





OpenVox Communication Co.Ltd



OpenVox BRI Cards on Trixbox 2.8.0.4 User Manual

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OpenVox Communication Co.Ltd

OpenVox-Best Cost Effective Asterisk Cards

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Test Environments

Trixbox 2.8.0.4 (CentOS-5.5)

Kernel version: 2.6.18-164.11.1.el5

DAHDI: openvox_dahdi-linux-complete-current

Asterisk: 1.6.0.26

Libpri: 1.4.10.2

Hardware: OpenVox BRI Cards



Chapter 1 Overview

1.1 What is Trixbox

Trixbox was initially released under the name Asterisk@Home, is a CentOS Linux distribution that provides an open source telephony package based on the famous Asterisk Voice-over-IP PBX. In October 2006, it was renamed to trixbox after Digium requested that its developers cease the use of the word "Asterisk"; the renaming was further justified by the fact that the product at that time consisted of much more than just Asterisk.

Here are some functions included for trixbox:

- Linux CentOS: Operating platform
- Asterisk: VoIP PBX
- FreePBX: Web GUI for Asterisk
- Dahdi/Zaptel: Telephony Hardware drivers
- LibPRI: Open source library that implements signaling for ISDN-PRI and ISDN-BRI
- MySQL: Database server
- Apache: Web server
- > PHP: Server-side scripting language
- SugarCRM: Customer relationship management (CRM) tool

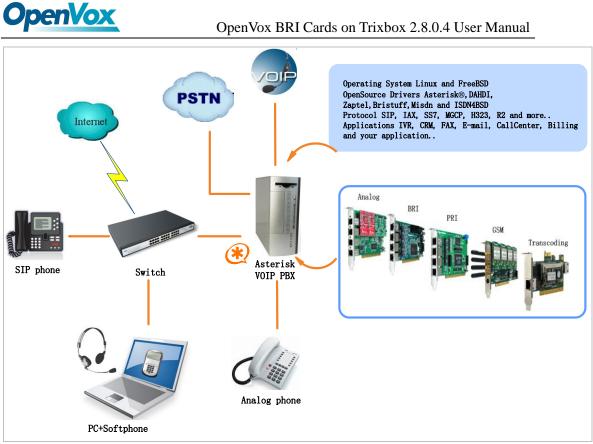


Figure 1 Topology

1.2 What is OpenVox BRI Telephony Cards

OpenVox provides full product line of ISDN BRI cards from 1 port to 8 ports with optional hardware Echo Cancellation Module. Superior quality products, reliability, high performance and quick support from our technical team are well known in the open source community. The BRI cards can turn the legacy ISDN BRI equipment into powerful Voice over IP devices and provide a soft migration path from ISDN technology to the Voice over IP world. BRI Telephony Cards work well 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.

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OpenVox BRI Telephony Cards can be divided into three classes in

accordance with PCI bus interfaces:

Mini PCI type III BRI cards

B100M/B200M/B400M

> PCI 2.2 compliant cards

B100P/B200P/B400P/B800P

BE200P/BE400P

> PCI Express 1.0 compliant cards

B100E/B200E/B400E

BE200E/BE400E

Target applications

- High Performance ISDN PC Cards
- ➢ ISDN PABX for BRI
- ➢ VoIP Gateways
- ISDN LAN Routers for BRI
- ISDN Least Cost Routers for BRI
- ISDN Test Equipments for BRI

Main features

- Provide 1 to 8 S/T interfaces
- Support 3 kinds of PCI bus interfaces
- > ITU-T I.430 and TBR 3 certified and S/T ISDN supporting TE/NT



mode

- > DTMF detection on all B-channels
- Multiparty audio conferences bridge
- Full software and hardware compatible with Junghanns.NET ISDN, mISDN driver, DADHI and so on.
- Certificates: CE, FCC, A-Tick
- trixbox TM Officially Certified
- Elastix[®] Officially Certified
- ➢ Lifetime warranty
- RoHS compliant



Chapter 2 Software Installation and Configuration

OpenVox BRI Telephony Cards support DAHDI software driver on Trixbox. To make full use of BRI Telephony Cards, it is need to download, compile, install and configure DAHDI, libpri and Asterisk. Before doing this, please stop Asterisk and DAHDI by operating:

amportal stop

service dahdi stop

2.1 Installation of DAHDI

Caution: In general, Trixbox 2.8.0.4 has already built DAHDI, LibPRI and Asterisk in the system, so it is not need to reinstall them to build your own PABX with

OpenVox BRI Cards. But there are a few of exceptional cases when use the following OpenVox BRI cards:

• B100M/B100P/B100E

You need to download the driver 'zaphfc' for B100M/B100P/B100E from OpenVox official website, because it is not contained in the original DAHDI driver which built in Trixbox.

• BE200P/BE200E/BE400P/BE400E

You need to download a patch for these cards from OpenVox official

Jpenvo

website to enable the Hardware EC module.

B800P

You need to download a patch for B800P from OpenVox official website to enable NT mode. While if you only use B800P on TE mode, it is not need to do that anymore!

> If use the BRI cards have mentioned before, please just download a DAHDI source code package from OpenVox official website. Since our current DAHDI driver

package contains all drivers for OpenVox BRI cards and all original drivers, it is very convenient to extend your PBX system and it is not need to reinstall the drivers. Downloading the current DAHDI driver package from OpenVox website will be a feasible solution for those cards:

http://downloads.openvox.cn/pub/drivers/dahdi-linux-complete/openvox_ dahdi-linux-complete-current.tar.gz

Execute the following commands under the directory of /usr/src/ in general to download and decompress the driver packages:

wget http://downloads.openvox.cn/pub/drivers/da hdi-linux-complete/openvox dahdi-linux-complete-c urrent.tar.gz

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tar -zxvf dahdi-linux-complete-current.tar.gz

- # cd /usr/src/dahdi-linux-complete-<version>
- # make
- # make install
- # make config

After doing these steps, please just skip to configuration part of the specific **USER MANUAL** about OpenVox BRI card.

2.2 Installation of Libpri and Asterisk

If use OpenVox BRI cards on NT mode, you need to apply a patch for Asterisk-1.6.0.26. Get libpri and Asterisk software packages from Digium official website:

http://downloads.asterisk.org/pub/telephony/libpri/releases/libpri-1.4.10.

<u>2.tar.gz</u>

http://downloads.asterisk.org/pub/telephony/asterisk/releases/asterisk-1.6

.0.26.tar.gz

Execute the following commands under the directory of /usr/src/ in general to download and decompress these packages:

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```
# wget http://downloads.asterisk.org/pub/telephon
```

y/libpri/releases/libpri-1.4.10.2.tar.gz

```
# tar -zxvf libpri-1.4.10.2.tar.gz
```

```
# wget http://downloads.asterisk.org/pub/telephon
```

y/asterisk/releases/asterisk-1.6.0.26.tar.gz

```
# tar -zxvf asterisk-1.6.0.26.tar.gz
```

cd asterisk-1.6.0.26

vi ./channels/chan_dahdi.c

Please comment out the following line:

/*ast_log(LOG_WARNING, "How cool would it be if someone Implemented this mode!For now, sucks for you.(line %d) n", v->lineno);*/

Then add the following two lines after above action:

```
confp->chan.sig = SIG_BRI_PTMP;
confp->pri.nodetype = PRI_NETWORK
```

After that, please save and quit it, then execute the following commands to install libpri and Asterisk.

cd libpri-1.4.10.2

make

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make install

- # cd asterisk-1.6.0.26
- # ./configure
- # make
- # make install



DO NOT execute "make samples" here, or it will damage the configuration file in the directory of /etc/asterisk. This action will lead to a disaster that you

have to reintall your system if you did not backup your configurations before.

After finishing the above steps, please just skip to Configuration part of the specific <u>USER MANUAL</u> about OpenVox BRI card.



Chapter 3 Web GUI Configuration

Make sure your Trixbox server is running fine, then log in the server via

web interface to start configurations.



Figure 2 Main Page of GUI

3.1 Create Extensions

• Add SIP extensions

Click PBX→PBX Settings→Extensions, choose "Generic SIP Device",

finally submit it. You can refer to the following figure.



The Open Platform for Bu	siness Telephony
System Status Packag	es PBX System Settings Help
	Admin Reports Panel Recordings Help
Setup Tools Admin System Status	Add an Extension Please select your Device below then click Submit
Module Admin Basic	Device
Extensions	
Feature Codes General Settings	Device Generic SIP Device 💌
Outbound Routes	Submit
Support	

Figure 3 Add a SIP Extension

Configure "User Extension", "Display Name", "Secret", and submit your

configurations.

System Status Packages	PBX System	Settings	Help	
	Admin Reports	Panel	Recordings	Help
Setup Tools Admin	Add SIP	Extens	ion	
System Status				
Module Admin	Add Extension			
Basic	Add Extension			
Extensions				
Feature Codes	User Extension	n 80	000	
General Settings	Display Name	Ti	.m	
Outbound Routes	CID Num Alias	3 80	100	
Support	SIP Alias	80	100	
Trunks				
Internal Options & Configuration				
Conferences	Device Options			
DISA				
Languages	This device us	es sin tech	nology	
Music on Hold	secret		000	
PIN Sets	dtmfmode		c2833	
Paging and Intercom	dimimode	rī	.020JJ	
Parking Lot				

Figure 4 Configure a SIP Extension



After successfully added, click "Apply Configuration Changes" button to take your configurations effect. Also you are able to add another SIP extension by click "Add Extension".

The Open Platform for Busines		Server time: 17:51:02 Admin mode [<u>switch</u>]
System Status Packages	PBX System Settings Help	?
	Admin Reports Panel Recordings Help 🐻 Apply Configuration Changes	
Setup Tools	Add an Extension	English
System Status	Please select your Device below then click Submit	Add Extension
Module Admin		
Basic	Device	Tim <8000>
Extensions		8888 <8888>
Feature Codes	Device Generic SIP Device	
General Settings		
Outbound Routes	Submit	
Support	SUDWIC	

Figure 5 Configuration Changes

Add ISDN extensions

The way to add an ISDN phone is similar to a SIP phone. The figure below will make it clear.

The Open Platform for Busines		Server time: 17:55:18 Admin mode [<u>switch</u>]
System Status Packages	PBX System Settings Help	?
	Admin Reports Panel Recordings Help	
Setup Tools	Add an Extension	English
System Status	Please select your Device below then click Submit	Add Extension
Module Admin		
Basic	Device	Tim <8000>
Extensions		8888 <8888>
Feature Codes	Device Other (Custom) Device	
General Settings		
Outbound Routes	Submit	
Support	oublit v	
Trunks		

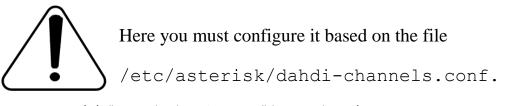




Choose "Other (Custom) Device", and submit it. Then configure "User Extension", "Display Name", "Device Options", and submit your configurations.

The Open Platform for Busines	•				Server time: 18 Admin mode	
System Status Packages	PBX System Set	tings Help				?
	Admin Reports P	Panel Recordings	Help			
Setup Tools		M Extension	n		English	*
System Status					Add Exten	sion
Module Admin	Add Extension					
Basic	Add Extension				Tim <8000)>
Extensions					8888 <888	38>
Feature Codes	User Extension	9000				
General Settings	Display Name	ISDN phone				
Outbound Routes	CID Num Alias	9000				
Support	SIP Alias					
				The setting here must be	e based on the file	
Conferences	Device Options			/etc/asterisk/dahdi-char	anels.conf	
DISA				group=1, 12		
Languages						
Music on Hold	This device uses cu		\leq			
PIN Sets	dial	DAHDI/g1 🖌				

Figure 7 Configure a ISDN Extension



; Span 1: B4/0/1 "B4XXP (PCI) Card 0 Span 1" (MASTER) AMI/CCS # The trunk for ISDN outline will use 'g0' here group=0,11 context=from-pstn # The default context for outbound setting switchtype = euroisdn # The signaling for TE mode signalling = bri cpe ptmp channel => 1-2 context = default group = 63; Span 2: B4/0/2 "B4XXP (PCI) Card 0 Span 2" AMI/CCS group=1,12 # The configuration for ISDN extension will use 'g1' here context=from-internal # The context for internal extensions switchtype = euroisdn signalling = bri net ptmp # The signalling for NT mode channel => 4-5 context = default group = 63

Figure 8 Configuration of dahdi-channels.conf



After setting, do not forget to click "Apply Configuration Changes"

button to make your configurations effective.

The Open Platform for Busines		Server time: 16:51:21 Admin mode [<u>switch</u>]
System Status Packages	PBX System Settings Help	(?)
	Admin Reports Panel Recordings Help 👩 Apply Configuration Changes	
Setup Tools	Add an Extension	English
System Status	Please select your Device below then click Submit	Add Extension
Module Admin		
Basic	Device	Tim <8000>
Extensions		8888 <8888>
Feature Codes	Device Generic SIP Device	ISDN phone <9000>
General Settings		
Outbound Routes	Submit	
Support	Paper -	

Figure 9 Apply Configuration Changes

More information about "Extensions", please refer to **HERE**.

3.2 Trunk settings

Click PBX→PBX Settings→Trunks, choose "Add Zap Trunk (DAHDI

compatibility mode)" to create trunks based on the configuration of

dahdi-channels.conf.

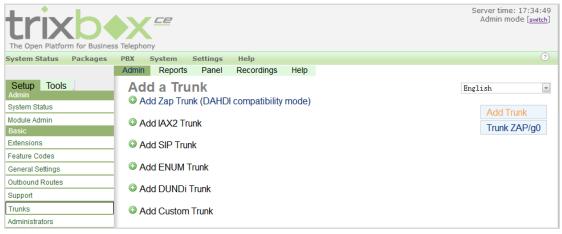


Figure 10 Add a Trunk



The default Trunk "Trunk ZAP/g0" is available here for the Spans of BRI card whose group number is "0". More details please refer to Figure 8 above.

trixb				Server time: 17:36:28 Admin mode [<u>switch</u>]
The Open Platform for Busine	ess Telephony			
System Status Packages	PBX System Settings	Help		(?)
System status - rackages	Admin Reports Panel	Recordings Help		<u> </u>
Setup Tools	Edit ZAP Trunk	0	atibility Mode)	English
System Status	Delete Trunk q0			Add Trunk
Module Admin	Delete Hunt go			
Basic	WARNING: This trunk is	not used by any routes!		Trunk ZAP/g0
Extensions	_			
Feature Codes	General Settings			
General Settings				
Outbound Routes	Outbound Caller ID:			
Support	Never Override CallerID:			
Trunks	Maximum Channels:			
Administrators	Disable Trunk:	Disable		
Inbound Call Control	Monitor Trunk Failures:		Enable	
Inbound Routes				
Zap Channel DIDs	Outgoing Dial Rules			
Announcements	3 3			
Blacklist	Dial Rules:			
CallerID Lookup Sources				
Day/Night Control	1			
Follow Me	1			
IVR	1			
Queues	1	Clean & Remove duplicates		
Ring Groups	Dial Rules Wizards:	(pick one)		~
Time Conditions	Outbound Dial Prefix:			
Time Groups	1		Here is the group number of the S	
Internal Options & Configuration	Outgoing Settings		can specify it depends on your ne	eds.
Conferences				
DISA	Zap Identifier (trunk name	e): g0 🔺		
Languages				
Music on Hold	Submit Changes			

Figure 11 Edit ZAP Trunk

After finishing trunk settings, click "Apply Configuration Changes"

button to take your configurations effect.

More information about trunk settings, please refer to **HERE**.

3.3 Outbound Routes settings

Click PBX→PBX Settings→Outbound Routes, choose "Add Route" to



create Outbound Routes based on the configuration of trunk settings.

Then configure "Route Name", "Dial Patterns", "Trunk Sequence", and submit your changes.

	s Telephony		Server time: 17:58:11 Admin mode [<u>switch</u>]
System Status Packages	PBX System Setting	as Help	?
System Status Facilityes	Admin Reports Pan		
Setup Tools	Add Route		English
System Status	Route Name:	0-OUT	
Module Admin	Route Password:		Add Route
Basic	PIN Set:	None 💌	Choose your own Dial Patterns, here I create a dialplan
Extensions	Emergency Dialing:		that when you dial 'O'+phone number will go through this
Feature Codes	Intra Company Route:		Outbound Route.
General Settings	Music On Hold?	default 💌	
Outbound Routes	Dial Patterns		
Support		0 .	
Trunks			
Administrators			
Inbound Call Control			
Inbound Routes			
Zap Channel DIDs		Clean & Remove duplicates	
Announcements	Dial patterns wizards:	(pick one)	
Blacklist	Trunk Sequence		Specify the trunk you want for this Outbound Route.
CallerID Lookup Sources		ZAP/g0 🖌	
Day/Night Control			
Follow Me	Submit Changes		

Figure 12 Edit Outbound Route

After finishing configuration, click "Apply Configuration Changes"

button to bring your configurations into effect.

About configuration of "Dial Patterns", please refer <u>HERE</u>.

3.4 Inbound Routes settings

Before creating Inbound Routes, you'd better configure Zap/DAHDI

channel DIDs first, click PBX \rightarrow PBX Settings \rightarrow Zap channel DIDs,

choose "Add Channel" to bind DID to specific Zap/DADHI Channel.



	Server time: 19:29:27 Admin mode [<u>switch</u>]
System Status Packages	PDA System Settings help
	Admin Reports Panel Recordings Help
Setup Tools Admin	Add Zap Channel English
System Status	Zap Channel DIDs allow you to assign a DID to specific Zap Channels. You can supply the Add Channel
Module Admin	same DID to multiple channels. This would be a common scenario if you have multiple
Basic	POTS lines that are on a hunt group from your provider. You MUST assign the channel's context to
Extensions	from-zaptel for these settings to have effect. It will be a line that looks like:
Feature Codes	
General Settings	Context = from-Zaptel This can be edited in the file chan_dahdi.conf
Outbound Routes	in your zapata.conf configuration effecting the specified channel(s). Once you have assigned DIDs you can
Support	use standard Inbound Routes with the specified DIDs to route your calls.
Trunks	
Administrators	
Inbound Call Control	Add Channel
Inbound Routes	
Zap Channel DIDs	Channel:
Announcements	Description
Blacklist	DID:
CallerID Lookup Sources	
Day/Night Control	Submit Changes

Figure 13 Configure DIDs

After completing configuration of DIDs, you can start to create Inbound Routes. Click PBX \rightarrow PBX Settings \rightarrow Inbound Routes, choose "Add Incomming Route" to create Inbound Routes based on the configuration of DIDs. Then set "Description", "DID Number", "Set Destination", and submit your changes.



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The Open Platform for Busine				Server time: 19:08:58 Admin mode [<u>switch</u>]
System Status Packages	PBX System Settings	Help		?
,	Admin Reports Panel	Recordings Help		
Setup Tools	Add Incoming	Route		English
System Status	Add Incoming Douto			Add Incoming Route
Module Admin	Add Incoming Route			View All DIDs
Basic				
Extensions	Description:	ALL-IN		View User DIDs
Feature Codes	DID Number:			View General DIDs
General Settings	Caller ID Number:			View Unused DIDs
Outbound Routes	CID Priority Route:		<u> </u>	
Support			Incomming cal	ls will be transfered based
Trunks	Options		on DIDs, leave	it blank means all DIDs
Administrators				
Inbound Call Control	Alert Info:			
Inbound Routes	CID name prefix:			
Zap Channel DIDs				
PIN Sets	CID Lookup Source			
Paging and Intercom				
Parking Lot	Courses	None -		
System Recordings	Source:	None *		
VoiceMail Blasting	Set Destination			
	Terminate Call: Hange Extensions: <9000> I		×	

Figure 14 Edit Inbound Route

After that, please click "Apply Configuration Changes" button to bring

your configurations into effect.

More information about "Inbound Routes", please refer **<u>HERE</u>**.



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

<u>wiki</u>