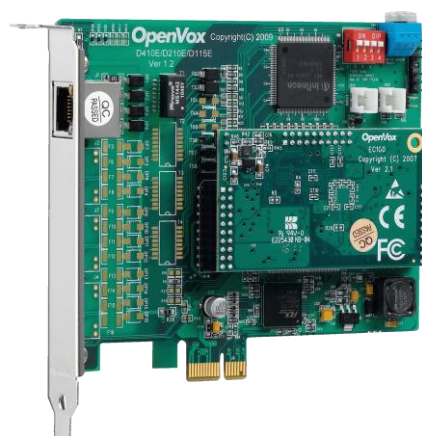




OpenVox Communication Co.Ltd



DE115P



DE115E

D115P/DE115P on Elastix User Manual

Version: 2.2





OpenVox Communication Co.Ltd

OpenVox-Best Cost Effective Asterisk Cards

Address: F/3, Block No.127, Jindi Industrial Zone,
Shazui Road, Futian District, Shenzhen, Guangdong 518048, China
Tel:+86-755-82535461, 82535095, 82535362, Fax:+86-755-83823074

Business Contact: sales@openvox.com.cn
Technical Support: support@openvox.com.cn

Business Hours: 09:00-18:00(GMT+8) from Monday to Friday
URL: www.openvox.cn

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General Safety Instructions



CAUTION

1. The computers that have DE115P/DE115E card installed must comply with the country's specific safety regulations.
2. Only service personnel should go to install DE115P/DE115E card.
3. Before installing DE115P/DE115E card, please unplug the power cord and remove the cover from your PC.
4. For avoiding personal injuries and damages to your machine and DE115P/DE115E card, make sure bracket of the card is secured to the PC's chassis ground by fastening the card with a screw.
5. Electrical Surges, ESD are very destructive to the equipment. To avoid it, make sure there is a low impedance discharge path from your computer to chassis ground.
6. To reduce the risk of damage or injury, please follow all steps or procedures as instructed.

Test Environments

CentOS-5.5

Kernel version: 2.6.18-194. el5

Elastix: 2.0.3-i386

Dahdi Version: 2.3.0.1

Asterisk Version:1.6.2.13

Hardware: OpenVox DE115P/DE115E

Chapter 1 Overview

1.1 What is Asterisk

The Definition of Asterisk is described as follows:

Asterisk is a complete PBX in software. It runs on Linux, BSD, Windows (emulated) and provides all of the features you would expect from a PBX and more. Asterisk does voice over IP in four protocols, and can interoperate with almost all standard-based telephony equipment using relatively cost-effective hardware. Asterisk provides Voicemail services with Directory, Call Conferencing, Interactive Voice Response, Call Queuing. It supports three-way calling, caller ID services, ADSI, IAX, SIP, H323 (as both client and gateway), MGCP (call manager only) and SCCP/Skinny (voip-info.org).

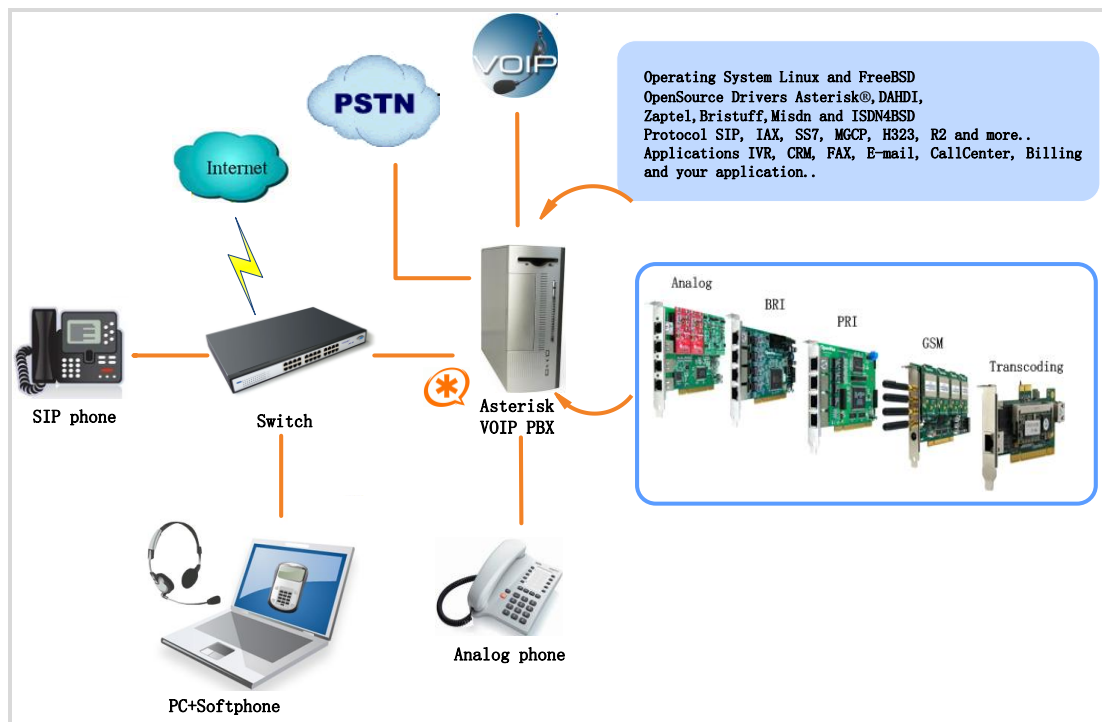


Figure 1 Topology

1.2 What is DE115P/DE115E

The DE115P/DE115E offers an on-board Octasic[®] DSP-based echo cancellation module. They support T1, E1, and J1 environments and is selectable on a per-card or per-port basis. The Octasic[®] DSP-based EC module enables users to eliminate echo tails up to 128ms or 1024 taps across all 32 channels in E1 mode or 24 channels in T1/J1 modes. Further, this module takes advantage of the Octasic[®] Voice Quality Enhancement to provide superior sound quality on all calls.

DE115P/DE115E supports industry standard telephony and data protocols, including Primary Rate ISDN (both N. American and Standard Euro) protocol families for voice, PPP, Cisco, HDLC, and Frame Relay data modes. Both line-side and trunk-side interfaces are supported.

DE115P works with Asterisk[®], Elastix[®], FreeSWITCH[™], PBX in a Flash, trixbox[®], Yate[™] and IPPBX/IVR projects as well as other Open Source and proprietary PBX, Switch, IVR, and VoIP gateway applications.

Target Applications

- Voice-over Internet Protocol (VoIP) Services
- Complex IVR Trees
- "Meet-Me" Bridge Conferencing
- Calling Card Platforms
- VoIP Gateways (support SIP, H.323, and IAX)

- Legacy PBX/IVR Services
- Voice/Data Router (replace expensive routers)
- PRI/Switch Compatibility - Network or CPE

Chapter 2 Hardware Setup

There are some points that should be paid attention to when setting up DE115P/DE115E.

2.1 Span type setup

Each DIP switch controls one span configuration for E1 or T1. Setting DIP1 to ON means SPAN1 will be E1. Setting DIP1 to OFF means SPAN1 will be T1.

2.2 CardID switch setup

If want to install more than one card of DE115P/DE115E in a PC, you should take care of the card ID switch. There are two pieces of rules you must obey:

- The first card must be set to 0, which is a card that will be initialized (i.e. installing driver) firstly when the system boot up. And the second should be set to 1, and so forth.
- At most cases, Linux will initialize PCI devices according to their slot order. The slot nearest to the CPU will be initialized firstly and the far end slot will be initialized at last. That is to say, the card which is nearest to the CPU ID should be set to 0 if there is more than one D410P/DE410P on your machine.

2.3 Slot compatibility

DE115P is compatible with 32-bit 5.0V PCI slot, 64-bit 3.3V PCI slot or 64-bit 5.0V PCI slot, but DE115E is compatible with PCI-E×1, ×2, ×4, ×8, ×16 slot; you should confirm your slot type and insert into a PCI slot or PCI-E slot as previously described.

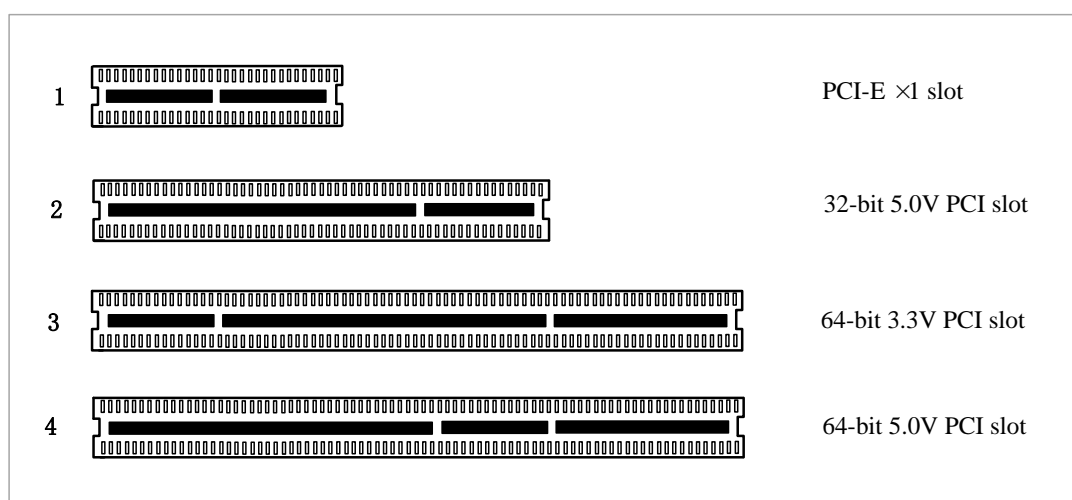


Figure 2 PCI-E and PCI slot

2.4 Timing cable

If you have just one card in the system, all channels on that card have already run under the same clock source, so timing cable is unnecessary.

But if there are more than one card, using timing cable has some advantages. Before using the clock line, each card works on its own clock, therefore precision of the clock is limited; each card will send /receive voice data at different speeds. In voice usage, this small issue can be omitted, but in data communication such as Fax/Modem, it will cause

big problems. Data loss will cause communication broken or fax broken. Timing cable will force all cards to work at the same clock source, send data at the same speed, as a result no data will lost.

If you found J914 (input) and J915 (output) interfaces on the card, it means the card supports clock line, for details, please refer to [HERE](#).

Chapter 3 Software Installation and Configuration

DE115P/DE115E supports DAHDI software driver on Linux. To make full use of DE115P, you should install Elastix firstly.

3.1 Installation

1. Install Elastix-2.0.3

2. Hardware detection

```
# lspci -vvvv
```

Check the outcome and confirm your system has recognized

DE115P/DE115E. If it has been recognized, "communication controller" will be displayed in the output information like that:

```
03:00.0 Communication controller: Unknown device 1b74:0115 (rev 02)
  Control: I/O- Mem+ BusMaster+ SpecCycle- MemWINV- VGASnoop- ParErr- Step
ping- SERR- FastB2B-
  Status: Cap- 66MHz- UDF- FastB2B- ParErr- DEVSEL=medium >TAbort- <TAbort
- <MAbort- >SERR- <PERR-
  Latency: 32
  Interrupt: pin A routed to IRQ 169
  Region 0: Memory at fdaff000 (32-bit, non-prefetchable) [size=128]
```

Figure 3 Hardware detection

If DE115P/DE115E is not recognized by the system, you have to power off and take out the card, then try to insert it into other PCI or PCI-E slot.

3.2 Configure on Elastix Webpage

1. Log into Elastix Webpage

Please open your browser and enter the PBX IP address, then type Username and Password, then click on "Submit" button in the following screen.

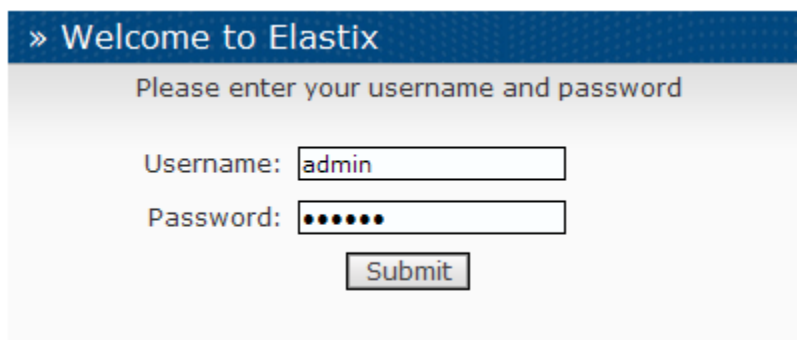


Figure 4 log into elastix webpage

2. Detect Hardware

Please click System, then click "Hardware Detector", chose Replace file chan_dahdi.conf, click "Detect New Hardware" as follows:

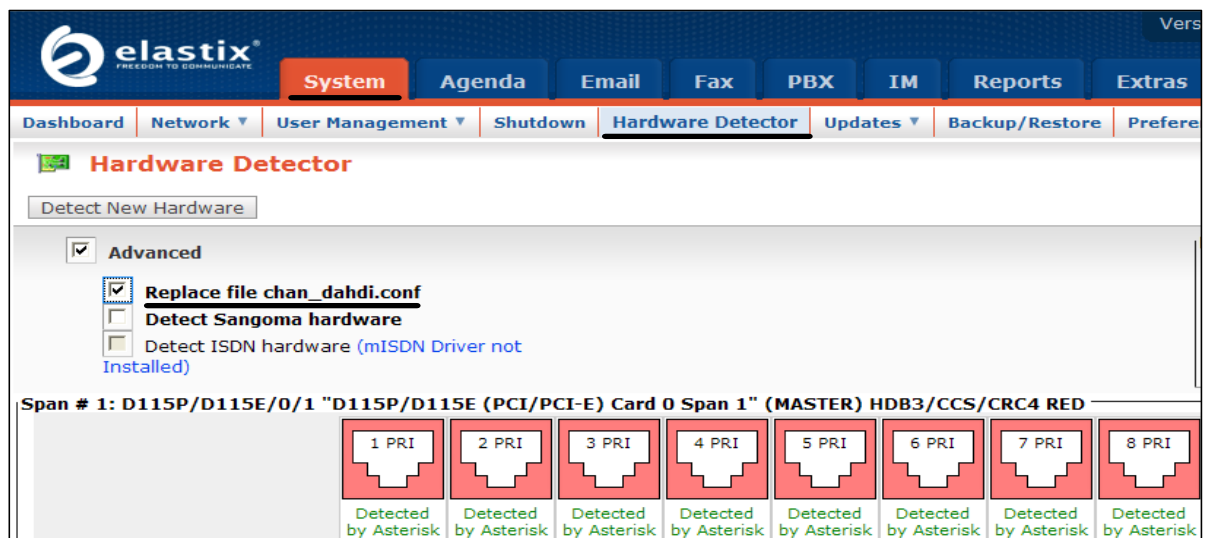


Figure 4 Hardware detection

Then a part of system.conf which is one of the basic channel configuration files is displayed.

```
# Span 1: D115/D130/0/1 "D115/D130 (E1|T1) Card 0 Span 1" (MASTER)
span=1,1,0,ccs,hdb3,crc4
# termtype: te
bchan=1-15,17-31
dchan=16
#echocanceller=mg2,1-15,17-31

# Global data
loadzone      = us
defaultzone   = us
```

Figure 4 A part of system.conf

In order to match your country pattern, you need to change parameters loadzone and defaultzone to your country. For example, your system is in CHINA, you would like them change to:

```
loadzone = cn
```

```
defaultzone = cn
```



Some zonedata is available in the file

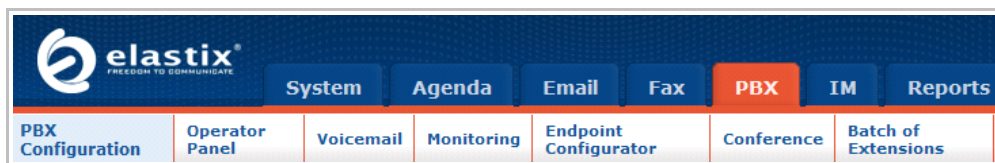
.. /dahdi-XX/tools/zonedata.c, you can refer to it to match your country mode. Meanwhile, you also need to modify another parameter which is in file

/etc/asterisk/indications.conf.

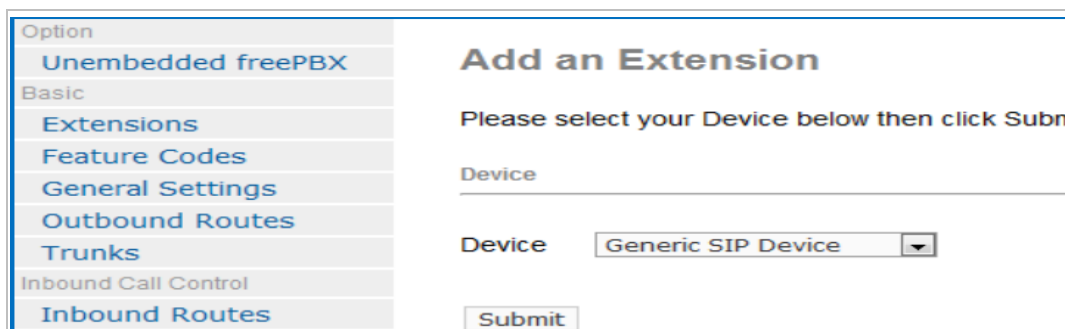
```
country=cn
```

3. Create Extensions

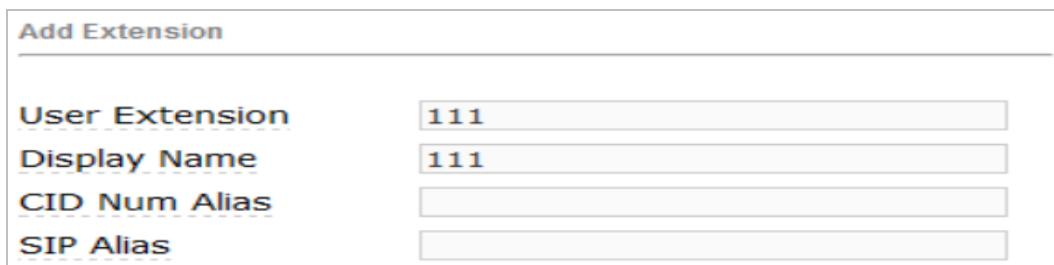
1) Click "PBX" button in the following figure



2) Click on Extensions bar in the following illustration



3) Set "User Extension" to 111, "Display Name" to 111 in the following illustration

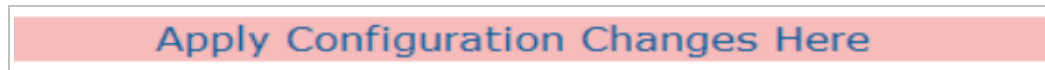


4) Then click on "Submit" button:



Press 0:	<input type="text"/>	<input checked="" type="checkbox"/> Go To Operator
Press 1:	<input type="text"/>	
Press 2:	<input type="text"/>	
<input type="button" value="Submit"/>		

5) Click the "Apply Configuration Changes Here" bar in the top of the screen.:



4. Add Incoming Route

1) Click on "Inbound Routes" bar.



2) Input incoming1 in the textbox of "Description" as the following screen

Add Incoming Route

Description:

DID Number:

Caller ID Number:

CID Priority Route:

3) Click the "Extensions" textbox to choose an extension number from the drop down selection box. Then click submit. Please refer to the following illustration

Set Destination

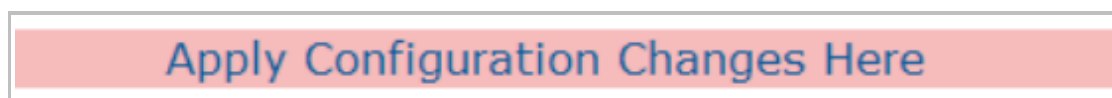
Phonebook Directory:

Terminate Call:

Extensions:

IVR:

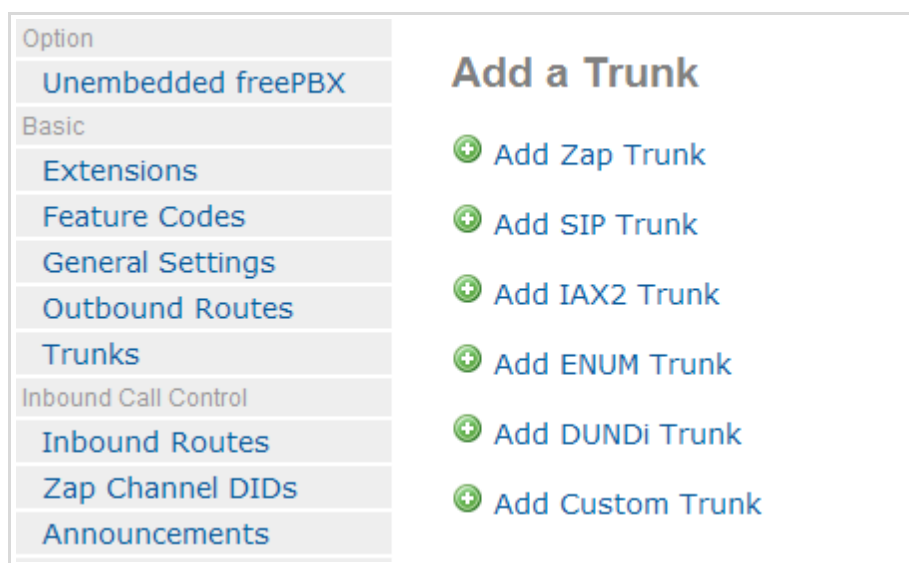
4) Click the "Apply Configuration Changes Here" bar in the top of the screen



5. Create Trunk

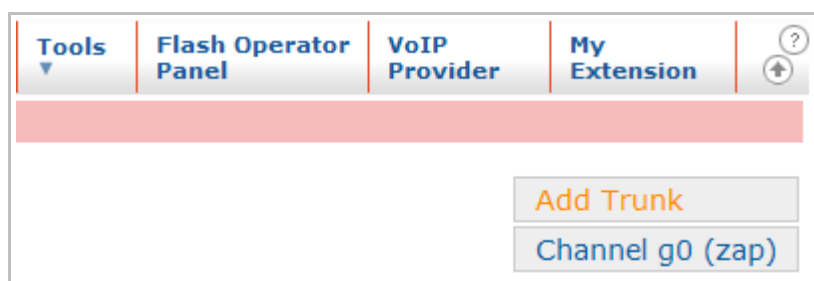
To dial out, you have to create a trunk.

1) Click on "Trunks" bar as the following illustration



2) Click on "Trunk ZAP/g0" button on the up right corner of the page.

Please refer to the following illustration



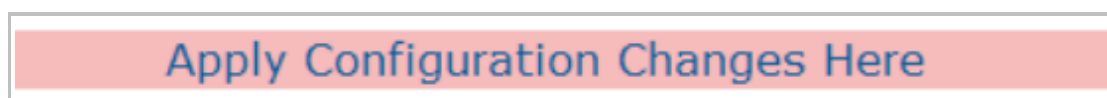
3) Input trunk1 in the textbox of "Outbound Caller ID". Please refer to the following illustration

General Settings	
Trunk Description:	<input type="text" value="ZAP Channel g0"/>
Outbound Caller ID:	<input type="text" value="trunk1"/>
CID Options:	<input type="text" value="Allow Any CID"/> ▾
Maximum Channels:	<input type="text"/>
Disable Trunk:	<input type="checkbox"/> Disable
Monitor Trunk Failures:	<input type="checkbox"/> Enable

4) Click on "Submit Changes" button in the following screen

Outgoing Settings	
Zap Identifier (trunk name):	<input type="text" value="g0"/>
<input type="button" value="Submit Changes"/>	

5) Click the "Apply Configuration Changes Here" bar in the top of the screen:



6. Set up Outbound Route

1) Please click on the "Outbound Routes" as the following illustration

Option	<h2>Add Route</h2>	
Unembedded freePBX		
Basic		
Extensions		
Feature Codes		
General Settings		
Outbound Routes		
Trunks	Route Name: <input type="text"/>	<input type="checkbox"/> Override Extension CID
	Route CID: <input type="text"/>	
	Route Password: <input type="text"/>	
	PIN Set: <input type="text" value="None"/>	
	Emergency Dialing: <input type="checkbox"/>	

2) Please click "09_outside button" and keep default parameters in the following screen. Please refer to the following illustration

Edit Route

⊖ Delete Route 9_outside

Route Name: 9_outside

Route CID: Override Extension CID

Route Password:

PIN Set:

Emergency Dialing:

Intra Company Route:

Music On Hold?:

Dial Patterns

9|.

Clean & Remove duplicates

Dial patterns wizards:

Trunk Sequence

0

Here we use the default "Dial Pattern" as 9|., so we have to add prefix 9, when dial out. For example, if you want to call 123456, then you have to press 9123456 on your phone.

3) Click the "Apply Configuration Changes Here" bar in the top of the



screen. Until now, it has complete a simple extension and you can make calls.

Apply Configuration Changes Here

Additional function

Users should run command "cat /proc/interrupts" to check DE130P has independent interrupt. If it shares interrupt with other device, it may cause some problems even cannot work normally. While DE130P allows users to modify interrupt pin during firmware upgrade for avoiding conflict. Or you can see if the EC module is working as follows:

```
# dmesg | grep VPM
```

```
[root@localhost ~]# dmesg | grep VPM
VPM450: echo cancellation for 32 channels
opvxd115 0000:20:00.0: VPM450: hardware DTMF disabled.
opvxd115 0000:20:00.0: VPM450: Present and operational
servicing 1 span(s)
```

Chapter 4 Reference

www.openvox.cn

www.digium.com

www.asterisk.org

www.voip-info.org

www.asteriskguru.com

Tips

Any questions during installation, please consult in our forum or look up for answers from the following websites:

[Forum](#)

[wiki](#)

Appendix A Specifications

• Weight and size

Weight: DE115P /DE115E 76g

Size: DE115P 12.9×10.3×1.8cm³

DE115E 13×10.8×1.8cm³

• Interfaces

PCI Bus: 3.3V or 5V bus slot, PCI 2.2 or above (DE115P)

Any type of PCI-E ×1, ×2, ×4, ×8, ×16 slot

• Environments

Temperature Operation: 0 ~50 °C

Temperature Storage: -65~125 °C

Humidity: 10 ~90% NON-CONDENSING

• Power consumption

Voltage: 3.3V, 5V

• Hardware and software requirements

RAM 128 + MB

Linux kernel 2.4.X or 2.6.X

CPU 800+ MHZ