



Synway AST Series

Trixbox 2.8.0.4 Installation Manual

Synway Information Engineering Co., Ltd

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Preface

When you use the Synway AST series boards to set up a Trixbox application system, this file provides the help for software installation and configuration.

Chapter 1 tells what to prepare before installing Trixbox.

Chapter 2 introduces how to install the Trixbox 2.8.0.4 system.

Chapter 3 unfolds how to compile and install the Dahdi and SynAST drivers.

Chapter 4 shows how to configure and use the Trixbox system.

Appendix A gives the contact way of technical support and sales department in Synway.

Although Synway has scrupulously checked through this manual, but cannot guarantee the absence of errors and omissions. We sincerely apologize for any consequent inconvenience brought to you and will be very grateful if you kindly give your advice regarding amendments to this book.

Chapter 1 Preparation

1.1 Hardware

First you shall prepare the following items: A PC with an empty HD (what we use herein is SAMSUNG, ATA/133 HDD 80GB), a Synway TEJ-1A/PCI board and a Synway FXM3201P board with two trunk modules (CH1 and CH2) and two station modules (CH3 and CH4).

You can install the Synway AST series boards before or after the installation of the Trixbox system. All hardware manuals for the AST series boards can be downloaded from the following page.

<http://www.synway.net/support.asp>

Note: We recommend you to use IE browser to open the links in this document.

1.2 Software

Make sure you have these software: Trixbox 2.8.0.4 installation CD, Dahdi-2.4.0 and SynAst-1.9.0.0.

Trixbox 2.8.0.4, about 672MB in size, can be downloaded from:

http://58.100.228.233/download/3898250/4109637/4/iso/240/200/1322927635184_200/trixbox-2.8.0.4.iso

or

<http://sourceforge.net/projects/asteriskathome/files/trixbox%20CE/trixbox%202.8/>

Burn the downloaded driver into a CD.

dahdi-linux-complete-2.4.0+2.4.0, about 2.3MB in size, can be downloaded from:

<http://downloads.asterisk.org/pub/telephony/dahdi-linux-complete/releases/dahdi-linux-complete-2.4.0+2.4.0.tar.gz>

SynAst-1.9.0.0, about 37.4MB in size, can be downloaded from:

http://www.synway.net/Download/Driver/Asterisk/AST1900/SynAST-1.9.0.0_en.tar.gz

Chapter 2 Installation of Trixbox 2.8.0.4 System

2.1 Brief Introduction to Trixbox System

The Trixbox system is an integrated system which includes the operating system CentOS and other software like Asterisk, Dahdi, FreePBX. All necessary software can be installed well at one time, not requiring independent operation for any one of them. Asterisk and relative services will automatically start up upon installation.

For detailed information about Trixbox, please go to the official website of Trixbox: <http://www.trixbox.org>.

2.2 Installation of Trixbox System

Step 1: Set the guide mode

Set BIOS to boot from CD-ROM. Put the CD of Trixbox system burned already into CD-ROM and start the PC. **Note: Don't use the ISO image file to install the driver from HD, otherwise some functions may be unavailable.**

Step 2: Install Trixbox

- a) The system will go into the CD guide after the PC being started. Then the following interface will be shown on the screen. See Figure 1. Press Enter directly to select the default installation mode.

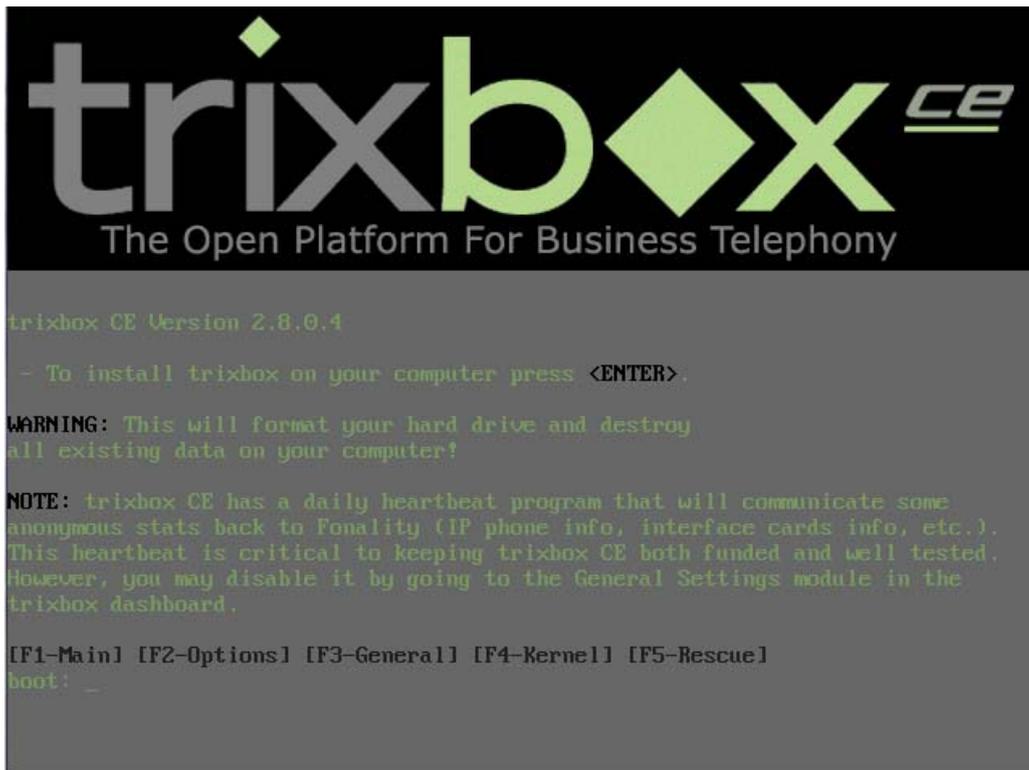


Figure 1

Note: When the Trixbox is installed in the default mode, it will format the entire HD. If you do not want the whole HD to be formatted, you should boot in the above interface following the CD start, then input 'advanced' and press Enter. Thus the system will give a prompt on how to partition the HD.

- b) Next, choose a keyboard type according to your requirement. Usually we choose 'us' as shown in Figure 2.



Figure 2

- c) Next, select a time zone according to the real situation. Here we select 'America/New_York' as shown in Figure 3.

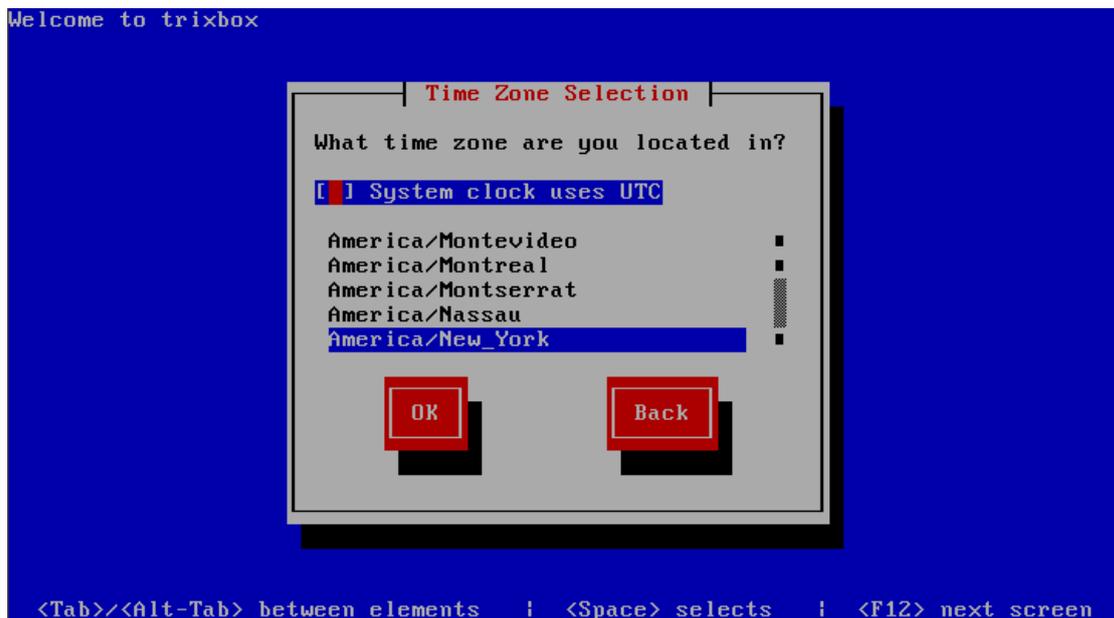


Figure 3

- d) Next, enter the root password as shown in Figure 4.

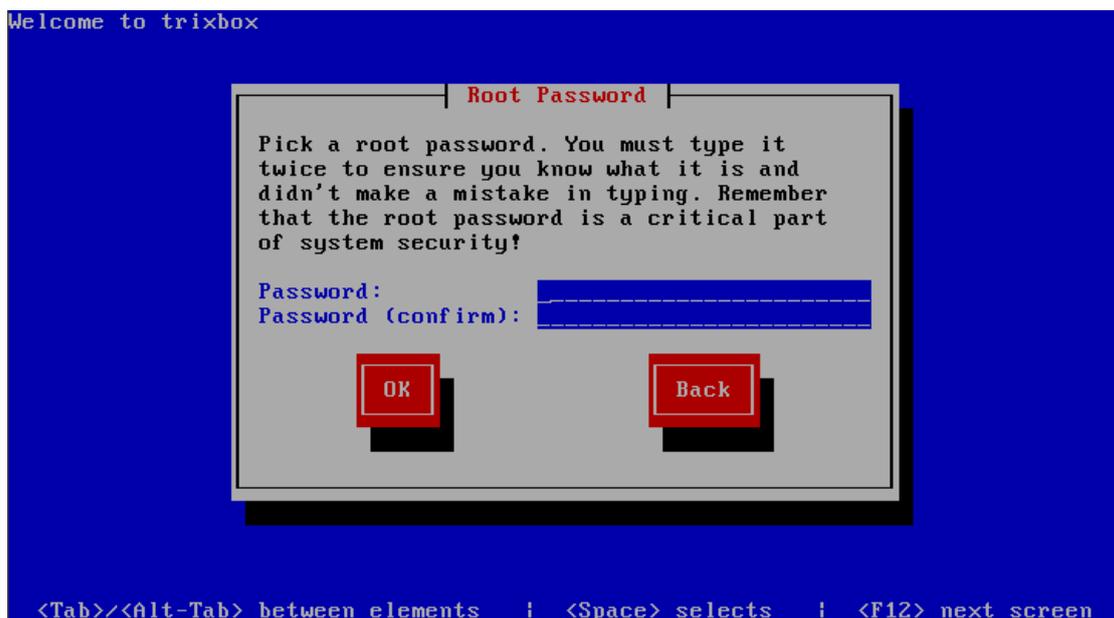


Figure 4

- e) Then go into the installation process. Upon all files being installed successfully, the PC will be restarted automatically.

Note: You must take out the Trixbox CD before the PC restarts; or the system will go into the installation guide interface again.

- f) After the PC restarts, the system will go into the startup interface. By default, the system will boot up in trixbox-base mode. See Figure 5.



Figure 5

Step 3: Log in to the system

There pops up the login prompt after the system startup. Please use the username “root” to log in, and the password is just the one set during the installation process.

Step 4: Configure the network

After entering the Trixbox system, you should first configure the network to connect the system to Internet.

To be exact, run the command ‘system-config-network’ to configure.

system-config-network

On the displayed menu:

Enter ‘Edit Devices’ to configure the basic information of network card;

Enter ‘Edit DNS configuration’ to configure the DNS information;

Save those configured settings and exit the interface. Then you need to restart the network service to put those settings into effect.

service network restart

Note: During the following installation process, the system will automatically link to Internet to download some relative files. Therefore, if the network has not been well configured, all subsequent operations will fail. However, for some networks that have

DHCP servers to automatically allocate IP and gateway addresses, you need not do such network configuration.

Step 5: When all the above steps are finished, the basic Trixbox system has been installed successfully.

Chapter 3 Compilation and Installation of Dahdi and SynAST

To support the Synway AST series boards, you should install the SynAST driver based on the Trixbox system. Here take the Synway TEJ-1A/PCI and FXM3201P boards as an example. As the Trixbox system needs to be recompiled before installing other drivers, you should first install the compiling environment.

3.1 Compiling Environment Installation

Note: Because the default installation does not involve installing the gcc compiler and the kernel source tree, the driver can not be compiled and installed directly. Only after you install the compiling environment can you install and use the third party boards and drivers. The commands are as follows.

```
# yum install gcc                # Install the gcc compiler
# yum install kernel-devel-`uname -r`  # Install the kernel source tree
```

If you cannot use the 'yum' command to find them, use the command 'yum check-update'.

3.2 Driver Installation

Step 1: Stop relative services

```
# amportal stop                # Stop Asterisk services
```

Note: amportal commands include stop, start, restart and some other operations. See the command description for details.

Note:

- 1) When the board driver is being installed, the Dahdi driver will be recompiled before the configuration of Asterisk system. Hence, we suggest you install the driver and configure the board on the condition that all running services are stopped.**
- 2) Asterisk services will be automatically started once the Trixbox system is installed, and the driver installation will fail if it is performed while Asterisk services are running. In such situation, you should manually stop Asterisk services first.**
- 3) As using the 'service' mode to stop and start Asterisk may not be compatible with Trixbox 2.8.0.4 and later versions, we suggest you use 'amportal' to stop and start Asterisk.**

Step 2: Install the SynAST driver

Put the prepared files under the /opt directory. Enter this directory and uncompress relative

installation packages.

```
# cd /opt
# tar -zxvf SynAST-1.9.0.0_en.tar.gz
# tar -zxvf dahdi-linux-complete-2.4.0+2.4.0.tar.gz
```

Enter SynAST-1.9.0.0_en to start auto installation:

```
# cd SynAST-1.9.0.0_en
# cd for_dahdi
# ./Setup install
```

Prompts on Screen:

```
Install SynAST AST package now!
```

```
You must install libpri and asterisk before this.
```

```
Would you like to install SynAST AST package now? (y/n) Enter 'y'.
```

```
Please enter working dahdi directory [q](exit install) : Enter the directory to dahdi. Here please enter: /opt/dahdi-linux-complete-2.4.0+2.4.0
```

If there are TEJ boards installed on your machine, the following prompts will pop up on the screen.

```
SELECT TEJA MODE [t, e, j] : Select the TEJ board trunk working mode. Here select e which indicates working in E1 mode;
```

```
SELECT TEJA [75, 120]ohm : Select the trunk impedance in E1 mode. Here input 120 which indicates working in Twisted Pair, 120Ω mode;
```

Select OK to start installing. During the installation, the system will link to the network to download some relative files. When finished, the prompt `Install Driver Completed` appears. Then you will see the following line which reminds you of the board arrangement.

```
Would you like to configure the cards order now? (y/n)
```

If you have multiple boards of a same model, follow the section *Configure Boards Order* in the file *SynAST_UserManual.pdf* to handle. Here just input `n` and press 'Enter'.

Now both Dahdi and SynAST drivers are already installed.

In the above step, these options 'SELECT TEJA MODE [t, e, j]', 'SELECT TEJA [75, 120]ohm' will appear only when the system is installed with TEJ series boards. In other words, they will not appear if the system is only installed with FXM series boards.

Note: The system will automatically compile and install the Dahdi driver while installing the SynAST driver. Therefore, it is not necessary to compile and install the Dahdi driver separately.

Step 3: Check if the driver module has been loaded

Input the command:

```
# lsmod | grep fxm
```

If properly installed, the first several lines of FXM will display on the screen. If they include the **fxm32** line, it means the **fxm32.ko** module has been well loaded.

To check TEJ boards, just replace the FXM in the above command with TEJ.

Step 4: Configure the board channel and generate the following configuration file.

```
# astcfg_dahdi trixbox
```

Step 5: Start Trixbox

```
# amportal start           #Start Asterisk Services
```

Now the SynAST driver installation is finished.

Chapter 4 Configuration and Management of Trixbox

In the address bar of the browser, enter the Trixbox website to go into the initial interface of Trixbox (see Figure 6). User Mode is the default setting. First click on the 'switch' button at the top right corner and the login box pops up. Enter the admin username **maint** and the password **password** to reach the configuration and management interface. Then a dialog box will pop up for registration. Close it directly as you are not required to register so far.

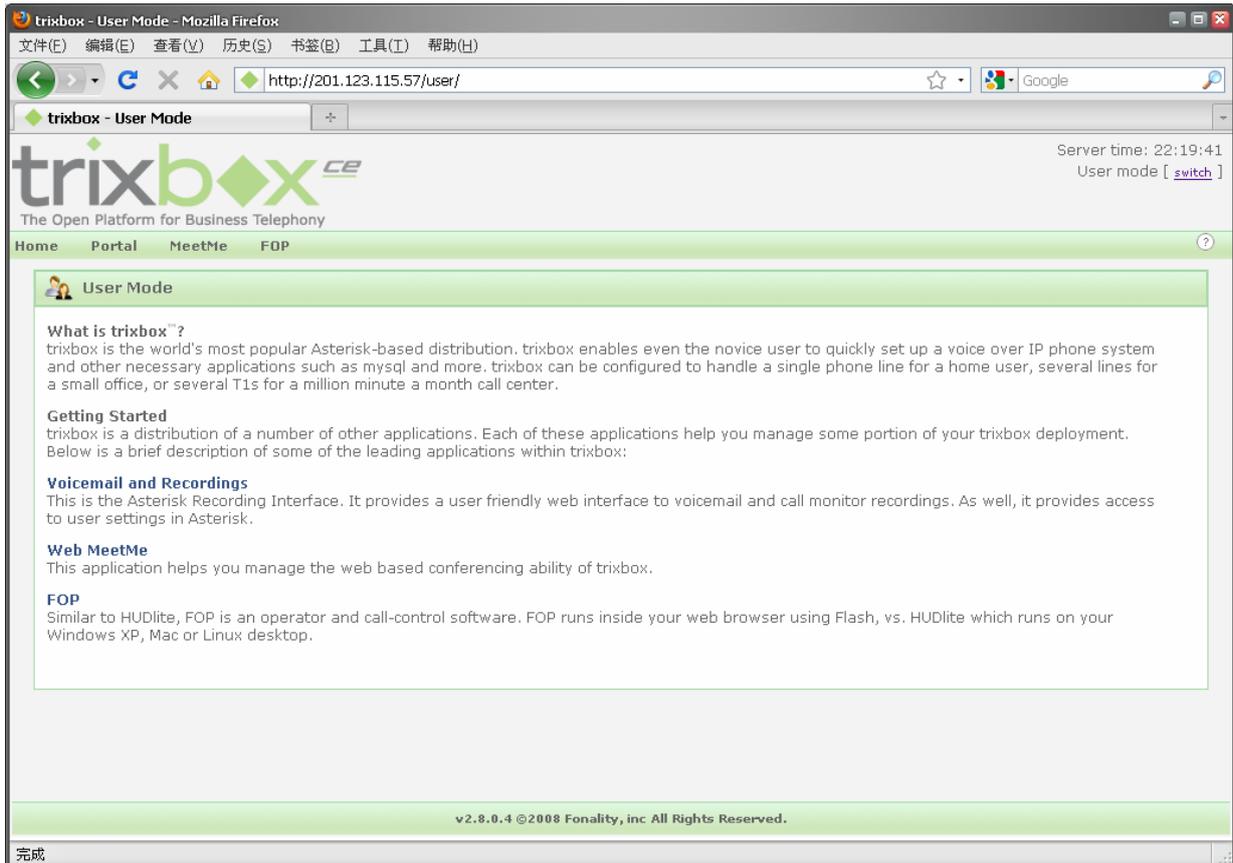


Figure 6

On the upward side is the menu bar and on the left side is the navigation bar (see Figure 7).

The screenshot displays the Trixbox Admin Mode interface in a Mozilla Firefox browser window. The page title is "trixbox - Admin Mode" and the URL is "https://201.123.115.57/maint/index.php?freepbx". The interface features a navigation menu on the left with categories like "Setup", "Tools", "Admin", "Basic", "Extensions", "Feature Codes", "General Settings", "Outbound Routes", "Support", "Trunks", "Administrators", "Inbound Call Control", "Inbound Routes", "Zap Channel DIDs", "Announcements", "Blacklist", "CallerID Lookup Sources", "Day/Night Control", "Follow Me", "IVR", "Queues", "Ring Groups", "Time Conditions", "Time Groups", "Internal Options & Configuration", and "Conferences". The main content area is titled "System Status" and includes several sections:

- Notices:** A notification icon and the text "No email address for online update checks" with a "show all" link.
- Statistics:** A table showing call statistics:

Total active calls	0
Internal calls	0
External calls	0
Total active channels	0
- Connections:** A section for monitoring active connections.
- Uptime:** A box displaying system and Asterisk uptime information:

System Uptime: 11 minutes
Asterisk Uptime: 8 seconds
Last Reload: 8 seconds
- System Statistics:** A section providing hardware and system performance metrics:

System Statistics	
Processor	
Load Average	0.00
CPU	0%
Memory	
Mem Memory	6%
Swap	0%
Disks	
/	1%
/boot	20%
/dev/shm	0%
Networks	
eth0 receive	0.00 KB/s
eth0 transmit	0.00 KB/s
eth1 receive	0.00 KB/s
eth1 transmit	0.00 KB/s
- Server Status:** A table showing the status of various services:

Server Status	
Asterisk	OK
Op Panel	OK
MySQL	OK
Web Server	OK
SSH Server	OK

Figure 7

Select the option PBX in the menu bar and click PBX Status to see the PBX information. Since there lists the channel information of our boards under 'Dahdi driver info' (see Figure 8), we can configure the PBX according to Trixbox explanation.

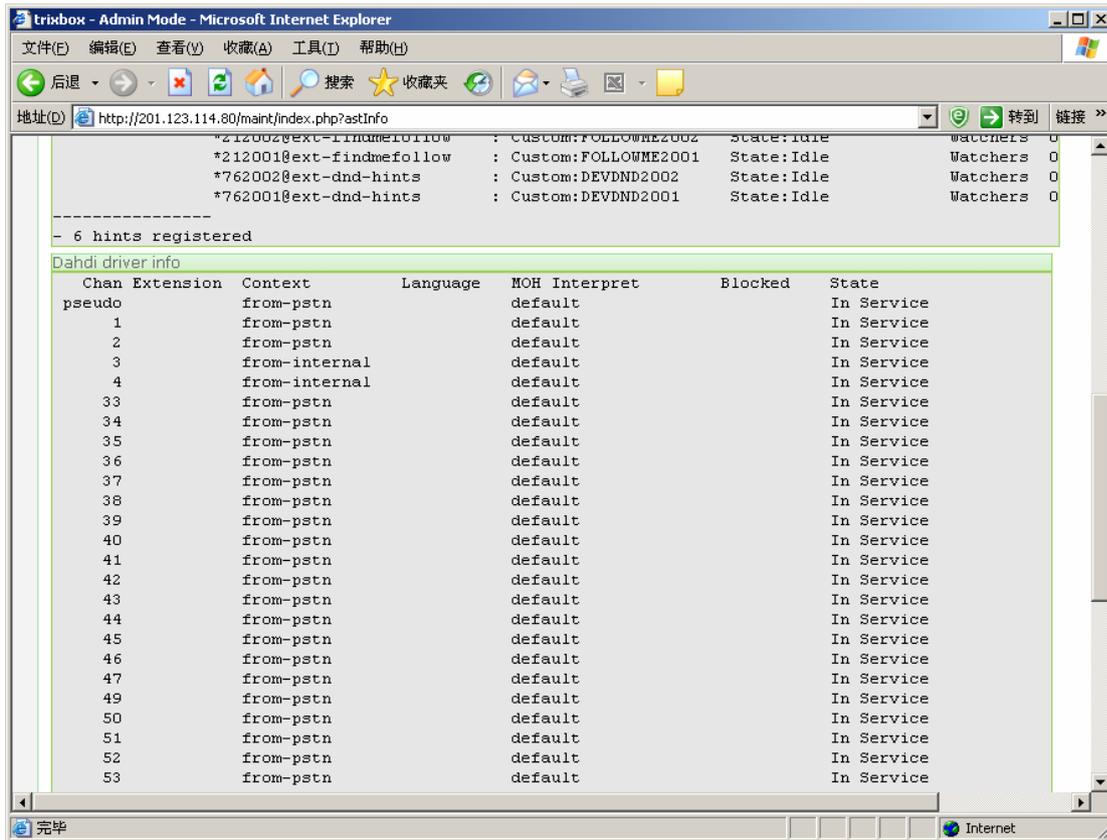


Figure 8

Next we will use an actual example to explain how to configure.

Take the FXM3201P board as an example. Install an FXM3201P motherboard with an FXO module and an FXS module. Channel 1 and Channel 2 on the board are FXO (trunk) while Channel 3 and Channel 4 are FXS (station). You can see from the above figure that the corresponding trunks in the Trixbox system are Dahdi channel 1 and channel 2, the corresponding stations are Dahdi channel 3 and channel 4. If there are multiple boards in the system, the channels are arranged by board number.

Here we demonstrate such functions as making a call from extension to extension, a call from extension to trunk, and a call from trunk to extension.

First, select PBX in the menu bar and click on PBX Settings.

Step 1: Configure extensions

In this situation, there are two station channels on the FXM board respectively corresponding to Dahdi channel 3 and Dahdi channel 4. We need to add two Extensions whose numbers are supposed to be 2001 and 2002.

Find the option Setup in the left navigation bar, select Basic and click Extensions. To add the information about the first extension 2001, choose Generic ZAP Device in the pull-down box for Device and press the Submit button to submit (see Figure 9). Then fill in some relative information on the page shown afterwards. Fill in 2001 for both options 'User Extension' and 'Display Name'. Find the sentence 'This device use technology. (Via DAHDI compatibility mode)' (see Figure 10)

and fill in 3 for the following option 'Channel'. This indicates Extension 2001 uses Dahdi channel 3. Press Submit and the configuration of Extension 2001 is finished.

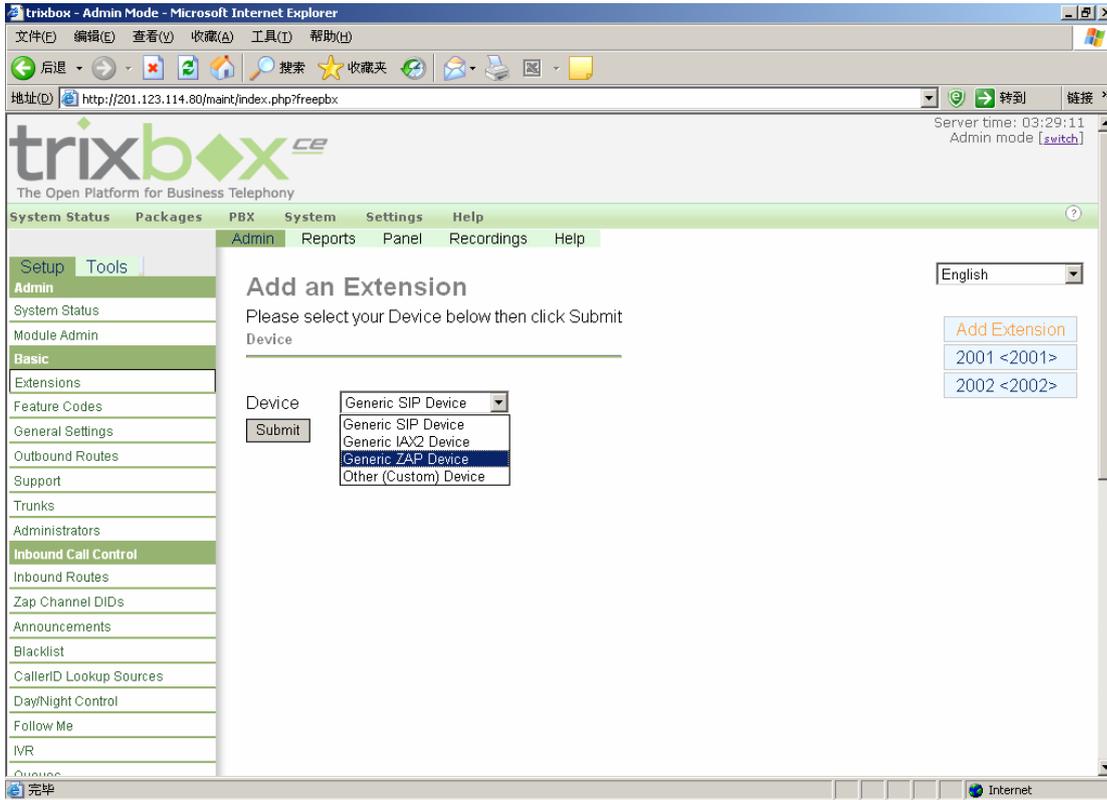


Figure 9

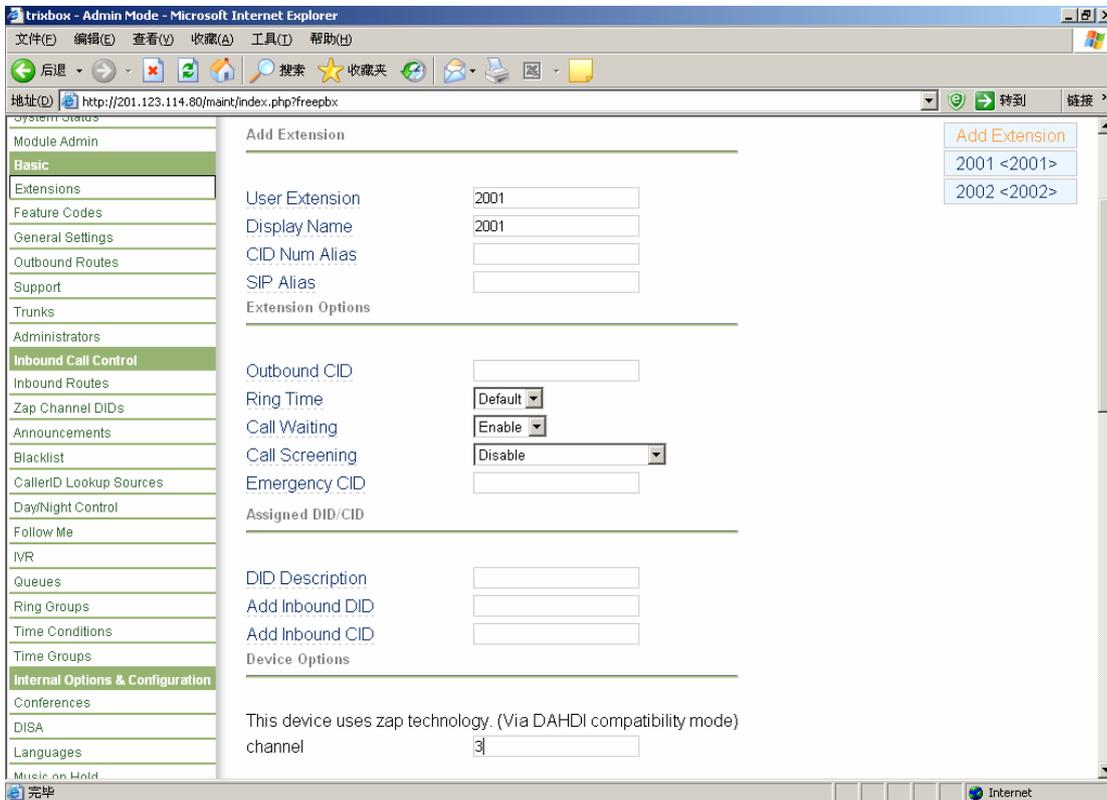


Figure 10

After that, return to Add Extension at the top to add Extension 2002. Configure it to use Dahdi channel 4. Then both extensions are well configured.

When the modified configuration is submitted, there appears a prompt 'Apply Configuration Changes' (see Figure 11) in orange on the top right corner of this page. Click it and an orange dialog pops up (see Figure 12). Click 'Continue with reload' to apply the modified configuration. Now we can make calls from extension to extension. Dial 2002 on the first extension to call the second extension.

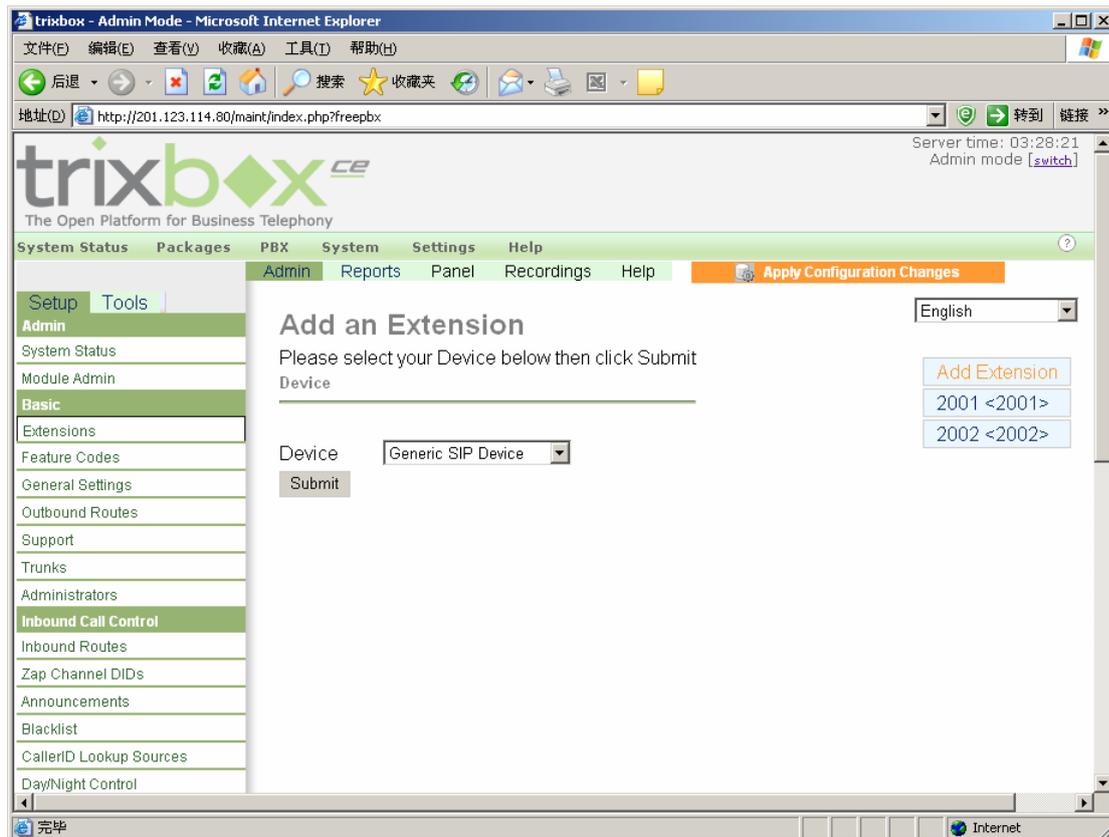


Figure 11

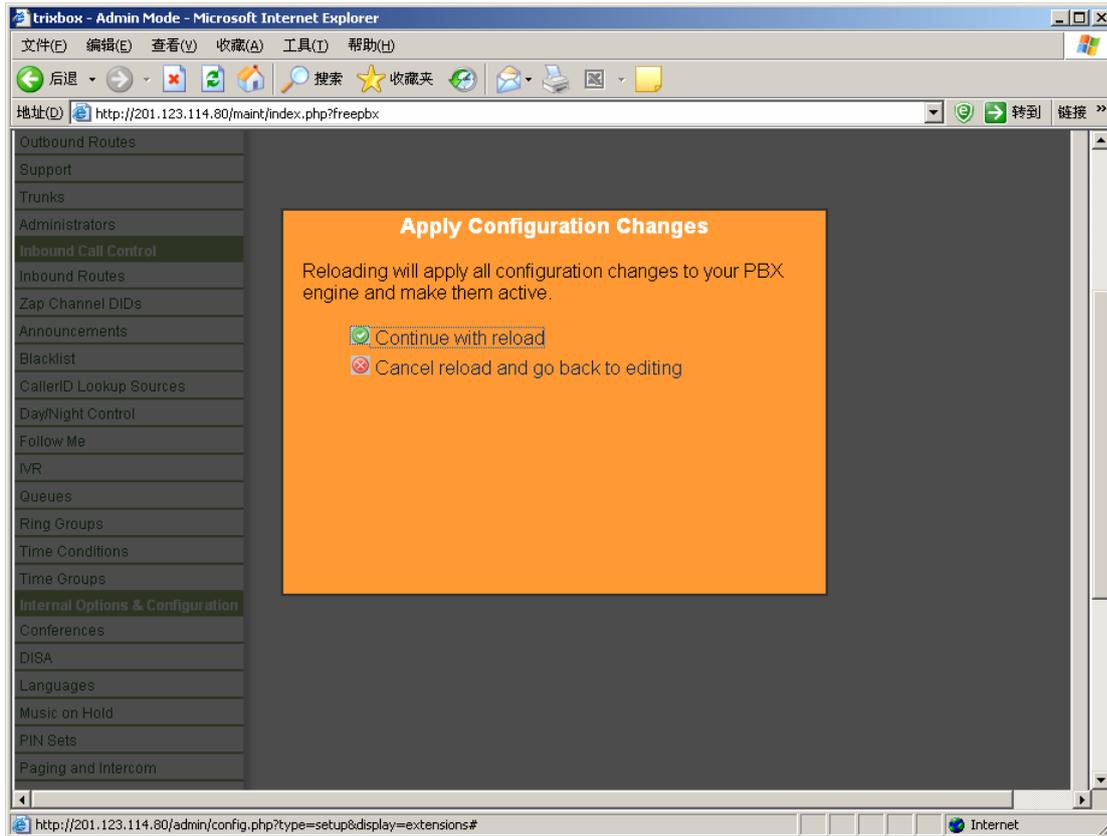


Figure 12

Step 2: Configure trunks

Now there are two trunk channels on the FXM board respectively corresponding to Dahdi channel 1 and Dahdi channel 2.

Find the option Setup in the left navigation bar, select Basic and click Trunks. We can see from the right side of this page (see Figure 13) that the default setting has included a trunk. Click 'Trunk ZAP/g0' and we can see the default value of 'Zap Identifier (trunk name)' is g0. Modify it to 1 which indicates this trunk uses Dahdi channel 1 and leave other parameters unchanged. Save the change and the configuration of the first trunk is finished (see Figure 14).

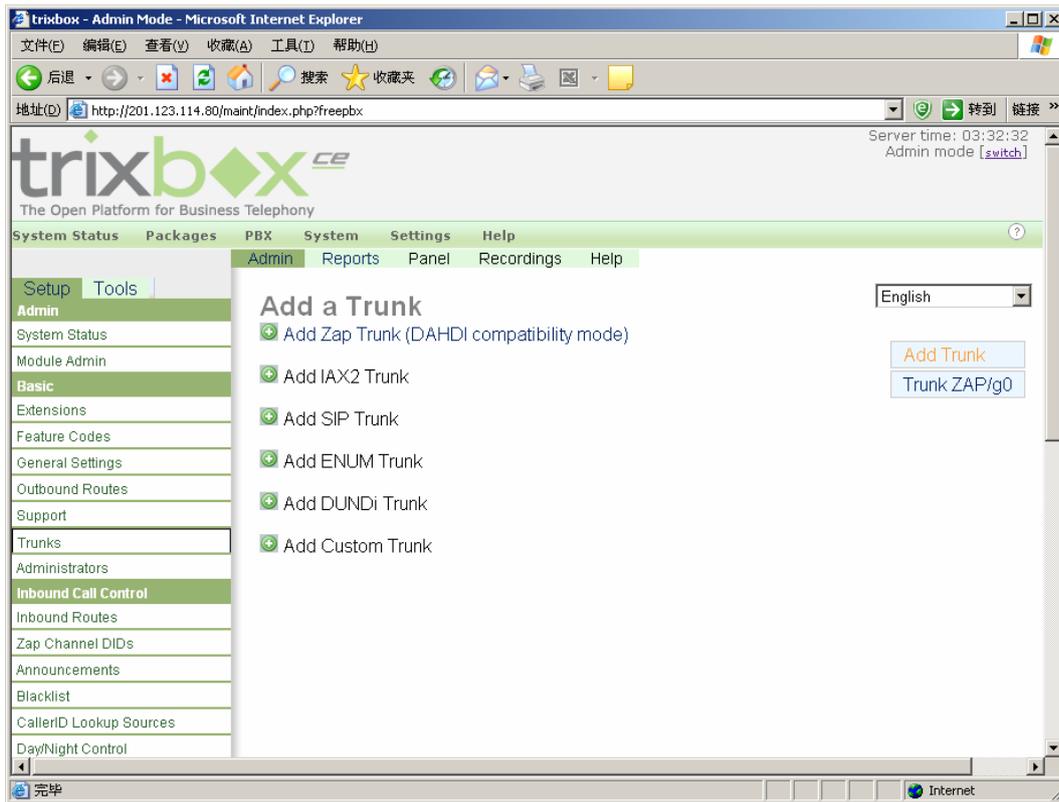


Figure 13

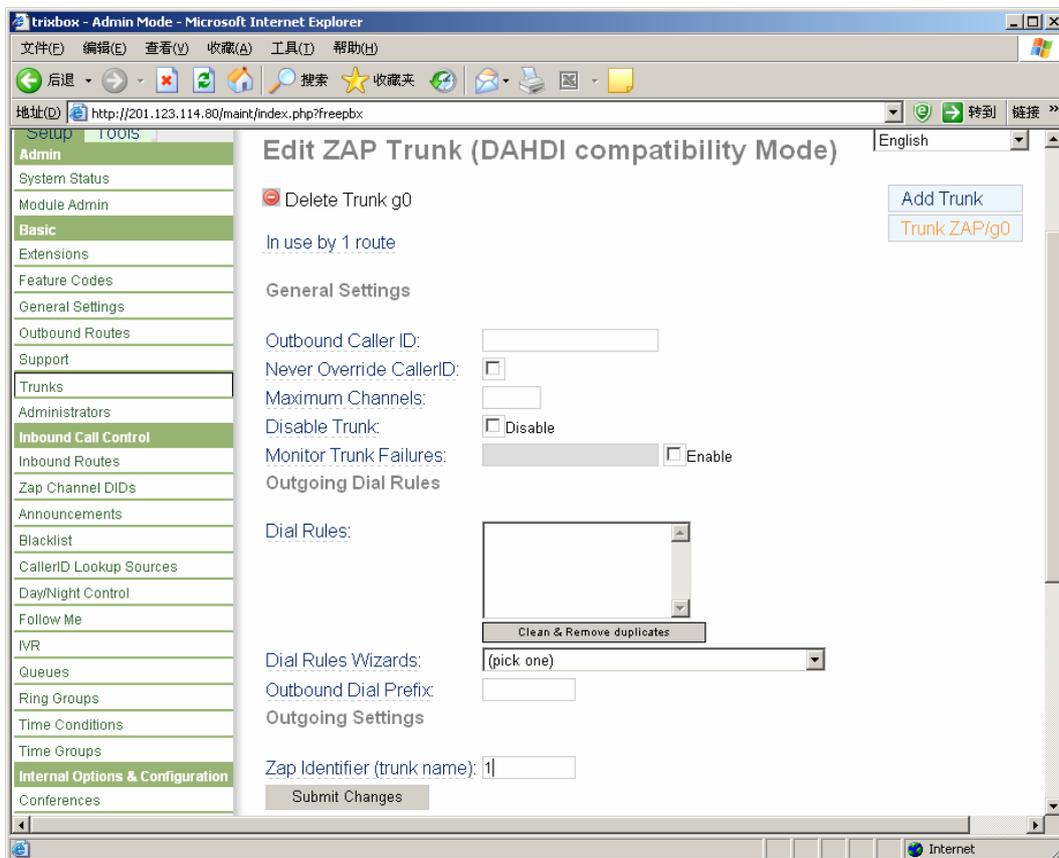


Figure 14

Then add the second trunk. Click 'Add Trunk' on the right and press 'Add Zap Trunk (DAHDI compatibility mode)'. Fill in 2 for 'Zap Identifier (trunk name)' which indicates this trunk uses Dahdi channel 2. Click the Submit button to submit. Now both trunks are properly configured (see Figure 15).

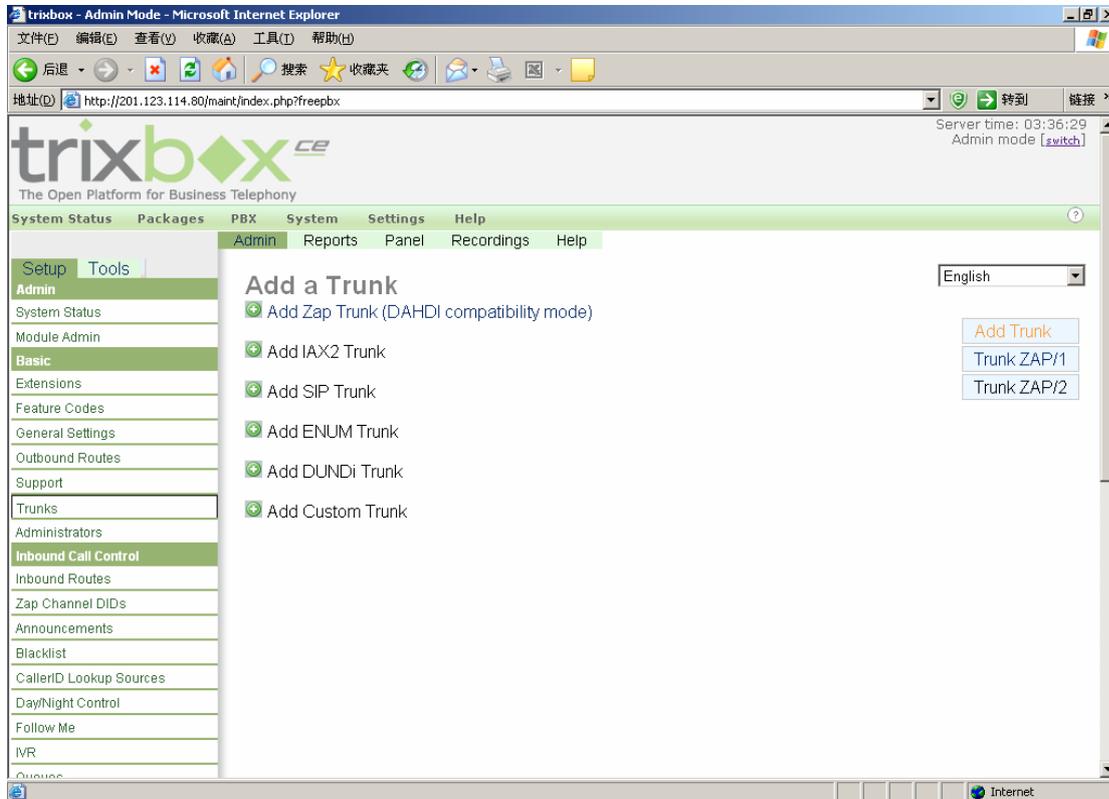


Figure 15

Next, we shall manage to perform the call from extension to trunk.

Step 3: Configure the outbound route for calls from extension to trunk

Find the option Setup in the left navigation bar, select Basic and click Outbound Routes. We can see from the right side of this page (see Figure 16) that the default setting has included a route with the name of 9_outside which indicates the rule of dialing 9 before the phone number. The outbound call is routed on Dahdi/1. Actually, dial '9+phone number' on the extension and the call will be routed out through Dahdi channel 1. You can modify the configuration and apply it to make calls from extension to trunks.

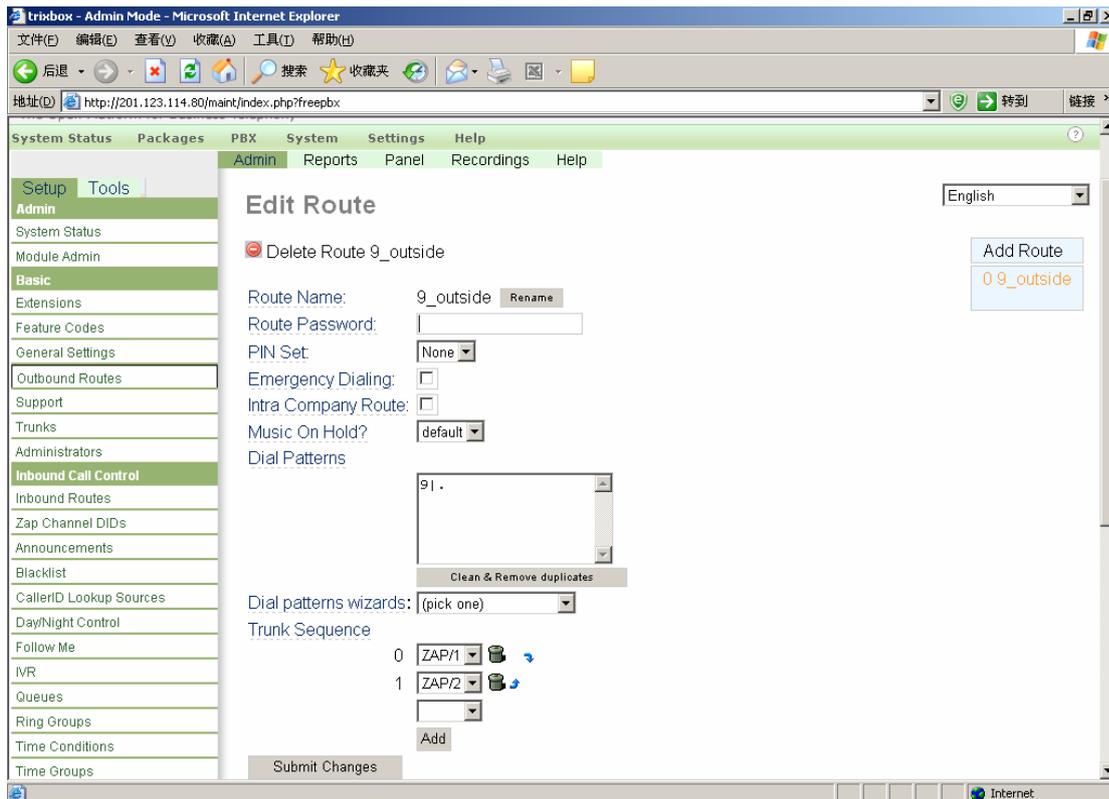


Figure 16

Step 4: Configure to make calls from trunk to extension

To make calls from trunk to extension, we shall configure 'Inbound Routes'. Find the option Inbound Call Control and select Inbound Routes. Go to the bottom of the displayed page (see Figure 17) to find Set Destination. Select Extensions and designate some extension (see Figure 18). Thus, when a call comes in from a trunk, the specified extension rings directly. Just pick up the call and talk. Also you can set other inbound routes like IVR to complete corresponding flows. However, the IVR must be set beforehand.

At last don't forget to click 'Apply Configuration Changes' to make modified configurations effective; otherwise, no modification works. Then we can perform call tests based on the above configurations.

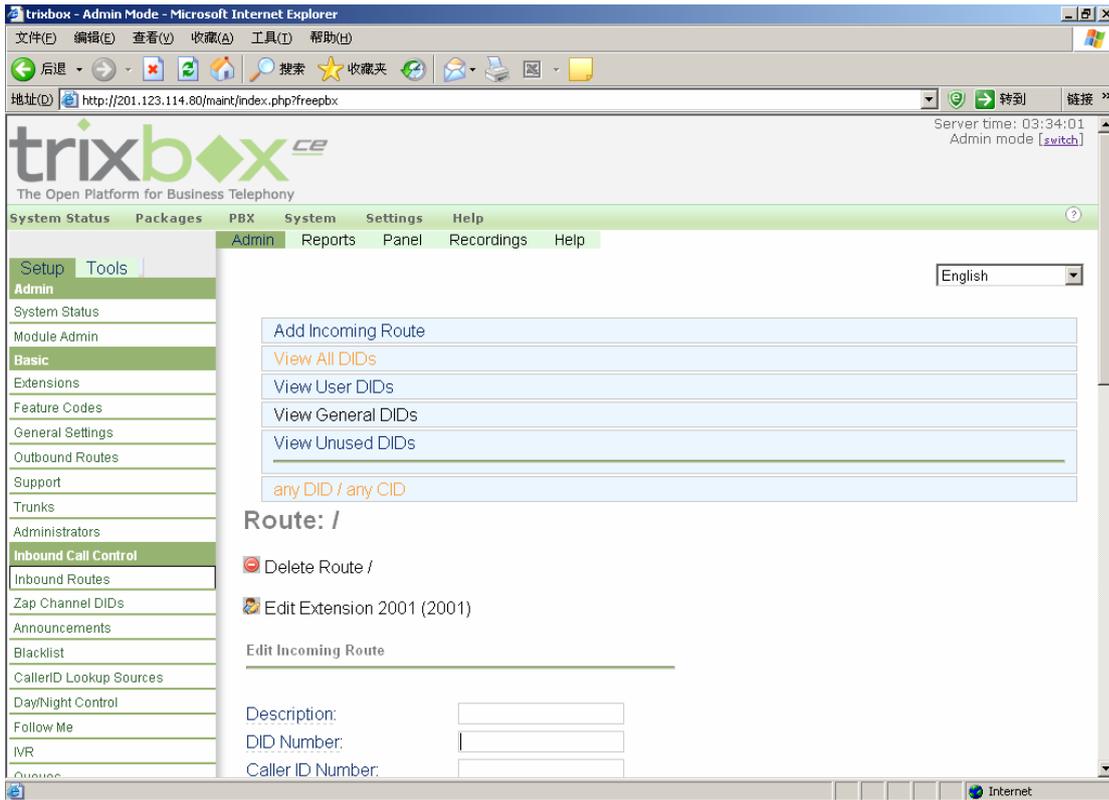


Figure 17

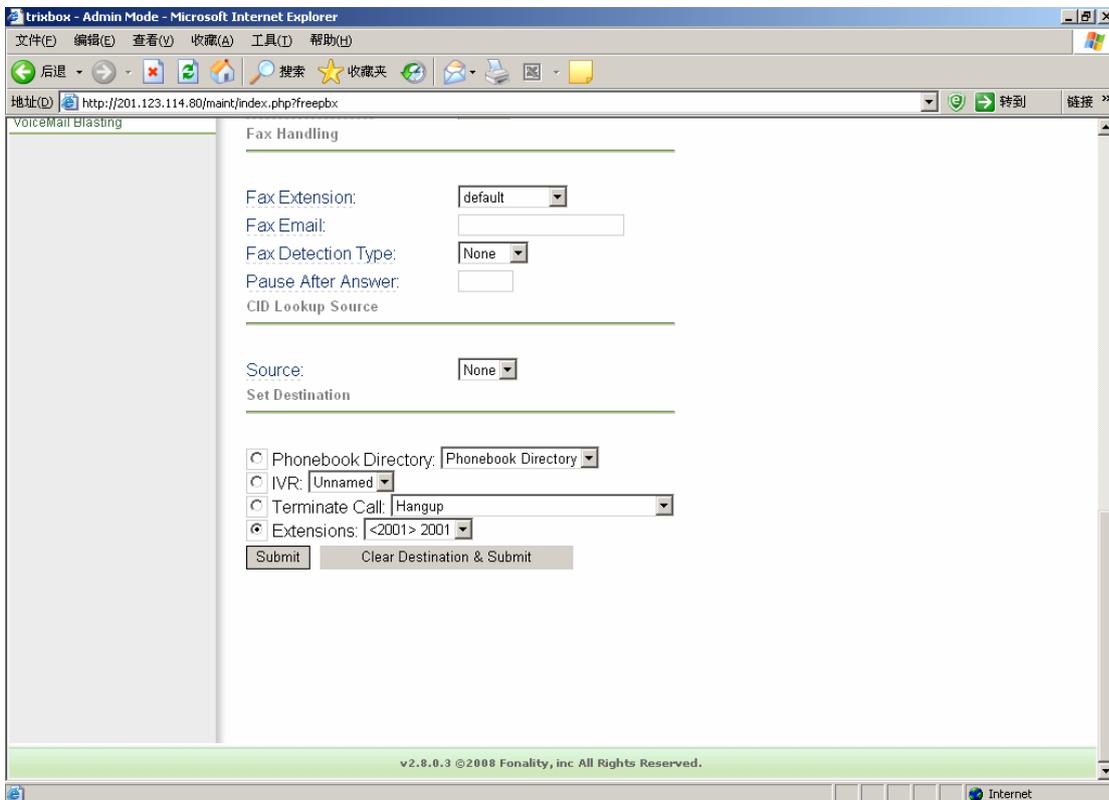


Figure 18

Now you are able to use the Synway FXM3201P board in the Trixbox system to make simple calls.

To achieve more complicated functions, go to <http://www.trixbox.org/> to refer to relative documents.

Appendix A Technical/Sales Support

Thank you for choosing Synway. Please contact us should you have any inquiry regarding our products. We shall do our best to help you. However, our technicians and salesmen are mainly responsible for maintaining our boards and providing relative technical support. If there are problems about Asterisk, please keep in touch with Digium Inc. for help.

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