

Junghanns.NET

PCI BASED
ISDN
INTERFACE
CARD

User's Guide

WARNING:

This equipment will be inoperable
when main power fails

INDEX

- Introduction
- Before You Begin
- Task Summary
- Task 1 - Configure the Jumper Settings
- Task 2 – Install Junghanns.NET ISDN Interface Card
- Task 3 - Configure the Card

- Appendix I – Software Configuration Sample
- Appendix II – Hardware Configuration Diagram

Introduction

Thank you for choosing a Junghanns.NET
ISDN Interface Card.

Our Interface Cards are built for the use in a
“Asterisk Open Source PBX” based system.
The SoftwarePBX “Asterisk” and the drivers
for the Interface Cards fall under the
regulations of the GNU public license (GPL).

Before You Begin

To use this document you must have:

- a PCI-based Junghanns.NET ISDN Interface card (not installed)
- an anti-static wristband
- a Phillips-head screwdriver

This installation works under the assumption that the Kernel sources of your currently running Linux-Kernel are correctly configured on your system and a working Internet-connection is available.

For the successful compilation of bristuff and Asterisk the following requirements or installations of packages need to be met by your system:

- Installed compiler gcc
- Kernel sources of your present Kernel are installed and configured
- openssl, openssl-dev

Task Summary

To install a full-size PCI card, you must follow these general steps. All tasks are defined in detail later in this document, although they may vary slightly for each device manufacturer.

1. Configure the jumper settings on your Junghanns.NET ISDN Interface PCI card.
2. Install the Junghanns.NET ISDN Interface PCI card
3. Configure the card for your operating system.

Task 1 - Configure the Jumper Settings on Your Junghanns.NET ISDN Interface PCI Card

The following jumpers must be configured:

1. NT/TE settings.
2. Termination of S/T interface.
3. Power feeding
4. Power supply configuration
5. Card switches

Please refer to Appendix III for detailed jumper settings.

WARNING:

Ensure the right setting of jumpers to prevent damage on your ISDN and computer equipment.

Task 2 – Install Junghanns.NET ISDN Interface PCI Card

Follow these steps to install a PCI card in a full-size, desktop computer.

1. Locate your PC system's documentation. It often has instructions for removing the case or replacing cards.
2. Put on the antistatic wristband
3. Unplug the computer from its power source.
4. Unplug all cords from the back of the computer.
5. Open the computer case.
Some systems have thumb screws that hold one panel in place, while others have plastic tabs or a metal locking mechanism. Other systems allow the case to be completely removed from the base.
6. Clip the other end of the wristband onto the metal frame of the computer.
1. Check to see if you have an open peripheral connection interface (PCI) slot. Ensure that you have a PCI slot without IRQ-sharing (please refer to your mainboard manual for detailed

information).

7. Once you locate a free PCI slot, unscrew the metal guard covering the rear opening for that slot. This piece is normally secured by a single screw.
8. If your slots have plastic tabs on either end, push them gently away from the slot to the "open" position.
9. Gently pick up the Junghanns.NET ISDN Interface PCI card by its metal bracket and the outer edge of the silicon board. Take care not to touch any gold circuitry on the card.
10. Gently insert the tabbed edge of the PCI card into the slot.
11. Press down firmly on the top edge of the card until you hear the tabs click into place. Do not force the card.
12. Check the alignment of the metal bracket. If the card is placed (seated) correctly, you can then replace the screw you removed in Step 7.
13. Remove the wristband.
14. Replace the computer's cover.
15. Plug in all of the cords you removed in Step 4.
16. Safely store the metal bracket you removed in Step 7.

Task 3 - Configure the Card for Your Operating System.

Login to your server as “root”. Enter the root user password when prompted.

Download the latest bristuff drivers at <http://junghanns.net>

```
Copy the zipped .tar file to /usr/src/ :  
cp bristuff-<version>.tar.gz /  
usr/src
```

Execute the “tar” command to decompress the driver files:

```
cd /usr/src/  
tar xvzf bristuff-<version>.tar.gz
```

Run the following commands to compile the bristuff and Asterisk drivers:

```
cd /usr/src/bristuff-<version>/  
make clean  
make  
make install
```

Execute the following command to create a sample configuration:

```
make samples
```

The Zaptel driver qozap is designed to operate with the following Junghanns.NET ISDN Interface Cards:

- **quadBRI**
- **octoBRI**
- **singleE1**
- **doubleE1**

Loading the Zaptel drivers:

Run the following commands if you are using a Junghanns.NET **quadBRI** ISDN Interface Card:

```
cd qozap
modprobe zaptel
insmod qozap.ko (for kernel 2.6)
ztcfg
```

Execute the following commands if you have a Junghanns.NET **octoBRI** ISDN Interface Card:

```
cd qozap
modprobe zaptel
insmod qozap.ko ports=X
;(kernel 2.6, for X see below)
ztcfg
```

X is a bitmap representing the port configuration (TE or NT mode) of the octoBRI

card.

S/T port 1 starts at the LSB of the bitmap.

Example:

S/T 1,2 in NT mode, S/T 3,4,5,6,7,8 in TE mode

X (binary) = 00000011

X (decimal) = 3

`insmod qozap.ko ports=3 ; (kernel 2.6)`

When a Junghanns.NET **singleE1** or a **doubleE1** ISDN Interface Card is installed, type in the following commands:

`cd cwain`

`modprobe zaptel`

`insmod cwain.ko ; (kernel 2.6)`

Loading the drivers (zaphfc):

`cd ../zaphfc`

`make load ;(for TE mode)`

or

`make loadNT ;(for NT mode)`

IMPORTANT NOTE:

If you have any other zaptel device in your machine then make sure that ztcfg is only run once (or run ztcfg -s and after that ztcfg again...)!

After starting the Zaptel drivers the status LEDs on the bracket of your Junghanns.NET ISDN Interface PCI card are lit if the driver is correctly installed.

Run the following command to start your Asterisk CLI:

```
asterisk -vvvgc
```

Appendix I – Software Configuration Sample 1

The directory `/usr/src/bristuff-<version>/SAMPLES/BRI-voip-gw` contains a few example configuration files for using Asterisk and a quadBRI ISDN card to build a 4 BRI VoIP gateway, e.g. for terminating calls from SIP phones to the ISDN:

Telco ISDN BRIs ---- (quadBRI TE | Asterisk)
-S-I-P- SIP phones

Entries in `/etc/asterisk/zapata.conf`:

```
[channels]
```

```
switchtype = euroisdn
```

```
; p2mp TE mode (for connecting ISDN lines in  
; point-to-multipoint mode)
```

```
signalling = bri_cpe_ptmp
```

```
pridialplan = dynamic
```

```
prilocaldialplan = local
```

```
nationalprefix = 0
```

```
internationalprefix = 00
```

```
usecallingpres=yes
```

```
echocancel = yes
```

```
echocancelwhenbridged = yes
```

```
echotraining = 100

context=isdn-incoming
group = 1

; S/T port 1-4
channel => 1-2
channel => 4-5
channel => 7-8
channel => 10-11
```

Entries in /

etc/asterisk/extensions.conf:

```
; incoming ISDN BRI calls arrive in this
context
; we need an extension for every DID/MSN or a
; pattern that will match all

[isdn-incoming]
exten => _X.,1,Dial(SIP/phone${EXTEN},60)
exten => _X.,2,Hangup

; in sip.conf you put context=sip-phones so
the
; phones can dial out
; using zaptel group 1 (which includes all BRI
; ports, see zapata.conf)
[sip-phones]
exten => _X.,1,Dial(ZAP/g1/${EXTEN},60)
exten => _X.,2,Hangup

; if the called party is busy
exten => _X.,102,Playtones(busy)
exten => _X.,103,Wait(10)
exten => _X.,104,Hangup
```

```
; if all zaptel channels in that group are in  
; use or the D channels are down  
exten => _X.,202,Playtones(congestion)  
exten => _X.,203,Wait(10)  
exten => _X.,204,Hangup
```

Sample 2

The directory `/usr/src/bristuff-<version>/SAMPLES/BRI-PBX-integration/` contains configuration files for using Asterisk and an octoBRI (or 2 quadBRI) ISDN cards to integrate an existing 4BRI PBX into a VoIP scenario:

Telco ISDN BRIs ---- (quadBRI TE | Asterisk | quadBRI NT) ---- ISDN 4BRI PBX

Calls are transparently passed between PBX and telco (and vice versa).
It should not matter if the calls are voice or ISDN data calls.

Entries in `/etc/asterisk/zapata.conf`:

```
[channels]
```

```
switchtype = euroisdn
```

```
pridialplan = dynamic
```

```
prilocaldialplan = local
```

```
nationalprefix = 0
```

```
internationalprefix = 00
```

```
usecallingpres=yes
```



```
echocancel = yes
echocancelwhenbridged = yes
echotraining = 100

;-----
; p2p TE mode (for connecting ISDN lines in
; point-to-point mode)
signalling = bri_cpe

context=isdn-incoming
group = 1

; S/T port 1-4 (first quadBRI, or lower ports
; of an octoBRI)
channel => 1-2
channel => 4-5
channel => 7-8
channel => 10-11

;-----
; p2p NT mode (for connecting an ISDN PBX in
; point-to-point mode)
signalling = bri_net

context=pbx-incoming
group = 2

; S/T port 5-8 (second quadBRI, or upper ports
; of an octoBRI)
channel => 13-14
channel => 16-17
channel => 19-20
channel => 22-23
```

Entries in /

```
etc/asterisk/extensions.conf:
; incoming ISDN BRI calls arrive in this
; context
; and are routed to zaptel group 2 (NT ports
; to the pbx)
```

```
[isdn-incoming]
```

```
exten => _X.,1,Dial(ZAP/g2/${EXTEN},60)
```

```
exten => _X.,2,Hangup
```

```
; only a few special DID/MSNs (1230 - 1239)
```

```
; are routed to SIP phones
```

```
exten => _123X,1,Dial(SIP/phone${EXTEN},60)
```

```
exten => _123X,2,Hangup
```

```
; calls from the PBX are routed out to the
```

```
; ISDN using zaptel group 1 (TE ports)
```

```
[pbx-incoming]
```

```
exten => _X.,1,Dial(ZAP/g1/${EXTEN},60)
```

```
exten => _X.,2,Hangup
```

```
; if the called party is busy
```

```
exten => _X.,102,Playtones(busy)
```

```
exten => _X.,103,Wait(10)
```

```
exten => _X.,104,Hangup
```

```
; if all zaptel channels in that group are in
```

```
; use or the D channels are down
```

```
exten => _X.,202,Playtones(congestion)
```

```
exten => _X.,203,Wait(10)
```

```
exten => _X.,204,Hangup
```

Appendix II – Hardware Configuration Diagram

