ID is 127A and Device ID is 2015 your line would be,

%HSFModem% = ModemX, PCI\VEN_127A&DEV_2015&SUBSYS_2015127A

You'll need to use this line later on to allow the driver to detect your modem, the next steps you need to take vary slightly depending on what kernel you have so you'll need to refer to the appropriate section depending on whether your kernel version is 2.2.14, 2.2.16 or 2.2.17

5.2.3. If you have a 2.2.14 kernel

Installing a HSF driver on a 2.2.14 kernel

1. Download the file HSF_V1.01.02_K2.2.14−5.0.tar, it can be obtained from *Olitec's site* or the *mirror*.
2. Copy it to your home directory
3. In a console window change to your home directory

   ```
   [user@localhost]$ cd ~
   ```

4. Decompress the file

   ```
   [user@localhost]$ tar xzvf HSF_V1.01.02_K2.2.14−5.0.tar
   ```

5. Enter into the drivers directory

   ```
   [user@localhost]$ cd pci_56k_v2
   ```

6. Load up the lin_hsf.inf file in your favorite text editor, under the section [generic] you'll see a few of lines like "%HSFModem% = ModemX, PCI\VEN_127A&DEV_1025&SUBSYS_1025127A" under theses lines add your own %HSFModem% line which you made earlier.
7. Switch to root

   ```
   [user@localhost]$ su
   ```

8. Run the ins_all script to install the driver

   ```
   [user@localhost]$ ./ins_all
   ```

You will now be able to access the internet by telling your dial−up software that your modem is located at /dev/modem.

The ins_all will only temporarily load the modem driver and the modem driver will be removed when you reboot. So if you re boot you will need to run the ./ins_all program to reload the driver, if you reboot on a regular basis you may want to set the . /ins_all command to automatically run every time your computer

loads up.

5.2.4. If you have a 2.2.16 kernel

Installing a HSF driver on a 2.2.16 kernel

1. Download the file PCI_56K_V2_K2.2.16.tar.gz, it can be obtained from *Olitec's site* or the *Mirror*.
2. Copy it to your home directory
3. In a console window change to your home directory

```
[user@localhost]$ cd ~
```

4. Decompress the file

```
[user@localhost]$ tar xzvf PCI_56K_V2_K2.2.16.tar.gz
```

5. Enter into the drivers directory

```
[user@localhost]$ cd pci_56k_v2_k2.2.16
```

6. Load up the lin_hsf.inf file in your favorite text editor, under the section [generic] you'll see a few of lines like "%HSFModem% = ModemX, PCI\VEN_127A&DEV_1025&SUBSYS_1025127A" under theses lines add your own %HSFModem% line which you made earlier.
7. Switch to root

```
[user@localhost]$ su
```

8. Run the ins_all script to install the driver

```
[user@localhost]$ ./ins_all
```

You will now be able to access the internet by telling your dial−up software that your modem is located at /dev/modem.

The ins_all will only temporarily load the modem driver and the modem driver will be removed when you reboot. So if you reboot you will need to run the ./ins_all program to reload the driver, if you reboot on a regular basis you may want to set the ./ins_all command to automatically run every time your computer loads up.

5.2.5. If you have a 2.2.17 or 2.2.18 kernel

Installing a HSF driver on a 2.2.17 or 2.2.18 kernel

1. Download the file PCI_56K_V2_K2.2.17.tar.gz , it can be obtained from *Olitec's site* or the *Mirror*.
2. Copy it to your home directory
3. In a console window change to your home directory

```
[user@localhost]$ cd ~
```

4. Decompress the file

   ```
   [user@localhost]$ tar xzvf PCI_56K_V2_K2.2.17.tar.gz
   ```

5. Enter into the drivers directory

   ```
   [user@localhost]$ cd pci_56k_v2_k2.2.17
   ```

6. Load up the lin_hsf.inf file in your favorite text editor, under the section [generic] you'll see a few of lines like "%HSFModem% = ModemX, PCI\VEN_127A&DEV_1025&SUBSYS_1025127A" under theses lines add your own %HSFModem% line which you made earlier.
7. Switch to root

   ```
   [user@localhost]$ su
   ```

8. Run the ins_all script to install the driver

   ```
   [user@localhost]$ ./ins_all
   ```

You will now be able to access the internet by telling your dial−up software that your modem is located at /dev/modem.

The ins_all will only temporarily load the modem driver and the modem driver will be removed when you reboot. So if you reboot you will need to run the ./ins_all program to reload the driver, if you reboot on a regular basis you may want to set the ./ins_all command to automatically run every time your computer loads up.

5.3. Kernel 2.4.*

5.3.1. Requirements

- You need a 2.4.* kernel which does not have SMP support.
- You will also need to have your kernel source available, if you don't have them installed already you can probably find them on your distributions CD.
- At least version 2.4.0 of ppp (you can find what version of ppp you have installed by using the command **pppd −−version**)

To get the modem working under a 2.4.* kernel you'll need to use the driver intended for 2.2.17 kernels alongside Marc Boucher's hsfcompat wrapper program which lets the driver work with 2.4.* kernels. At the time of writing the hsfcompat driver is on version 1.0d and is still experimental and may cause problem with your system. However I haven't seen anyone have any problem from using the wrapper. For the latest details see *hsfcompat's homepage*.

Files you'll need to download:

hsfcompat_24−1.0d.tar.gz

Main download site:

http://www.mbsi.ca/hsfcompat/hsfcompat_24-1.0d.tar.gz

`PCI_56K_V2_K2.2.17.tar.gz`

Main download site:

http://www.olitec.com/pub/PCI_56K_V2_K2.2.17.tar.gz

Mirrored at:

ftp://ftp.dina.kvl.dk/pub/Staff/Thomas.S.Iversen/linmodems_drivers/olitec/PCI_56K_V2_K2.2.17.tar.gz

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5.3.2. Installing

1. Copy the `hsfcompat_24-1.0d.tar.gz` file to your home directory
2. In a console window change to your home directory

   `[user@localhost]$` **cd ~**

3. Extract the hcfcompat program by using:

   `[user@localhost]$` **tar xzvf hsfcompat_24-1.0d.tar.gz**

4. Copy the `PCI_56K_V2_K2.2.17.tar.gz` file into the `hsfcompat_24-1.0d` directory.
5. Extract the driver by using:

   `[user@localhost]$` **tar xzvf PCI_56K_V2_K2.2.17.tar.gz**

6. Load up the file `Makefile` (Found in the `hsfcompat_24-1.0d` directory) in a text editor and scroll down to the line which reads SBINDIR=/usr/sbin and replace `/usr/sbin` with the location of your system bin directory, then scroll down to the line which reads KERNELSRC=/usr/src/linux and replace `/usr/src/linux` with the location of your kernel source files.
7. Switch to superuser (root) by using:

   `[user@localhost]$` **su**

8. In the `hsfcompat_24-1.0d` directory compile hsfcompat by using:

   `[user@localhost]$` **make**

9. Install the driver by running: `[user@localhost]$` **make *install***
10. Follow the on-screen instruction which explain how to load the driver into memory and how to have this done automatically.

5.4. Troubleshooting FAQ

5.4.1. When running ./ins_all I get a kernel mismatch error ?
5.4.2. When I try to run ./ins_all I get the error "bash: ./ins_all No such file or directory."

5.4.3. When installing the driver when it tries to load `myserial.o` I get a segmentation fault ?
5.4.4. When trying to dial my ISP I get "No Carrier" error ?
5.4.5. When running ./ins_alI get the error "No matching INF file is found for SoftK56 PCI device" ?
5.4.6. On my Laptop the driver seemed to install fine but I can't access my modem on /dev/modem ?

5.4.1. When running ./ins_all I get a kernel mismatch error ?

This means that the driver thinks that you don't have the appropriate kernel version, if you have a variant of the kernel (such as the one that has non−standard name) then you can still get the driver to work by loading up the file `ins_all` in a text editor and replacing all of the '**insmod −m**' commands with '**insmod −f −m**'.

5.4.2. When I try to run ./ins_all I get the error "bash: ./ins_all No such file or directory."

This error tends to be caused by the script being unable to find C Shell at the location `/bin/csh`. If you have C Shell installed in a different location then you should create a symbolic link which points to the correct location. If you don't have you'll need to install it.

5.4.3. When installing the driver when it tries to load `myserial.o` I get a segmentation fault ?

This is caused by your computer trying to get Plug−and−Play to work with your modem. You can stop it doing this by going to your BIOS and setting an option which tells it not to do that. The settings name varies from BIOS to BIOS but is normally something like PnP OS.

5.4.4. When trying to dial my ISP I get "No Carrier" error ?

It has been reported that making the following changes to your configuration will work:

1. Replace the command ATZ with ATZX3
2. Replace the command ATDT with ATX3DT

5.4.5. When running ./ins_alI get the error "No matching INF file is found for SoftK56 PCI device" ?

his occurs when the driver can't find the correct %HSFModem% line in the lin_hsf.inf line, go back through the instructions and make sure that you didn't make a mistake when making or entering the the %HSFModem% line.

5.4.6. On my Laptop the driver seemed to install fine but I can't access my modem on /dev/modem ?

This is often caused by the modem's device number clashing with that of PCMCIA, you can check if this is the case by entering the command,

[user@localhost]$ **ls −l /dev/ | grep 254**

You'll see the hsf0 device listed with the major number of 254, if any other device also has the major number of 254 it means there is a clash. You can fix this problem by loading up the ins_all file and change the line which reads "mknod /dev/cnxt c 254 64" to "mknod /dev/cnxt c 253 64".

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Notes

[1]

1. Download the driver from *http://www.mbsi.ca/hsflinux/*, the following instruction are for the Binary RPM version which I recommend you use.
2. Load up a terminal (or go to a console), change to the root user and enter the directory you downloaded the driver to and use the command "rpm −i" followed by the name of the driver. For instance if it is called `hsflinmodem−4.06.06.02mbsibeta02012000−1.i586.rpm` you would enter,

   `[user@localhost]$` **rpm −i hsflinmodem−4.06.06.02mbsibeta02012000−1.i586.rpm**