

# RedHat and ISDN4Linux

Mirko Zeibig

How to use isdn4Linux and RedHat (>=5.2). Documentation and a script-package.

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# 1. What is it good for?

As RedHat does not seem to care for ISDN I wrote a few scripts on my own with a little bit of inspiration by isdn4net and the SuSE-startup-files. There is a spanish version (rh-isdn-es.html) ' of this document available.

This is tested for RH 5.2 in combination with PAP-PPP, dynamic IP and an Elsa QuikStep 1000 ISA-card (only *hisax* is tested with these scripts right now, but it should be no problem to adjust them easily to other hardware).

**Note:** I now have tested the package with the "german" Halloween III which is a descendant of RH6.0. Feel free to comment and change things, as though I am nearly perfect there might nonetheless be space for corrections and improvements ;-). Take care to look into ChangeLog as well, some rewrite might have been done in configuration as well. Of course have a look at the Disclaimer-section.

## 2. Source- and other requisites

### 2.1. Hard- and Software and elsewhere

An ISDN-card ;-)

As Elsa did provide money for the hisax-developoppers and for the certification for the german telephone net I would recommend one of theirs, but who am I ...

The Kernel

You must not take the one delivered with RedHat 5.2, as the ISDN-part is faulty. Get the newest from Kernel 2.0.36 (<ftp://ftp.de.kernel.org/>)

ISDN4K-utils

The newest ISDN4K-utils 3 beta 2 (available as RPM from <ftp://trollmor.terminator.net>), or as source from <ftp://ftp.suse.com> To compile the X-programs make sure you have X-header-files installed.

The Scripts

Of course my script-collection for RedHat (<http://www.webideal.de/rh-isdn/downloads/>) ;-) (available as tgz, RPM and SRPM).

#### News

With Halloween III (= RH6.0 GPL) the kernel (2.2.9 resp. 2.2.12) (<ftp://ftp.kernel.org/>) and the isdn4kutils (local copy) ([../downloads/](http://www.webideal.de/rh-isdn/downloads/)) included in this edition will work out of the box.

## 2.2. Compiling the kernel and configuring PnP devices

When compiling the kernel make sure, that you have set the following options:

#### Network-Device-Support

- PPP-support (best as module)

#### ISDN-Subsystem:

- Support synchronous PPP
- normally *Euro DSS1*
- maybe *German Chargeinfo*
- and of course the *driver* for your ISDN-card

After compiling and installing the kernel, do the same with the ISDN4K-utils. If you have a Plug 'n Pray-card make sure that you have configured it right. Take a look into `isapnp.conf.elsa` of my script-collection and of course RTFM ;-). For further information on compiling the kernel and configuring PnP have a look at Section 11.2.

## 3. The Package

**tar xzf rh-isdn-A.BB-C.tgz** into a temporary directory and adjust the scripts to your needs before you copy the files to your root-file system. This is for your own safety (refer to the Disclaimer-section). **install.sh** will copy the files for you and make a needed link!

As you are probably using RedHat you might want to install the RPM, which will hopefully not delete any of the configuration changes you made. I suggest to use the *Upgrade*-mode of RPM, which will work fine even if you have not installed a previous version of the package. Do this by executing **rpm -Uvh rh-isdn-A.BB-C.noarch.rpm** and **rpm -Uvh rh-isdn-conf-A.BB-C.noarch.rpm** for the configuration tool.

**Note:** Some hints on version: version A.BB-C is the C'th rpm-repackage of the BB'th minor-version of the A'th major-version, so a change in C normally does not provide fixes or enhancements of the scripts but will normally only be a fix of the RPM-packaging.

If you decided to install **rh-isdn-conf** as well you might skip to do a lot of the changes described hereafter manually. Just execute **rh-isdn** from the commandline. This will set up the following files: **isdn**, **ifcfg-ipp0** and **pap-secrets** for you. Make sure to repeat your **PAP-UserName** in **/etc/ppp/ipp0.d/options** and to adjust **COUNTRYCODE** and **AREACODE** in **/etc/isdn/isdn.conf**. Then go to Section 6.

## 3.1. Adjusting ISDN

- **/etc/isdn/callerid.conf** (some info important for *isdnlog*)
- **/etc/sysconfig/isdn** (*hardware specific* settings and choice of *dynamic vs. static IP*)
- **/etc/isdn/ipp0.conf** (Adjusting hanguptime, country-code etc.)

## 3.2. Setting up your ippd

- **/etc/ppp/pap-secrets** (*Username* and *Password*)
- **/etc/ppp/ipp0.d/options** (some other settings)
- **/etc/sysconfig/network-scripts/ifcfg-ipp0** (*ONBOOT* and *static IP-addresses*, *Phonenumbers*, *usage of a slave-device*)

### 3.3. Test your settings

- Unconnected What you should see if you are not connected
- Dynamic IP Changes How route and device-ip will be changed after connection if you have dynamic IP.
- On reboot Adding the isdn-script to your run-levels.

### 3.4. Scripts in /etc/ppp/ipp0.d

- Concepts (general)
- The scripts (what they do)

## 4. Adjusting ISDN

### 4.1. /etc/isdn/callerid.conf

As I am not quite sure, what does the magic, I entered the INTERFACE for my MSN as well as for my ISP. Your own numbers go into MSN-sections, other numbers into NUMBER-sections.

#### Example 1. /etc/isdn/callerid.conf

```
[MSN]
NUMBER = YourMSN # (eg. +497219374530)
SI      = 7
ALIAS   = YourMachineName
ZONE    = 0
INTERFACE = ipp0

[NUMBER]
NUMBER = ISPsPhoneNumber # (eg. +49721945939)
ALIAS   = ISPsName
```

```
ZONE    = 1
INTERFACE = ippp0
```

If you don't enter any information here, **isdnlog** will not be able to change *chargeup*–time automatically for you. Also make sure to set *I4L\_DEBUG* to 4 (see Section 4.2). It seems to be important to include country–prefix, country– and areacode for this to work. Have a look at **man 5 callerid.conf** for more options.

## 4.2. /etc/sysconfig/isdn

Here you have to enter hardware–specific settings. Make sure you set the right driver (*I4L\_DRIVER*), card–type (*I4L\_TYPE*), protocol (*I4L\_PROTOCOL*) etc.

**Note:** You will normally enter 2 (=EDSS1(Euro–ISDN)) here, older german connections might have to set this to 1 (=1TR6)

If you have a PnP–Card it is important that you have configured it right before trying to start the isdn–subsystem. *IRQ*, *IO* and *MEM* should be set to the same values as in */etc/isapnp.conf*.

### Example 2. /etc/sysconfig/isdn

```
I4L_ISDNLOG="yes"
I4L_DEBUG=4
I4L_VERBOSE=3
I4L_PROTOCOL=2
I4L_DRIVER="hisax"
I4L_TYPE=7 # Elsa QuikStep
I4L_ID="ElsaQS"
I4L_IRQ="12"
I4L_IO="0x0360"
I4L_MEM="" # no need for Elsa QS
DYNAMIC_IP="yes"
```

For further information have a look

into: `/usr/src/linux/Documentation/isdn/README.HiSax`

In the case you do not have static IP-addresses make sure to set `DYNAMIC_IP="yes"` right here.

If you are done you may try your settings with `/etc/rc.d/init.d/isdn4linux start`. Instead you might consider executing `rcisdn` which is in fact just a symlink to `/etc/rc.d/init.d/isdn4linux`.

If you encounter any problems you may try to increase the values for `I4L_DEBUG` and `I4L_VERBOSE` which will end in a flood of information in `/var/log/messages`. Look into the manpages for `isdnctrl` and `hisaxctrl` as well.

**Note:** Whether this information will actually show up, is dependant from your syslog-settings. You better include a statement for `debug` in `/etc/syslog.conf` like this:

```
*.debug                                /var/log/debug
```

Also make sure you uncommented `debug` in `/etc/ppp/ipp0.d/options`.

Setting `I4L_ISDNLOG` to "yes" will invoke `isdnlog` which will:

- report your connections and
- adjust your charge hangup time automatically (see Section 4.1 as well). To enable this behavior you have to set `I4L_DEBUG` to 4.

Of course this is of interest mostly for people living in countries without a flat-rate, here in Germany you will pay about 2.40 Euro (appr. the same in \$) per hour for the telephone-connection alone on weekdays during daytime.

### 4.3. `/etc/isdn/ipp0.conf`

The only things you may want to change here are:

#### **Example 3.** `/etc/isdn/ipp0.conf`

```
HUPTIMEOUT = 3  
CHARGEHUP = on  
CHARGEINT = 90
```

*CHARGEINT* is the period in seconds after which **ippd** will normally hangup, if *CHARGEHUP* is set to *on*. Of course it would be stupid if *ippd* would do so during a download, wouldn't it? Well, this is controlled by *HUPTIMEOUT*. **ippd** will only hangup if there was no traffic on the connection for the last *HUPTIMEOUT* seconds.

A whole bunch of other options might be set by editing */etc/isdn/isdn.conf*, I did include mine in the *samples*-directory of the documentation. You should set your *COUNTRYCODE* and *AREACODE* right here <sup>2</sup>.

## 5. Setting up your ippd

### 5.1. /etc/ppp/pap-secrets

As *pap-secrets* and *chap-secrets* conflict with files from the *ppp*-package, I decided to install copies called *\*.example*. Set the *UserName* + *Password* for your *PAP*-Account in *pap-secrets*. It is best to embed these in quotation marks, so non-alphanumeric characters (required by german Telecom e.g.) will be accepted as well.

#### Example 4. /etc/ppp/pap-secrets

```
# Secrets for authentication using PAP
# client server secret IPaddresses
"UserName" * "PassWord"
```

### 5.2. /etc/ppp/ipp0.d/options

If you have *static ip-addresses* you might have to comment out *ipcp-accept\** in *options* and might set the IP addresses right here. Change *user* to the *UserName* in *pap-secrets*, I guess this is to make sure **ippd** takes the right password for your connection.

#### Example 5. /etc/ppp/ipp0.d/options

```

# The IP addresses: <local>:<remote>
# just "0.0.0.0:" or nothing for dynamic IP
0.0.0.0:
# my user name
user "UserName"
# accept IP addresses from peer
# use with dynamic IP
ipcp-accept-local
ipcp-accept-remote
noipdefault

```

**Note:** If you want to use channel-bundling you have to make sure to set the slave-device in `/etc/sysconfig/network-scripts/ifcfg-ipp0`. As the devices are now given on `ippd`-startup in `/etc/sysconfig/network-scripts/ifup-ipp`, you do not need to include `/dev/ipp0` or `/dev/ipp1` in the the options-file anymore. For further information about this topic have a look at the channelbundling (<http://www.isdn4linux.de/faq/i4lfaq-18.html>)-section of the I4L-FAQ.

**Note:** For a dialin-server you probably want to change some options as well. You may define static IP-numbers for your dialin-partners and whether they are to take your computer as their preferred name-server etc. For the syntax and parameters take a look into `ippd`'s man page. Refer to Section 5.3 as well.

### 5.3. `/etc/sysconfig/network-scripts/ifcfg-ipp0`

If you have a dynamic IP-number you are almost done. Take a look at `ifcfg-ipp0`. Do not forget to set `DYNAMIC_IP = "yes"` (refer to Section 4.2). If you have static IP-numbers you have to enter them as `IPADDR` and `REMOTEADDR`. Another reason to change these values might be if you have an internal ethernet using this IP-range. `ONBOOT = "yes"` will start the device right after booting. You *must* enter your MSN and the phonenumber of your provider in this file.

#### **Example 6.** `/etc/sysconfig/network-scripts/ifcfg-ipp0`

```

# configuration for ipp0
DEVICE=ipp0

```

```

# if you have static IPs you may enter your IPs here,
# else make sure DYNAMIC_IP is set to "yes" in /etc/sysconfig/isdn!
IPADDR="192.168.100.1"
REMOTEADDR="192.168.100.2"

# Should be started at boot-time
ONBOOT="yes"

# set this to off|manual|auto
DIALMODE="auto"

# Your MSN
EAZ=9374532

# Your providers Number (seperate more than one number by spaces)
PHONE_OUT=932640

# Who is allowed to dialin (seperate more than one number by spaces)?
PHONE_IN=" "

# Want channel bundling? Set SLAVE to "ipp1"
SLAVE="no"

# Setting this to yes will change resolv.conf for you
GET_DNS="no"

```

If you want channel-bundling, set *SLAVE* to "*ipp1*". If you are in need of more "power" during a download, you may bring up the slave device by executing **isdnctrl addlink ipp0**. To go back to a single-line, execute **isdnctrl removelink ipp0**, while you are connected. As an alternative you might consider using *ibod*, take a look at Section 11.2 for the URL or grap an rpm from <http://www.webideal.de/rh-isdn>.

New in version 0.59 is the ability to get your */etc/resolv.conf* changed automatically by setting *GET\_DNS* to "yes". The script */etc/ppp/scripts/get-dns* will try to change your first nameserver on dialin. Note that you have to get an **ippd**, which understands the *ms-get-dns*. Executing **strings /sbin/ippd | grep 'ms-get-dns'** will show you if this is the case. Otherwise you might consider grabbing the *ippd*-package from *rh-isdn*'s

homepage.

**Note:** If you want to configure a dialin-server, take a look at the dialin (<http://www.isdn4linux.de/faq/i4lfaq-21.html>)-section of the I4L-FAQ. As *SECURE* is set to on in `/etc/isdn/ipp0.conf`, only the numbers given in *PHONE\_IN* are allowed to dial in. So if you want everybody to dial in, change this to off or delete the line. Do not miss to adjust the options as well.

## 6. Test your settings

### 6.1. The unconnected state

First make sure you have set up your ISDN-card correctly and started the ISDN-subsystem with `/etc/rc.d/init.d/isdn4linux start` (Please refer to Section 4.2 for more information). You may now try to start **ipp0** and set up the netdevice by: `/sbin/ifup ipp0`

Enter `/sbin/ifconfig ipp0` and `/sbin/route -n` to see if your netdevice-settings and routing are correct. If you have set `GATEWAYDEV="ipp0"` in `/etc/sysconfig/network`, your default-route (Destination 0.0.0.0) should be set to the *REMOTEADDR* of Interface ipp0. On my machine it looks like:

```
[root@picard /]# /sbin/ifconfig ipp0
ipp0      Link encap:Point-to-Point Protocol
          inet addr:192.168.100.1  P-t-P:192.168.100.2  Mask:255.255.255.0
          UP POINTOPOINT RUNNING NOARP  MTU:1500  Metric:1
          RX packets:3307 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3082 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0
```

and:

```
[root@picard /]# /sbin/route -n
Kernel IP routing table
Destination      Gateway          Genmask          Flags Metric Ref    Use Iface
192.168.100.2    0.0.0.0         255.255.255.255 UH      0      0      0 ipp0
```

```

192.168.0.0      0.0.0.0          255.255.255.0   U    0    0    20 eth0
127.0.0.0      0.0.0.0          255.0.0.0      U    0    0    12 lo
0.0.0.0        192.168.100.2   0.0.0.0         UG   0    0    0 ipp0

```

## 6.2. A simple ping to test dynamic IP

Make sure you have started your `ippd`-device (take a look at Section 5.3). Now you may try to do a ping to your provider's nameserver. In `/var/log/messages` you should see messages from your `ippd`.

Enter `/sbin/isdnctrl list ipp0` to see if `isdnlog` has changed your `hup`-timeout. Of course this is only true if you started `isdnlog` as well and set the right phone number in `callerid.conf`.

Enter `/sbin/ifconfig ipp0` and `/sbin/route -n`.

```

[root@picard /]# ping -c 1 212.227.14.1
PING 212.227.14.1 (212.227.14.1): 56 data bytes
64 bytes from 212.227.14.1: icmp_seq=0 ttl=63 time=29.0 ms

--- 212.227.14.1 ping statistics ---
1 packets transmitted, 1 packets received, 0% packet loss
round-trip min/avg/max = 29.0/29.0/29.0 ms

```

```

[root@picard /]# /sbin/ifconfig ipp0
ipp0      Link encap:Point-to-Point Protocol
          inet addr:212.227.15.44  P-t-P:212.227.14.10  Mask:255.255.255.0
          UP POINTOPOINT RUNNING NOARP  MTU:1500  Metric:1
          RX packets:3421 errors:0 dropped:0 overruns:0 frame:0
          TX packets:3173 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0

```

```

[root@picard /]# /sbin/route -n
Kernel IP routing table
Destination      Gateway          Genmask         Flags Metric Ref    Use Iface
212.227.14.10   0.0.0.0         255.255.255.255 UH    0    0    0 ipp0
192.168.0.0     0.0.0.0         255.255.255.0   U    0    0    19 eth0
212.227.14.0    0.0.0.0         255.255.255.0   U    0    0    5 ipp0
127.0.0.0       0.0.0.0         255.0.0.0       U    0    0    11 lo

```

```
0.0.0.0          212.227.14.10  0.0.0.0          UG    0      0      0 ippp0
```

You should see your IP-addresses have changed due to *dynamic-ip*. If you have set `DYN_IP="yes"` in `/etc/sysconfig/isdn`, any pre-connect addresses will be rewritten upon connect to your dynamic address (look for messages of the kernel in `/var/log/messages` saying sth. like "shifting x.x.x.x to y.y.y.y") After hup time **ipppd** should automatically hang up (see Section 4.3. Your IP-addresses should be set back to the defaults in `ifcfg-ipp0` (`/sbin/ifconfig ipp0` and `route -n` should show similar results to Section 6.1).

## 6.3. ISDN4Linux at startup

Now you may add the startup of `isdn4linux` to the corresponding rc-levels by entering **chkconfig --add isdn4linux**. Make sure you have set `ONBOOT` to `yes` in Section 5.3. Reboot and look if everything's alright.

To ensure you will find your way to the internet you edit `/etc/resolv.conf` and enter your ISP's name server IP. Or you might consider `/etc/resolv.conf` to be automatically changed by setting `GET_DNS` to "yes" in `/etc/sysconfig/network-scripts/ifcfg-ipp0`.

# 7. Scripts in `/etc/ppp/ipp0.d`

## 7.1. A few words on the concepts

According to suggestions of *Marc Haber* and others in the german ISDN4Linux-newsgroup (`news:de.alt.comm.isdn4linux`)<sup>3</sup> the design for starting and stopping scripts is done in a `SYSV-init`script-style mixed with the run-parts concept of *Debian* depending on the device as well:

- The options do reside in `/etc/ppp/${DEVICE}.d`, so every `ippd` has it's own file.
- Scripts reside in `/etc/ppp/scripts`. Every script has an up and a down part.
- In `/etc/ppp/${DEVICE}.d/up|down` there are only enumerated symlinks to these scripts.

- So you may easily decide and configure which services to start and stop by just adding or deleting a symlink.

On dialup *RedHat* automatically invokes **/etc/ppp/ip-up.local**. This one will get some general information out of `/etc/ppp/scripts/common`. Then all scripts resp. the links to scripts in `/etc/ppp/${DEVICE}.d/up/` will be executed.

On hangup **/etc/ppp/ip-down.local** <sup>4</sup> will be executed.

## 7.2. The scripts

### 7.2.1. /etc/ppp/scripts/get-dns

On dialup this one will change `/etc/resolv.conf` automatically for you, if you set `GET_DNS` to "yes" in `/etc/sysconfig/network-scripts/ifcfg-ipp0`.

### 7.2.2. /etc/ppp/scripts/onlinetime

On dialup this one will save a timestamp to `/var/lock/${DEVICE}.online`. On hangup it will see if the uptime is less than 10 seconds <sup>5</sup> and bring the device down. A message is then sent to root.

### 7.2.3. /etc/ppp/ipp0.d/routes

On dialup this one will change the route entries to be in accordance with your dynamic IP-addresses <sup>6</sup>. On hangup, it will reconfigure the isdn-device via **ifconfig** and reset the route-entries.

### 7.2.4. /etc/ppp/ipp0.d/private

Look into private for automatic triggering of EMail-download and send. As I use qmail (<http://www.qmail.org>), a replacement for sendmail, which is faster, more secure and easier to configure (wink), most users might want to take a look into the samples-directory of the documentation, where you will find a **private.sendmail**.

**Note:** For RPM-users: type `rpm -qd rh-isdn` to see where the documentation has gone, in the tgz it is located in the `docs` directory.

## 8. Multiple Configurations

I have not tested this, but it should be rather simple.

**Note:** *rh-isdn-conf* does not support multiple configurations right now (probably never will), so you have to make these changes always manually.

### 8.1. Modifications in `/etc/ppp`

First of all you have to either copy `/etc/ppp/ipp0.d` to eg. `/etc/ppp/ippX.d`, X being one of the devices `/dev/ipp[0-9]*`.

- Make sure to add a new entry in `pap-secrets` and
- have the matching `user`-entry in `options`.

### 8.2. Modifications in `/etc/sysconfig/network-scripts`

You have to copy `/etc/sysconfig/network-scripts/ifcfg-ipp0` as well and adjust it to your needs.

- You will probably better set `ONBOOT` to "no" and bring devices up and down by e.g. a cron-script.
- In your cron-script do not forget to modify your `resolv.conf`. Alternatively take a look at DNRD.

**Note:** If you have a caching-only nameserver you have to alter `named.conf` or `named.boot` instead. You have to change the *forwarder* according to your IPS's name-server.

### 8.3. Modifications in `/etc/isdn`

Take a look at `ipp0.conf` and `ipp1.conf`, the first one is a sample for a master-device-, the second for a slave-device-configuration. Take a look at Section 4.3 to get the meaning of the settings.

Include your new ISP's number in `callerid.conf`.

## 8.4. More than *one* ISDN-card

Well, if all your cards use the `hisax`-driver it is rather simple: Just enter the parameters like `IO`, `MEM` etc. for all your cards separated by a single comma in `/etc/sysconfig/isdn` like e.g.:

```
I4L_IO="0x0360,0x0400"  
I4L_ID="Elsa%Teles"
```

The only exception is `I4L_ID` where the IDs have to be separated by a `%`-`(Percent)`-sign. Thanks to Gerhard Sittig <Gerhard.Sittig@gmx.net> (mailto:Gerhard.Sittig@gmx.net) for his suggestions in this area.

## 9. Doing it with `rh-isdn-conf`

### 9.1. Prerequisites

Before you start complaining it won't work, make sure you the following packages installed:

- `python` (at least version 1.52), check out at [rufus.w3.org](http://rufus.w3.org) (<http://rufus.w3.org>).
- `newt` (The version available from the download page (<http://www.webideal.de/rh-isdn/downloads/>) will work.)

### 9.2. How to use it

As root just execute `rh-isdn`, which will start the `python`-scripts with a welcome-screen. `rh-isdn` uses the same interface as the `setup`, so moving around is generally done by using the **TAB** and **Shift-TAB**. If you see a hash-sign (`#`) you may choose values using the **Arrow**-keys. Before the single screens are executed, a help-screen will come up to tell you the meaning of the parameters. For detailed information of these please look into the rest of this documentation.

### 9.3. The screens

### 9.3.1. Hardware–Configuration

You may probably leave most of the values like they are. What you have to change are the values for *IRQ*, *IO* and *MEM*. Please refer to Section 4.2 for further information.

### 9.3.2. Device configuration

What you have to change of course are *EAZ* (your phonenummer) and *PHONE\_OUT* (your ISP's phonenummer). For further information refer to Section 5.3.

### 9.3.3. ISDN Configuration

Changes go to `/etc/isdn/isdn.conf`. You must set *COUNTRYPREFIX*, *COUNTRYCODE*, *AREAPREFIX* and *AREACODE* right here.

### 9.3.4. Authentication

These values will go into `/etc/ppp/pap-secrets`, the username will be used to change the *user*-value in `/etc/ppp/ipp0.d/options` as well. Please refer to Section 5.1 for further information.

## 9.4. And now?

As I do not know how your `/etc/isdn/callerid.conf` looks like, you have to adjust it yourself. Afterwards you may proceed with Section 6.

## 10. Frequently asked Questions

**Q:** ping: sendto: Network is unreachable (I)

After that i ran "route -n", i don't think this is right (just one ipp0, nothing in the Gateway-column?):

```
Kernel IP routing table
```

```
Destination      Gateway          Genmask          Flags Metric Ref Use
```

```

Iface
192.168.100.2    0.0.0.0          255.255.255.255  UH    0      0      0
ippp0
127.0.0.0      0.0.0.0          255.0.0.0       U     0      0      0
lo

```

After that i ran "ping -c 1 130.115.15.2" (my nameserver's IP):

```

PING 130.115.15.2 (130.115.15.2): 56 data bytes
ping: sendto: Network is unreachable
ping: wrote 130.115.15.2 64 chars, ret=-1

```

**A:** Refer to Section 6.1. You probably did not set *GATEWAYDEV* to *ippp0* in */etc/sysconfig/network*, execute **ifdown ippp0** and **ifup ippp0** and compare your routing table to Section 6.1.

**Q:** How do I use my *external ISDN-modem* with your package?

**A:** Sorry, you don't. My package is for usage with internal ISDN-cards only. External ISDN-modems are handled like standard analog modems, so by running **netcfg** you should be able to set up a conventional *ppp*-connection (see the *PPP-howto* as well).

**Q:** RedHat 6.1? What gives? My */etc/ppp/options* is empty!

**A:** You probably run RedHat 6.1 whose *isdn4kutils*-package seems to be incompatible with mine in regards to this file. Please replace *isdn4kutils options* by mine! If in doubt, always use my files (sic!), as they are much more elaborate! I see RH has taken it's configuration from a German distro called DLD (actually RH bought DLD, which is now redhat.de), but did not include DLD's tool to set up the configuration! Make sure not to start both ***/etc/rc.d/init.d/isdn*** (from DLD) and ***/etc/rc.d/init.d/isdn4linux*** at the same time!

**Note:** I removed *options* from my package in version 0.58 to get rid of the conflict with RedHat 6.1. Instead the parameters *lock* and *debug* now have to be set in */etc/ppp/ippp0.d/options*. If you install the package manually (using the tar.gz) make sure to have */etc/ppp/options*, if it does not exist, just execute **touch */etc/ppp/options***.

**Q:** Why do I have to set *IPADDR* if I have dynamic IP-addresses?

**A:** Well as **ifconfig**, which is used in RedHat's **ifup** has to be invoked with IP-addresses you have to enter valid values like e.g. 192.168.100.1 for *IPADDR* and 192.168.100.2 for *REMOTEADDR* to set up your interface. These values will be automatically changed when a

dial-in occurs and set back to their original values on hangup.

**Note:** Of course there is an exception to this rule: if you have an internal network set up to work with this address-range, you have to change them. Please refer Section 6.1.

**Q:** Chargehup is not working, why?

**A:** Did you change Section 4.1 and followed the instructions in Section 4.2?

## 11. What now?

### 11.1. Disclaimers etc.

I hope you found the explanations useful. If so or if you detected an error you may drop me a mail what has happened (<mailto:mz@webideal.de?Subject=rh-isdn>). To make sure, you have the most recent release, take a look at rh-isdn's Homepage (<http://www.webideal.de/rh-isdn>).

Translations of this text to other languages are welcome. I did this documentation by using docbook (<http://www.oasis-open.org/docbook/>), so I would prefer a docbook of this document to simplify formatting.

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### 11.2. Useful links to other sites dealing with RH and ISDN

ISDN4Net-Pages (<http://www.terminator.net/isdn4net/>)

Offering maybe a bit too much sophisticated concepts and a module for linuxconf

simple and clear script-approach (<http://leising.home.pages.de/isdn.html>)

Info about Kernel-configuration

Right from the Netherlands (but in English) (<http://www.wurtel.demon.nl/i4l-howto-uk.html>)

Lot's of info about PnP and Kernel as well

ISDN4Linux–newsgroup (<news:de.alt.comm.isdn4linux>)

The german isdn4linux–newsgroup, where you might ask in English as well.

ISDN4Linux (<http://www.isdn4linux.de>)

Homepage of ISDN4Linux, links, documentation, CVS–versions \* of the drivers and utilities.

I4L–FAQ (<http://www.mhessler.de/i4lfaq.html>)

Homepage of the Official ISDN4Linux–FAQ (available at the ISDN4Linux–Homepage as well).

DNRD – Domain Name Relay Daemon (<http://members.home.net/garsh/dnrd/>)

A DNS–proxy (useful if you got more than one ISP \*).

IBOD (<http://www.compound.se/ibod.html>)

A daemon which will bring up and down an additional slave–device according to the throughput.

## Appendix A. ChangeLog

\* Tue Dec 29 1999

- new script to get dynamic DNS–resolution
- some updates for chargeup in the docu
- wrong command for hisaxctrl would not let isdnlog change huptime correctly
- COPYING and CHANGELOG in html–format
- /etc/rc.d/init.d/isdn4linux: help returns basename

\* Tue Dec 14 1999

- small updates in spec–file (ioptions) and install.sh
- included link for rcisdn pointing to /etc/rc.d/init.d/isdn4linux
- Corrected hints how to test the hardware–layer
- ioptions removed

\* Mon Dec 13 1999

- Corrected hints how to test the hardware-layer and a missing reference to isdn4linux in test-section of doc
- Included Changelog in html-doc
- ioptions removed
- description in ip-up.local and the scripts in /etc/ppp/scripts
- lock and debug now set in /etc/ppp/ipp0.d/options
- improved errorhandling/status/output for /etc/rc.d/init.d/isdn4linux
- improved errorhandling/output for  
/etc/sysconfig/network-scripts/ifup-ipp0|ifdown-ipp0
- fixed a routing bug in ifup-ipp0 (route-entry for kernel 2.0.X was only set, if ipp0 was GATEWAYDEV as well)

\* Fri Dec 10 1999

- rh-isdn-conf now handles needed parameters in isdn.conf and set "user" in  
/etc/ppp/ipp0.d/options according to pap-secrets.
- updated the documentation to include rh-isdn-conf as well
- some FAQ-stuff

\* Mon Nov 15 1999

- forgot to include some links from the /etc/ppp/ipp0.d/{up,down}-  
directory  
to /etc/ppp/scripts (missing due to CVS!)

\* Sun Nov 14 1999

- put the whole stuff into CVS (really nice tool), building the package therefore now requires python and the whole docbook-jade-sgml stuff
- changed copyright to GPL
- Ruediger Sopp (rsopp@ernie.MI.Uni-Koeln.DE) provided some code for dialin-support in ifup-ipp0 as well as support for more than one number.
- as well he detected a bug in the /etc/ppp/scripts/routes-script, where the  
default-route was deleted even if the dialed device was not the  
GATEWAYDEV.

19.10.1999

- detected some incompatibilities with RH6.1 (I do not have it), please  
look  
to the FAQ-section, added configuration for more than one isdn-card.

12.10.1999

- documentation now in docbook-format, rearranged and (hopefully)  
improved,

now covers multiple configurations, added a few links.

- some minor corrections in the scripts

15.09.1999

- changed included docu to a more Howto-Style, changed outfit of site as Netscape is doing cruel things with the <pre>-tag if you assign a class with borders.

14.09.1999

- my first version of a small configuration-script for ifcfg-ipp0
- goes to separate package rh-isdn-conf
- just execute rh-isdn to run it

11.09.1999

- lots of changes
- added some require-statements, now channel bundling is supported somehow.
- got rid of some files belonging to isdn4k-utils resp. ppp.
- now installs /etc/isdn/ipp0.conf and /etc/isdn/ipp1.conf instead of fiddling around with /etc/isdn/isdn.conf (belonging to isdn4k-utils).
- phone numbers now go to /etc/sysconfig/network-scripts/ifcfg-ipp0 (needed for channel-bundling).
- to use channel-bundling (/etc/sysconfig/network-scripts/ifcfg-ipp0)
  - edit SLAVE to be "ipp1" instead of "no"
  - if you are in need enter "isdnctrl addlink ipp0", to stop "isdnctrl removelink ipp0"
  - note that the connection has to be up, to increase the number of links!

10.09.1999 <mz@webideal.de>

- spec-file did not install the routes-script!

09.09.1999

- built RPMs, updated docs and moved the whole site to <http://www.webideal.de/rh-isdn/>

27.07.1999

- changed some routing stuff in /etc/sysconfig/network-scripts/ifup-ipp due the new standard routing of 2.2.x Kernels
- some minor changes in documentation

30.06.1999

- version is now tested with Halloween III a RH 6.0 derivate.
- moved scripts to /etc/ppp/scripts, so update your symlinks, please.

15.05.1999

- rewrote the whole document, hopefully this will clarify some things  
09.03.1999

- Stein has installed a mailing list for those interested in  
distribution

independent solution for the I4L setup.

- send a mail to `Majordomo@terminator.net` with the following in the  
body:

`subscribe isdn4net your@mail-address`

- A spanish translation of the documentation was contributed by Alberto  
(`agi@grumetes.org`)

01.02.1999

- I did contact Stein Vrale, the last author of `isdn4net`, a much more  
complete

package for RH and I4L. We are going to try to bundle our efforts to  
have

distribution independant, flexible solutions for simple as well as  
comlex

server-environments (may take a while, though ;-)). This will be an  
"egg-giving-wool-milk-pig" like we say in german :-).

- According to suggestions of Marc Haber and others in  
`de.alt.comm.isdn4linux`, the design for starting and stopping services  
is

now done in SYSV-initscript-style depending on the device as well:

- the scripts and options do reside in `/etc/ppp/${DEVICE}`

- in `/etc/ppp/${DEVICE}/up|down` there are only symlinks to the scripts

- so you may easily decide and configure which services to start and  
stop

by just adding or deleting a symlink.

- Because of the change of the options-file a minor change had to be  
made to

`/etc/sysconfig/network-scripts/ifup-ipp`

- The `Readme.HISAX` from the 2.0.36-kernel is now included for  
convenience.

- Stein and I are looking for other suggestions/supporters of such a  
package, maybe there'll be things like a mailing-list, CVS-Trees etc.?

28.01.1999

- I forgot to include the whole script directory, so sorry for that!

20.01.1999

- Made slight changes to `ip-*.local`, new modules in `/etc/ppp/ip.d` are  
now

- executed automatically on up/down-ACTION.
- Added ip.d/firewall.\*, no function yet
- 19.01.1999
- Another major rewrite due to some ideas (and scripts) by Marc Haber. The device will now be turned off if the last connection-time < 10sec!
  - Now ip-\*.local only starts the scripts found in /etc/ppp/ip.d:
    - common will set global variables and provide some functions
    - onlinetime.\* will control the time of the last connection and eventually turn off the device
    - routes.\* will set the routing depending on DYNAMIC\_IP
    - private.\* is for your own stuff and is (should be) the only file which you have to change in this directory
  - Scripting variables are hopefully more clear then before.
- 17.01.1999
- Rewrote ip-up.local and ip-down.local, so that private stuff is going into ip-up.private and ip-down.private!
  - Some modifications to ip-up.local and ip-down.local, so reconfig and route-change is only done when DYNAMIC\_IP="yes"
- 16.01.1999
- Forgot to include /etc/rc.d/init.d/isdn4linux
  - some slight changes to ip-up.local and ip-down.local, replacing echo by mstamp
- 15.01.1999
- First release, announcement in de.alt.comm.isdn4linux

References:

<http://trollmor.terminator.net>  
<mailto:stein@terminator.net>  
<mailto:mz@webideal.de>

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```
Gnomovision version 69, Copyright (C) 19yy name of author  
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'show w'.
```

```
This is free software, and you are welcome to redistribute it  
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```

The hypothetical commands 'show w' and 'show c' should show the  
appropriate  
parts of the General Public License. Of course, the commands you use  
may  
be called something other than 'show w' and 'show c'; they could even be  
mouse-clicks or menu items--whatever suits your program.

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the program  
'Gnomovision' (which makes passes at compilers) written by James  
Hacker.
```

```
<signature of Ty Coon>, 1 April 1989  
Ty Coon, President of Vice
```

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consider it more useful to permit linking proprietary applications with  
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Public License instead of this License.

## Notes

1. A little outdated though.
2. Of course in the one in `/etc/isdn`, not in the one in the `samples-directory` ;-).
3. Where you might ask in english as well.
4. Which is in fact just a symlink to **`/etc/ppp/ip-up.local`**
5. Then there is in most cases sth. wrong with your connection
6. Only if `DYNAMIC-IP` is set to yes in Section 4.2.
7. Though you could use the `ip-up/down-mechanisms` and build your own structure.
8. This is for the brave, compilation might be difficult, but often newer cards are supported only by CVS-versions.
9. I did not test this as my provider is not very cheap but very, very good, so no need to switch.