

Installation Guide for "HFC-S PCI" based ISDN Cards under Linux

Introduction

Your ISDN PCI card is based on a single chip solution from Cologne Chip?

The chip on your card is called "HFC-S PCI"?

Congratulations! There is a feature-rich Linux driver available for your ISDN adapter:

"HFC-S PCI" based cards are already supported by the original Linux kernel. The driver is part of the so called "HiSax" module which is maintained by the ISDN4Linux developers group.

Modern Linux distributions (like SuSE Linux and RedHat Linux) support "HFC-S PCI" cards by an automatic hardware detection. They come with a pre-compiled Linux kernel including the HiSax ISDN driver suite. So you just have to configure the Internet connection.

Just follow our installation instructions as example for

[SuSE 8.2 Linux](#)

or

[RedHat Linux 8.0](#)

If you use another Linux distribution without HiSax support included or if you want to compile your own kernel with HiSax support, just follow our [kernel compilation instructions](#).

Note

The Linux driver runs with both revisions of Cologne's ISDN PCI chip "HFC-S PCI" and "HFC-S PCI A".

Many Linux distributions call these chips simply "HFC" or "HFC-PCI". Sometimes this leads to misunderstandings. Just make sure that it is HiSax driver type 35.

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SuSE Linux 8.2

Plug the ISDN card into a free PCI slot.

Boot SuSE Linux and start the configuration tool "Yast2" or simply follow the instructions of the "New Hardware Detection" to enter Yast2:



Select the ISDN card type "CCD HFC 2BDS0" from the list of supported devices:

Please select ISDN card from the list.

If you have an old legacy ISA card, you can enter values for IO port or memory addresses and the used interrupt. For the correct values, check with your technical manual or contact your salesman.

Start Mode: OnBoot the driver is loaded during system boot. **Manual** the driver must be started with the **rcisdn start** command, only the user root can do this. **HotPlug** is a special case for PCMCIA and USB devices.

For some isdn card exist multiple drivers, Please select one from the list.

ISDN low-level configuration for control0

ISDN cards

Select your ISDN card

- Billion B00A
- Billion B00B
- Billion B00C
- Billion BIPAC-D
- Billion BIPAC-D1
- CCD HFC 2BDS0**

Start Mode

OnBoot

Driver

HiSax

Selection of ISDN protocol

- ☒ Euro-ISDN (EDSS1)
- ☐ 1TR6
- ☐ Leased line
- ☐ NI1

Areacode

Dialprefix

Back Abort OK

Choose "Sync PPP" to set up a connection to a common PPP Internet Service Provider:

For networking over ISDN, there are two types of interfaces: **RawIP** and **SyncPPP**. In most cases, you will use SyncPPP. It is the default for all common Internet providers.

For switching between various Internet providers, an interface for each provider is not required. Simply add multiple providers to the same interface.

To avoid adding an interface now, use **Skip** not to enter the interface and provider dialogs.

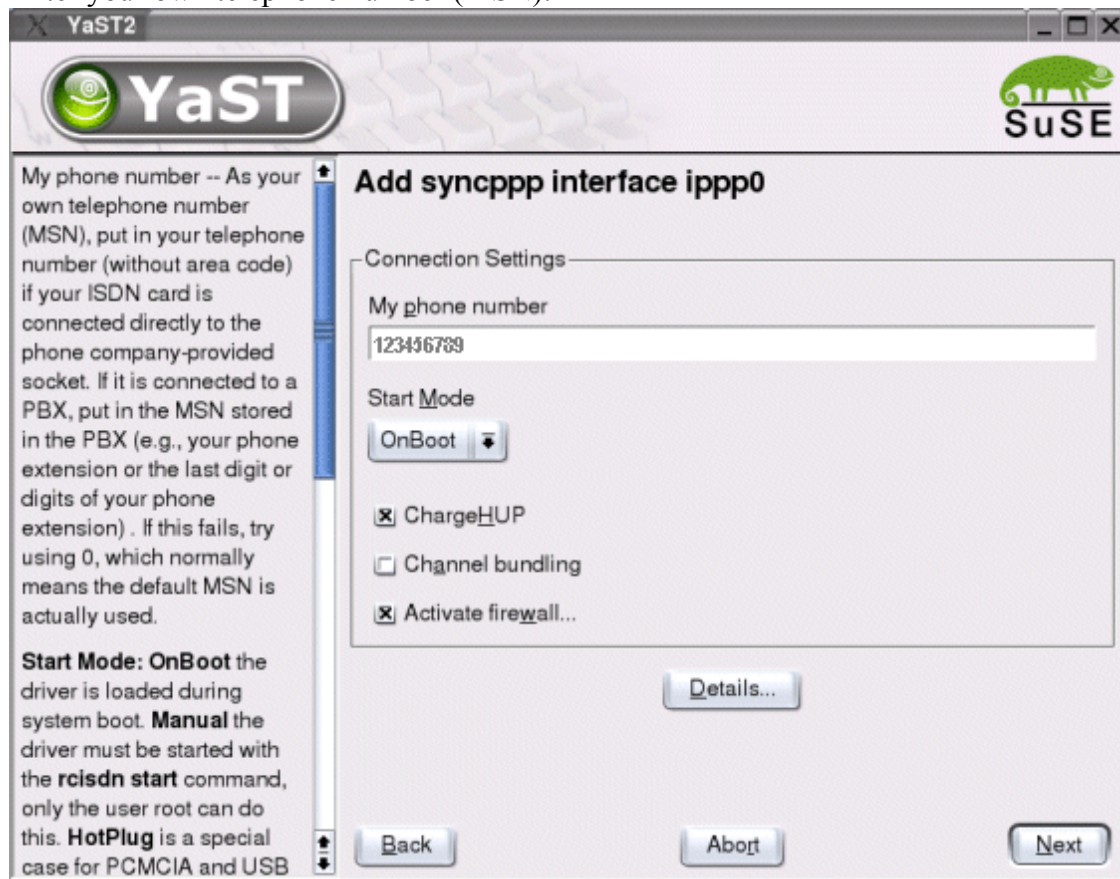
ISDN Service Selection

Network services

- Add new SyncPPP network interface
- Add new RawIP network interface
- Add provider to existing interface

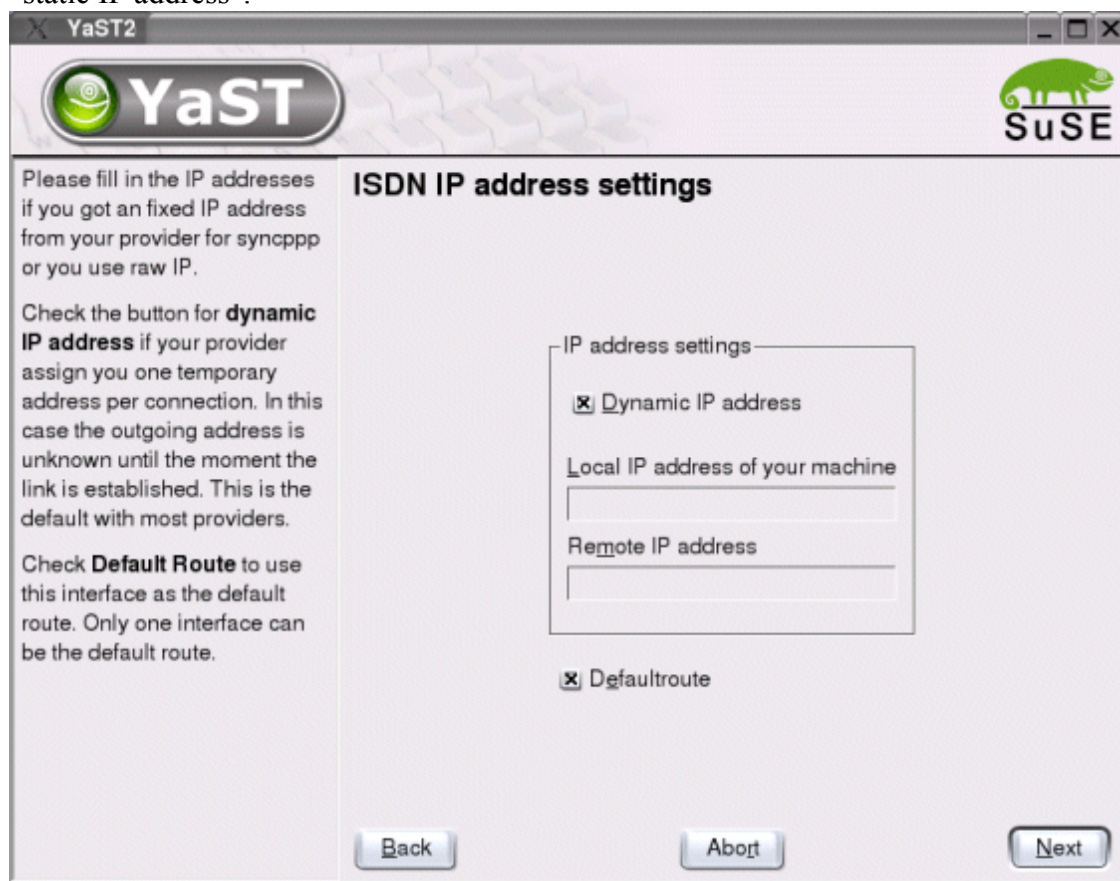
Back Abort Skip

Enter your own telephone number (MSN):



The YaST2 window displays the 'Add syncppp interface ippp0' configuration screen. On the left, a sidebar contains instructions: 'My phone number -- As your own telephone number (MSN), put in your telephone number (without area code) if your ISDN card is connected directly to the phone company-provided socket. If it is connected to a PBX, put in the MSN stored in the PBX (e.g., your phone extension or the last digit or digits of your phone extension). If this fails, try using 0, which normally means the default MSN is actually used.' Below this, it explains 'Start Mode: OnBoot' (driver loaded during boot), 'Manual' (driver started with 'rcisdn start'), and 'HotPlug' (special case for PCMCIA and USB). The main area is titled 'Add syncppp interface ippp0' and contains 'Connection Settings' with a 'My phone number' field (containing '123456789'), a 'Start Mode' dropdown (set to 'OnBoot'), and three checked options: 'ChargeHUP', 'Channel bundling', and 'Activate firewall...'. A 'Details...' button is below these settings. At the bottom are 'Back', 'Abort', and 'Next' buttons. The SuSE logo is in the top right corner.

Choose between getting a "dynamically assigned IP address" (default setting) or using a "static IP address":



The YaST2 window displays the 'ISDN IP address settings' configuration screen. On the left, a sidebar contains instructions: 'Please fill in the IP addresses if you got an fixed IP address from your provider for syncppp or you use raw IP.' It then explains the 'dynamic IP address' option (temporary address per connection, unknown until link is established) and the 'Default Route' option (use this interface as the default route). The main area is titled 'ISDN IP address settings' and contains 'IP address settings' with a checked 'Dynamic IP address' option, empty fields for 'Local IP address of your machine' and 'Remote IP address', and a checked 'Defaultroute' option. At the bottom are 'Back', 'Abort', and 'Next' buttons. The SuSE logo is in the top right corner.

Setup the parameters of your Internet Service Provider (ISP) like phone number and user account settings:



The YaST2 window displays the 'Set parameters for the Internet connection' screen. On the left, a sidebar contains instructions: 'Access to your Internet provider. If you have selected your provider from the list, these values are provided.', 'Enter a **Provider Name** for the provider and a **Phone Number** to access your provider.', 'Select the type of packet encapsulation. **RawIP** means that MAC headers are stripped. **SyncPPP** stands for Synchronous PPP.', 'Enter the **User Name** and the **Password** to use as the login (ask your provider if unsure).', and 'Check **Always Ask** to be asked for the password every time.' The main area has the following fields: 'Name for dialing:' with 'arcor1' entered; 'Provider name' with 'Arcor (1)' in a dropdown; 'Phone number' with '0192075' and an 'Info' button; 'Packet Encapsulation' with a dropdown set to 'Synchronous PPP'; and an 'Authorization' section with 'User name' as 'arcor-ibc', 'Password' as '*****', and an unchecked 'Always ask for password' checkbox. At the bottom are 'Back', 'Abort', and 'Next' buttons.

YaST2

YaST

SuSE

Access to your Internet provider. If you have selected your provider from the list, these values are provided.

Enter a **Provider Name** for the provider and a **Phone Number** to access your provider.

Select the type of packet encapsulation. **RawIP** means that MAC headers are stripped. **SyncPPP** stands for Synchronous PPP.

Enter the **User Name** and the **Password** to use as the login (ask your provider if unsure).

Check **Always Ask** to be asked for the password every time.

Set parameters for the Internet connection

Name for dialing:

Provider name

Phone number

Packet Encapsulation

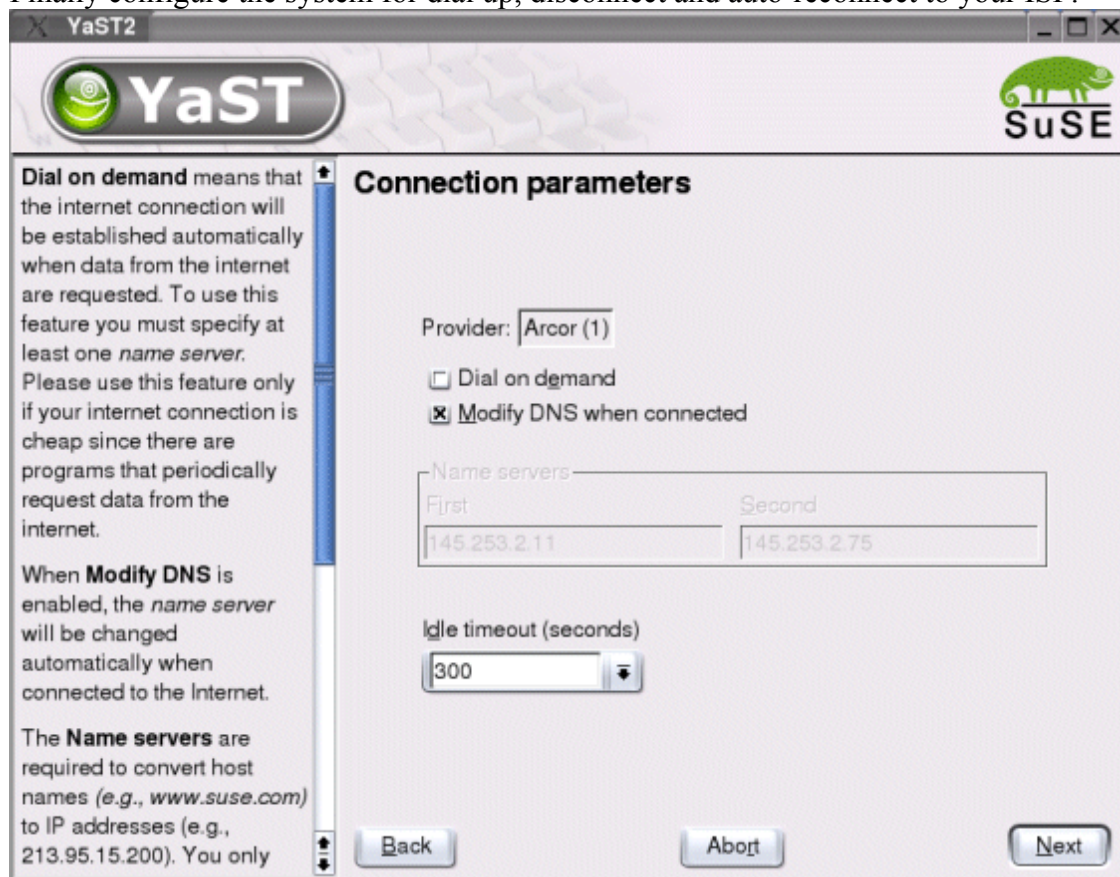
Authorization

User name

Password

☐ Always ask for password

Finally configure the system for dial up, disconnect and auto-reconnect to your ISP:



The YaST2 window displays the 'Connection parameters' screen. The left sidebar contains instructions: 'Dial on demand means that the internet connection will be established automatically when data from the internet are requested. To use this feature you must specify at least one *name server*. Please use this feature only if your internet connection is cheap since there are programs that periodically request data from the internet.', 'When **Modify DNS** is enabled, the *name server* will be changed automatically when connected to the Internet.', and 'The **Name servers** are required to convert host names (e.g., *www.suse.com*) to IP addresses (e.g., 213.95.15.200). You only'. The main area has the following fields: 'Provider:' with 'Arcor (1)' in a dropdown; 'Dial on demand' as an unchecked checkbox; 'Modify DNS when connected' as a checked checkbox; 'Name servers' with two input fields: 'First' containing '145.253.2.11' and 'Second' containing '145.253.2.75'; and 'Idle timeout (seconds)' with a dropdown set to '300'. At the bottom are 'Back', 'Abort', and 'Next' buttons.

YaST2

YaST

SuSE

Dial on demand means that the internet connection will be established automatically when data from the internet are requested. To use this feature you must specify at least one *name server*. Please use this feature only if your internet connection is cheap since there are programs that periodically request data from the internet.

When **Modify DNS** is enabled, the *name server* will be changed automatically when connected to the Internet.

The **Name servers** are required to convert host names (e.g., *www.suse.com*) to IP addresses (e.g., 213.95.15.200). You only

Connection parameters

Provider:

☐ Dial on demand

☒ Modify DNS when connected

Name servers

First

Second

Idle timeout (seconds)

Now your system is ready to connect to the Internet via your "HFC-S PCI" based ISDN card.
Have much fun surfing the Internet!

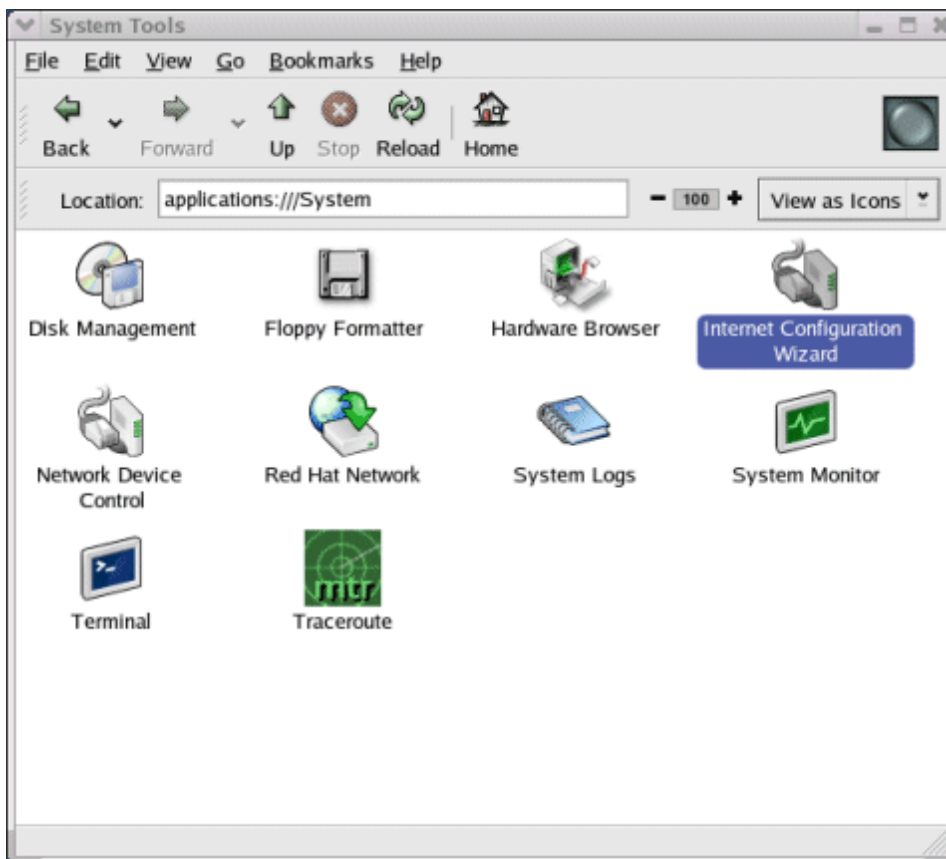
[\[Back\]](#) · © 2003 Cologne Chip AG

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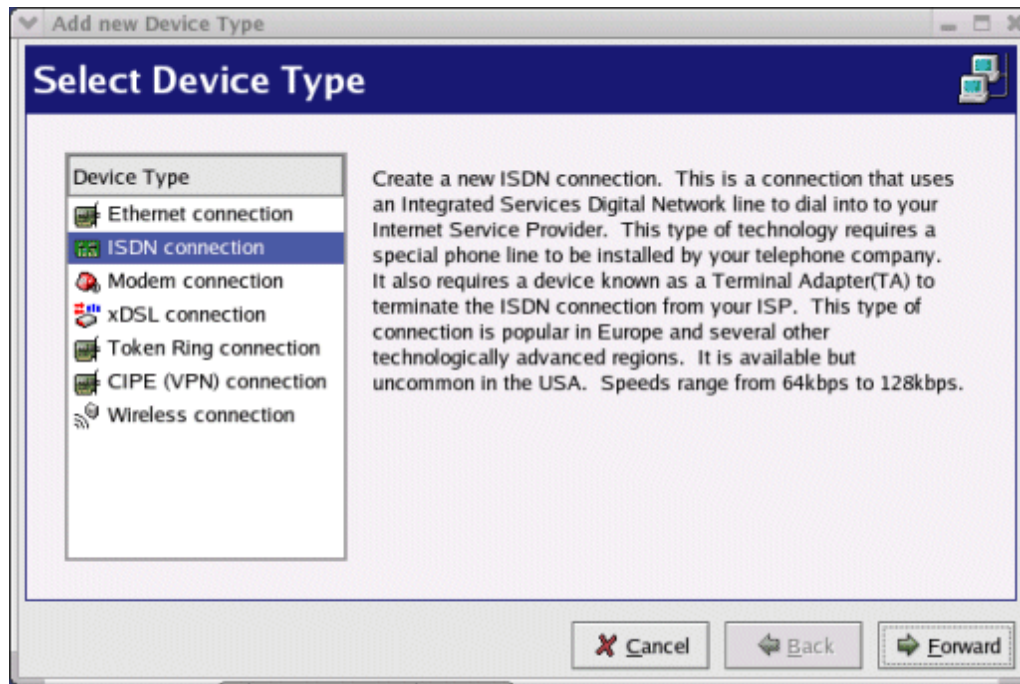
RedHat Linux 8.0

Plug the ISDN card into a free PCI slot.

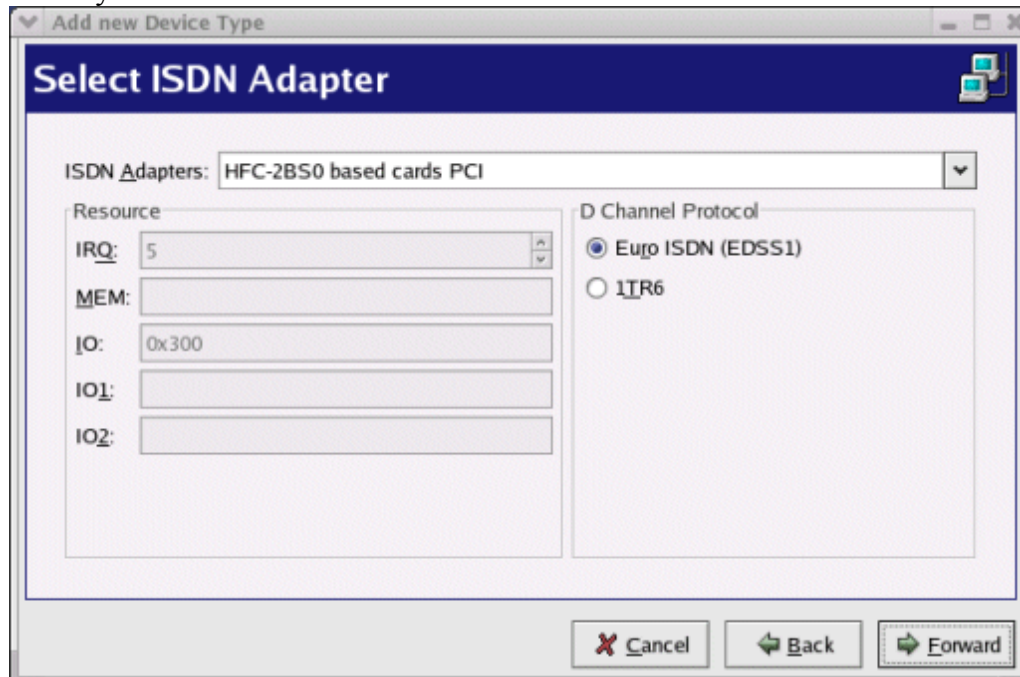
Boot RedHat Linux and start the "Internet Connection Wizard":



Thereafter, please choose "ISDN connection" as the type of connection that you want to establish:



Select your ISDN card. It is listed as "HFC-2B20 based cards PCI":



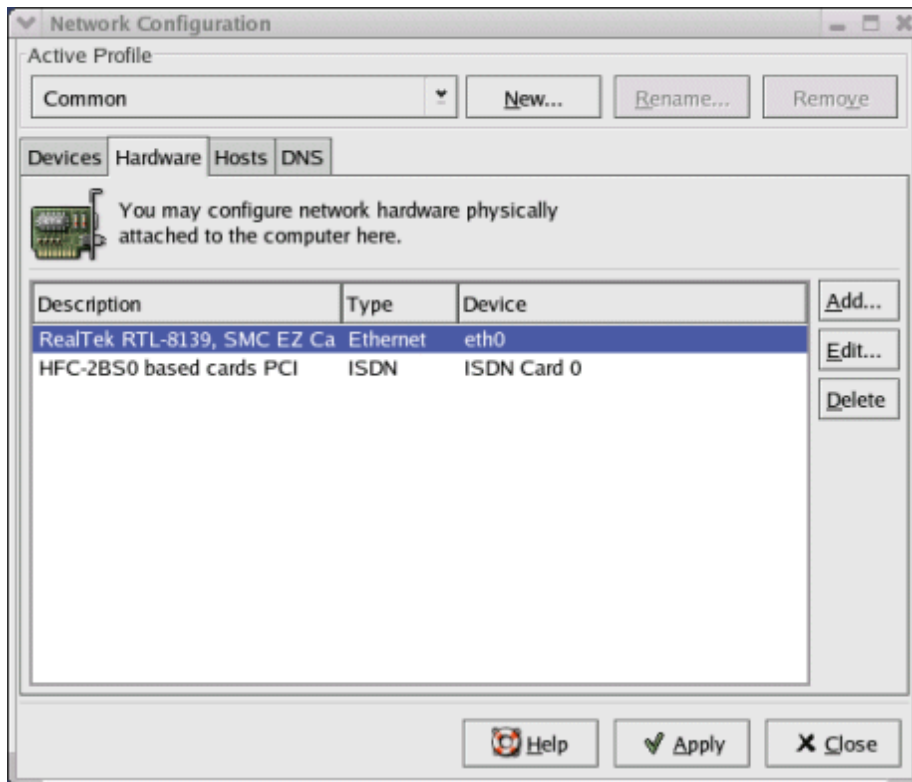
Make your choice of using an Internet Service Provider (ISP) out of the list or type in customized provider settings:

The screenshot shows a window titled "Add new Device Type" with a sub-header "Select Provider". On the left, a tree view under "Internet Provider" shows a hierarchy: Austria, Czech Republic, Germany (expanded), National (expanded), and a list of providers including 1stlog, 1und1-Online, acn, Arcor (selected), ArgonSoft, call2surf, and callando. On the right, there are input fields for "Phone Number" (Prefix, Area Code, and Phone Number: 0192070), "Provider Name: Arcor", "Login Name: arcor", and "Password: *****". At the bottom are "Cancel", "Back", and "Forward" buttons.

Please confirm the configuration of your ISDN connection by pressing "Apply":

The screenshot shows a window titled "Add new Device Type" with a sub-header "Create Dialup Connection". The main area contains the text "You have selected the following information:" followed by a list of settings: "Hardware: HFC-2BS0 based cards PCI", "Provider Name: Arcor", "Login Name: arcor", and "Phone Number: 0192070". At the bottom are "Cancel", "Back", and "Apply" buttons.

To re-configure and to view the hardware settings, use RedHat's "Network Configuration Tool":



Now your system is ready to connect to the Internet via your "HFC-S PCI" based ISDN card. Have much fun surfing the Internet!

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Kernel Compilation

Note

If you are new to Linux, kernel compilation can be somehow difficult. Invalid kernel configurations can lead to improper function of your operating system or even no function at all. The kernel should be compiled by experienced Linux users only. So, in case that you are a Linux newbie, please refer to the following readings for further information:

The Linux Kernel HOWTO

<http://www.tldp.org/HOWTO/Kernel-HOWTO/>

Linux Loadable Kernel Module HOWTO

<http://www.ibiblio.org/pub/Linux/docs/HOWTO/Module-HOWTO>

FAQ for isdn4linux

<http://www.isdn4linux.de/faq/>

For enabling the Linux kernel to support the "HFC-S PCI" based card, the Linux kernel must be compiled together with the HiSax driver in the following way:

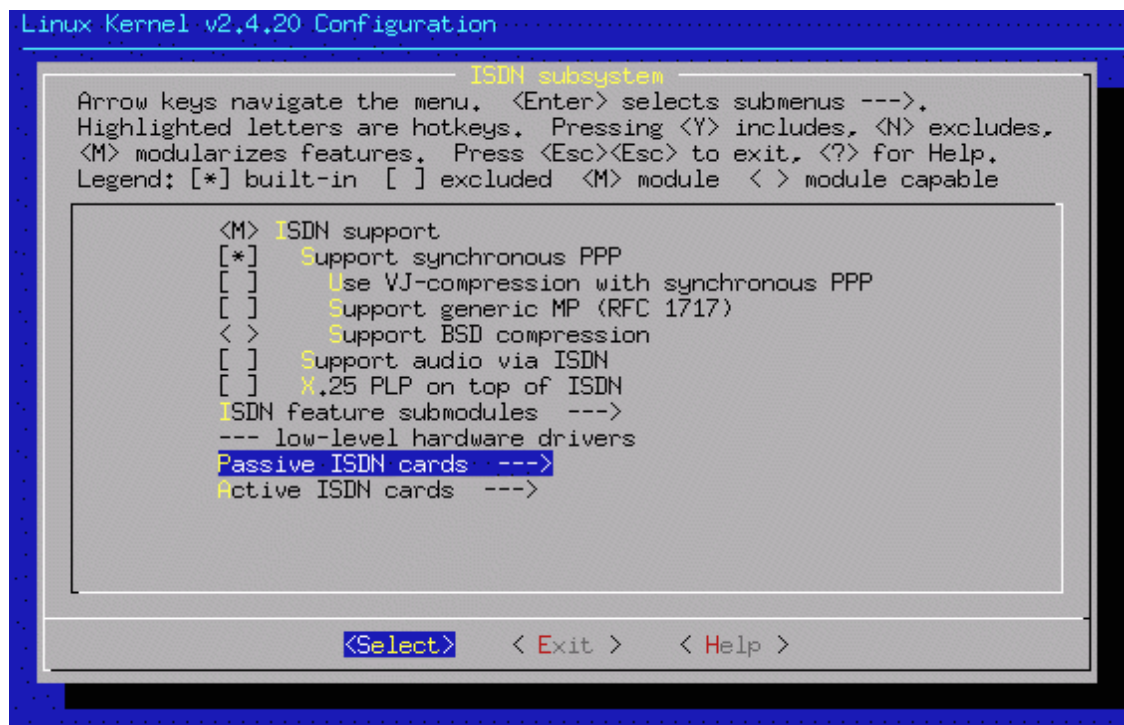
Open a shell and change to the directory containing the Linux source files, e.g.:

- `cd /usr/src/linux`

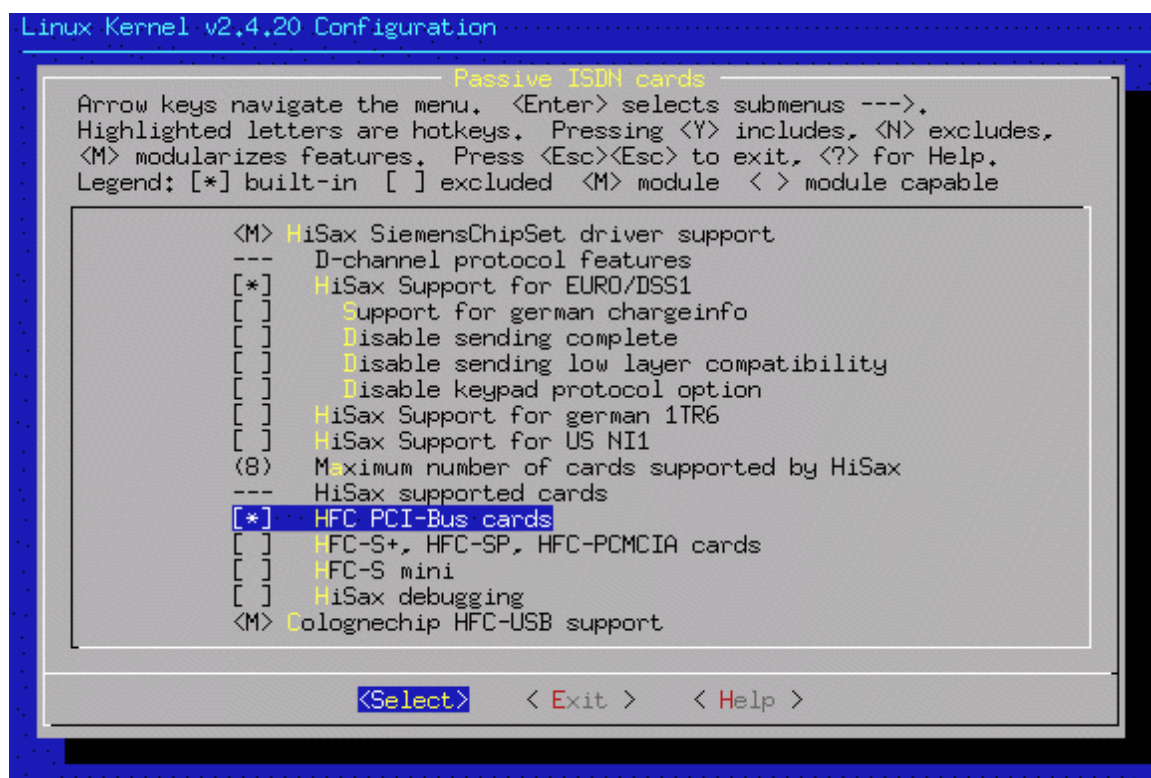
Enter the Linux kernel configuration with

- `make menuconfig`

Then enter the ISDN subsystem as follows:



Enable the support for "HFC PCI-Bus cards":



Save the kernel settings and compile the kernel by:

- make dep && make clean
- make bzImage
- make modules && make modules_install

After booting the kernel with a HiSax module including the "HFC-S PCI" support, you can load the HiSax ISDN driver with the following commands:

- `modprobe isdn`
- `modprobe hisax id=HiSax type=35 protocol=2`

When the HiSax module has been successfully loaded and your ISDN card has been detected in your PC, the similar messages will appear in your `/var/log/messages` log file:

```
May 2 13:17:45 linux kernel: HiSax: HFC-PCI driver Rev. 1.1.4.1
May 2 13:17:45 linux kernel: HiSax: HFC-PCI card manufacturer:
CCD/Billion/Asuscom card name: 2BD0
May 2 13:17:45 linux kernel: HFC-PCI: defined at mem 0xd2863000 fifo
0xc2ab8000(0x2ab8000) IRQ 5 HZ 100
May 2 13:17:45 linux kernel: HFC_PCI: resetting card
May 2 13:17:45 linux kernel: HFC 2BDS0 PCI: IRQ 5 count 0
May 2 13:17:45 linux kernel: HFC 2BDS0 PCI: IRQ 5 count 34
May 2 13:17:45 linux kernel: HiSax: DSS1 Rev. 1.1.4.1
May 2 13:17:45 linux kernel: HiSax: 2 channels added
May 2 13:17:45 linux kernel: HiSax: MAX_WAITING_CALLS added
```

The hardware driver is now installed and ready for use. The next steps are to configure the Internet connection of your system by using tools like "isdncontrol" and "imon".

Please refer to the [ISDN4Linux-FAQ](#) to figure out, how to do this.