

## **Installation and configuration of VoIP Asterisk - For Beginners**

**Authors:**

Mateusz Broncel

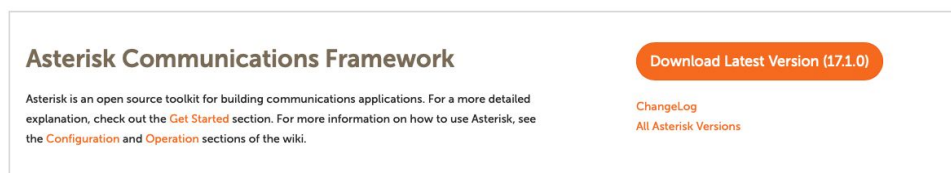
## I. Hardware requirements

- Linux System (for the beginners the best will be Ubuntu 19.10) - created on virtual machine or installed on hard drive
- Stable and fast internet connection
- Minimum 4GB of free space on your disc.

## II. Installation of Asterisk

**Before we start, this instruction DOES NOT explain anything that is in conf files of Asterisk. If you want know more about it just visit <https://wiki.asterisk.org/wiki/display/AST/Getting+Started>. You will get there every information about Asterisk and VoIP protocol. I hope this instruction will be helpful to understand the basics of creating your own Asterisk server.**

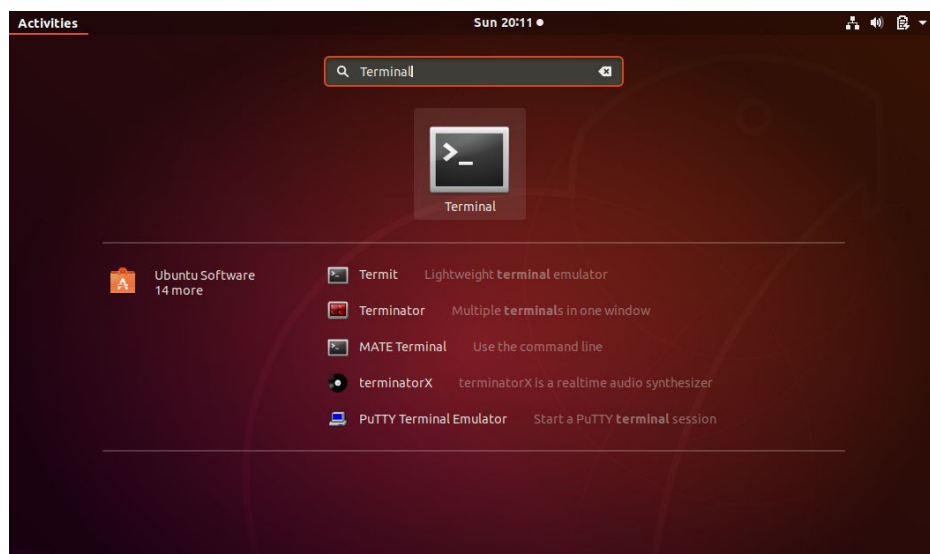
- **From website <https://www.asterisk.org> downloa the latest version of Asterisk.**



The file which is downloaded should be with `.tar` extension.



### *Open Terminal*



- ***Become a root using this command***

*>sudo su*

Terminal will be asking you for a root password (it is a same as you are logging into your computer)

```
parallels@parallels-Parallels-Virtual-Platform:~$ sudo su
[sudo] password for parallels:
root@parallels-Parallels-Virtual-Platform:/home/parallels#
```

If we don't log as a root installation process will be much harder for us(believe me). Our command line should look like this:

*root@user\_name:/directory1/directory2#*

***Our downloaded file should be saved on your desktop.***

**DO NOT UNTAR/UNZIP IT. LEAVE IT WITH .TAR EXTENSION**

- ***In terminal using cd command go to your Desktop directory***

In our case the command line should look like this :

```
root@parallels-Parallels-Virtual-Platform:/home/parallels# cd Desktop
```

- ***Move file to /usr/src/ using mv command***

After moving your tar. file, use *cd /usr/src/* command and untar your file using *tar zxvf file\_name* command.

```
root@parallels-Parallels-Virtual-Platform:/home/parallels/Desktop# mv asterisk-17-current.tar.gz /usr/src
root@parallels-Parallels-Virtual-Platform:/home/parallels/Desktop# cd /usr/src/
root@parallels-Parallels-Virtual-Platform:/usr/src# tar zxvf asterisk-17-current.tar.gz
```

- **Before we begin with Asterisk configuration we need to update our system and download necessary libraries:**

```
>apt-get update && apt-get upgrade
>apt-get install build-essential libssl-dev      zlib1g-dev
               libncurses5-dev
>apt-get install libedit-dev libedit2
>apt-get install uuid-dev
>apt-get install libxml2-dev
>apt-get install libsqlite3-dev
```

- After downloading all libraries go to *asterisk-17.1.0* directory

If you are using different version of Asterisk check the name of the file using this command

```
>ls
```

In return of this command you should see all the files and directories that are in */usr/src* directory

- Start your configuration with this command

```
>./configure --with-jansson-bundled
```

```
root@parallels-Parallels-Virtual-Platform:/usr/src# ls
asterisk                linux-headers-4.15.0-72
asterisk-17.1.0         linux-headers-4.15.0-72-generic
asterisk-17-current.tar.gz  linux-headers-4.15.0-74
linux-headers-4.15.0-34  linux-headers-4.15.0-74-generic
linux-headers-4.15.0-34-generic  parallels-tools-15.1.2.47123
root@parallels-Parallels-Virtual-Platform:/usr/src# cd asterisk-17.1.0
root@parallels-Parallels-Virtual-Platform:/usr/src/asterisk-17.1.0# ./configure
--with-jansson-bundled
```

During configuration process may occur some errors. If there is any error it should look like this:

```
configure: error: *** Please install the 'libedit' development package.
```

Solution to this problem is really straight forward. You have to install missing files using this command:

```
>apt-get install missing_file_name-dev
```

```
root@parallels-Parallels-Virtual-Platform:/usr/src/asterisk-17.1.0# apt-get install libedit
```

Unfortunately we are not able to cover all errors in this instruction. If our solution is not helping you visit <https://stackoverflow.com> website where you should get answer to your problem.

- ***Asterisk configuration should take from couple of seconds to couple of minutes. If the configuration is successful this logo should appear :***

```
configure: Menuselect build configuration successfully completed

      .$$$$$$$$$$$$$$$$$=..
    .7$7$7..          .7$7$:..
    .$$:..          ,7$.7
    .7$.          7$$$$          .$$77
    ..$$..          $$$$$          .$$$7
    .7$ .?.          $$$$$ .?.          7$$$..
    $.$.          .$$$7. $$$$7 .7$$$..          .$$$..
    .777.          .$$$$$77$$$$77$$$$$7.          $$$..
    $$$~          .7$$$$$$$$$$$$$7.          .$$$..
    .7$7          .7$$$$$$$7:          ?$$$..
    $$$          ?7$$$$$$$$$$$I          .$$$7
    $$$          .7$$$$$$$$$$$$$$$$$          :$$$..
    $$$          $$$$$$7$$$$$$$$$$$$$          .$$$..
    $$$          $$$ 7$$$7 .$$$          .$$$..
    $$$          $$$$7          .$$$..
    7$$$7          7$$$          7$$$
    $$$$          $$$          $$$$
    $$$7.          $$$ (TM)
    $$$$$$.          .7$$$$$ $
    $$$$$$$$$$7$$$$$$$$$. $$$$$$
    $$$$$$$$$$$$$$.

configure: Package configured for:
configure: OS type : linux-gnu
configure: Host CPU : x86_64
configure: build-cpu:vendor:os: x86_64 : pc : linux-gnu :
configure: host-cpu:vendor:os: x86_64 : pc : linux-gnu :
```

- *To install our Asterisk use this command:*

*>make install*

```
+----- Asterisk Installation Complete -----+
+
+   YOU MUST READ THE SECURITY DOCUMENT   +
+
+ Asterisk has successfully been installed. +
+ If you would like to install the sample  +
+ configuration files (overwriting any     +
+ existing config files), run:             +
+
+ For generic reference documentation:     +
+   make samples                           +
+
+ For a sample basic PBX:                  +
+   make basic-pbx                         +
+
+----- or -----+
+
+ You can go ahead and install the asterisk +
+ program documentation now or later run:   +
+
+       make progdocs                       +
+
+ **Note** This requires that you have     +
+ doxygen installed on your local system   +
+-----+
```

- *Last thing we need to do is to generate the configuration files which are necessary to configure our Asterisk*

*>make samples*

### III. Two softphones Asterisk configuration

Before we start I want to notice that we are will be changing our configuration files. That's why is recommended to save them to another text files before changes to avoid any unnecessary problems.

- **Go to */etc/asterisk* directory**

```
>cd /etc/asterisk
```

- **Open *modules.conf* file:**

```
>gedit modules.conf
```

Check if in this file you have this commands (they should be on top of the file):

```
[modules]
autoload=yes
```

If for some reasons you do not have them just write them at the bottom of the file and save it.

- **Open *extensions.conf* file:**

```
>gedit extensions.conf
```

Add that commands at the bottom of the file:

```
[from-internal]
exten=>6001,1,Dial(PJSIP/phone1,20)
exten=>6002,1,Dial(PJSIP/phone2,20)
```

- **Open *pjsip.conf* file:**

```
>gedit pjsip.conf
```

Add that commands at the bottom of the file::

```
[transport-tcp]
type=transport
protocol=tcp
bind=0.0.0.0:5080

[endpoint_internal](!)
type=endpoint
context=from-internal
disallow=all
allow=ulaw

[auth_userpass](!)
type=auth
auth_type=userpass

[aor_dynamic](!)
type=aor
max_contacts=1

[phone1](endpoint_internal)
auth=phone1
aors=phone1
[phone1](auth_userpass)
password=0000
username=phone1
[phone1](aor_dynamic)

[phone2](endpoint_internal)
auth=phone2
aors=phone2
[phone2](auth_userpass)
password=1111
username=phone2
[phone2](aor_dynamic)
```

- **We have to open all ports:**

```
>iptables -P INPUT ACCEPT
>iptables -P OUTPUT ACCEPT
```



```
>iptables -P FORWARD ACCEPT  
>iptables -F
```

- To open Asterisk console in terminal use that commands:

```
>asterisk -rvvvv  
>reload  
>core restart now  
>asterisk -rvvvv
```

#### IV. Installation and configuration of Zoiper(Desktop version)

- Download Zoiper from <https://www.zoiper.com/>



- **Choose linux version and download file .tar**



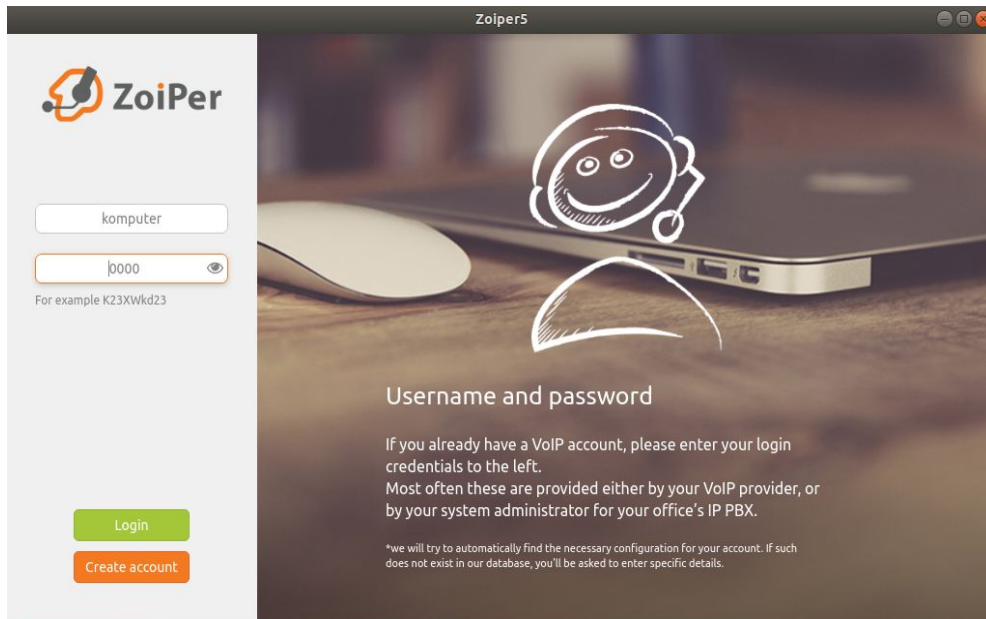
- **Save the file wherever you want and untar it.**
- **Double click on this icon**



### ★ Configuration of Zoipera

- Open the app and put your username and password that we set in *pjsip.conf* file

***username=phone1***  
***Password=0000***



- **Hostname or domain name is the IP address of the host on which we install our Asterisk. To check an IP address us this command**  
**>ifconfig**

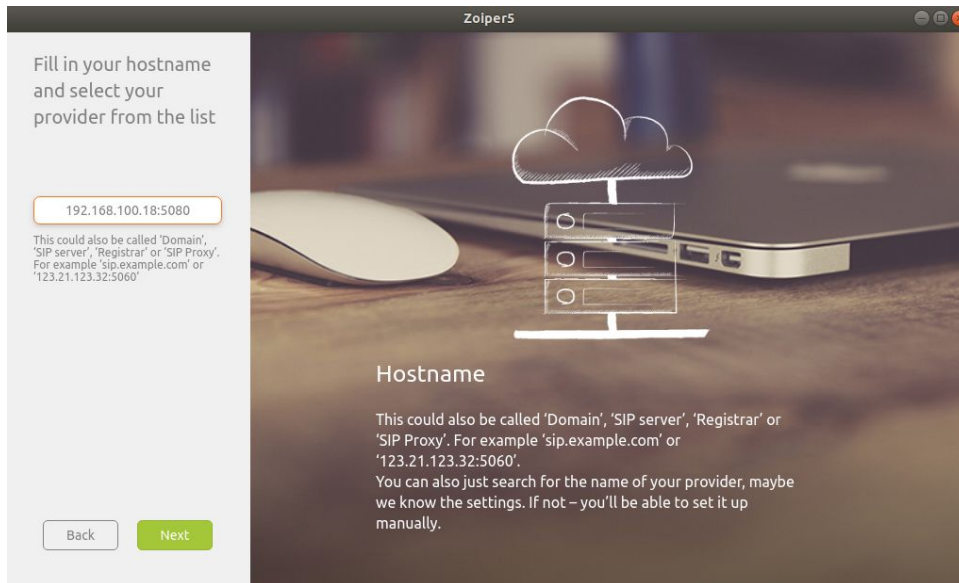
*Local IP address should looks like this 192.168.X.X ,however, it can be different on your computer and in your network.*

*If you created your Asterisk server on your virtual machine you have to change the type of access to network. In default is NAT and you have to change it to Bridge.*

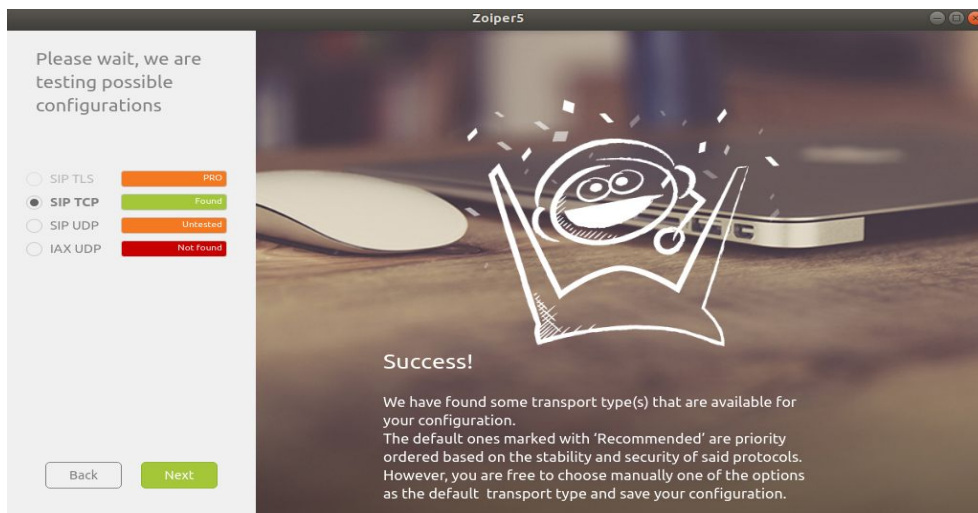
- **Put your IP address and port number like this:**

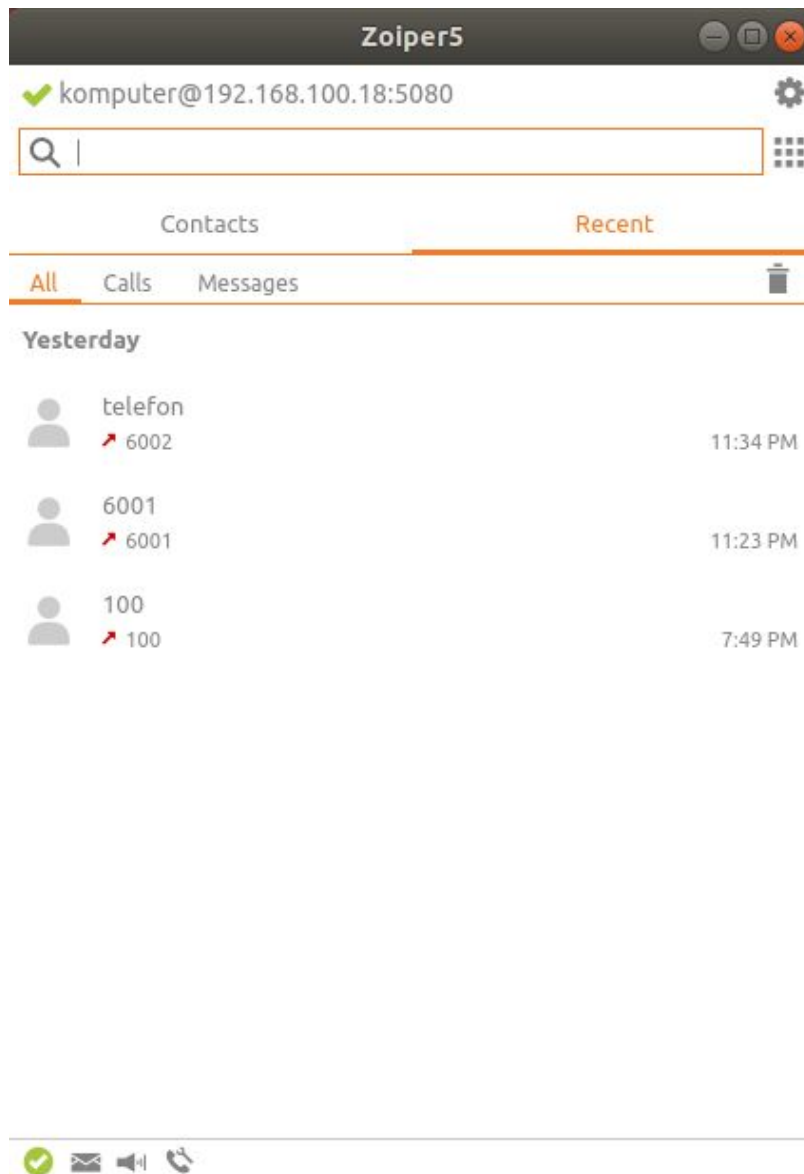
**192.168.100.18:5080**

*Default port for Asterisk is 5060, however, in this example we are installing softphone on the same host as the Asterisk server.*



- ***Now Zoiper will automatically check all possible configurations. If you did everything as in instruction you should get the same result as on screenshot below***





★ **Zoiper configuration (Android app)**

*Configuration is the same as for Desktop version.*

- **Pobierz aplikację Zoiper z Google Play**

00:23    ...

  VoLTE   70% 



## Zoiper IAX SIP VOIP Softphone

Securax LTD.

Zakupy w aplikacji

Odinstaluj

Otwórz

### Co nowego •

Ost. aktualizacja: 18 gru 2019



v. 2.11.15

- Fix for the automatic cancellation of the PUSH subscription;...

### Oceń tę aplikację

Podziel się swoją opinią



Napisz opinię

### Kontakt z deweloperem



00:22 71%

Ustawienie konta



Voip • Chat • Video

Username @ PBX/VoIP provider

telefon

Hasło

1111

Tworzenie konta

Lista dostawców



Logowanie  
za pomocą

III O <

00:23 71%

Ustawienie konta

Wpisz swoją nazwę hosta i wybierz dostawcę z listy

nazwa hosta lub dostawca

192.168.100.18:5080

Może to być nazwane 'Domain', 'SIP Server', 'Registrar' lub 'SIP Proxy'. Na przykład 'sip.example.com' albo '123.21.123.32:5060'.

Możesz też wyszukać nazwę swojego operatora. Być może znamy ustawienia.

Następny

III O <

00:23 71%

Ustawienie konta

Wybierz jedną z następujących konfiguracji

<input type="radio"/> SIP TLS	Nie znaleziono
<input checked="" type="radio"/> SIP TCP	Uznanie
<input type="radio"/> SIP UDP	Niesprawdzony
<input type="radio"/> IAX UDP	Nie znaleziono

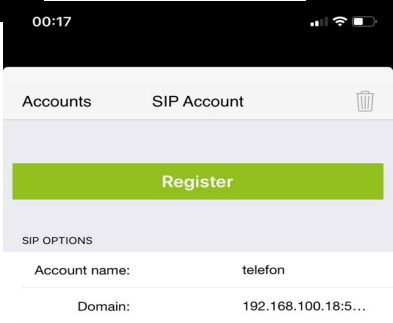
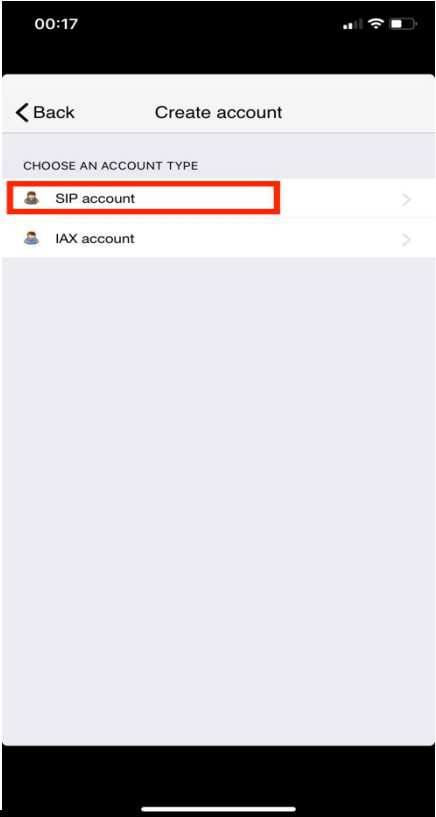
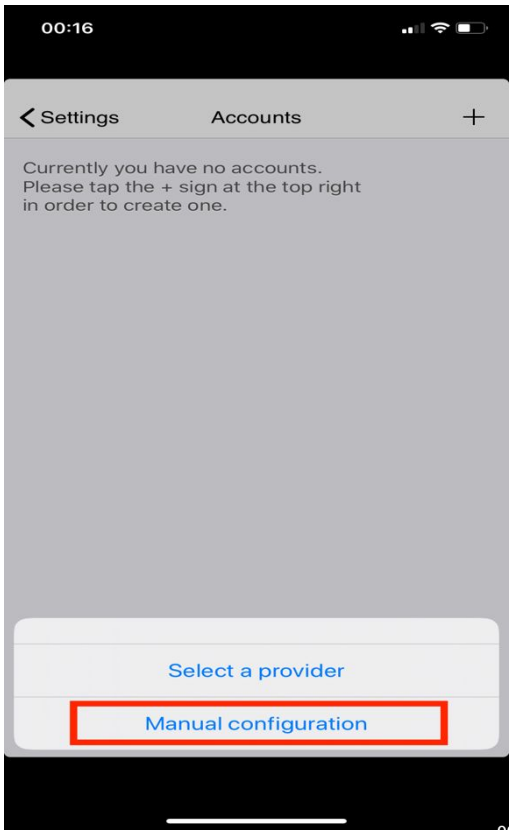
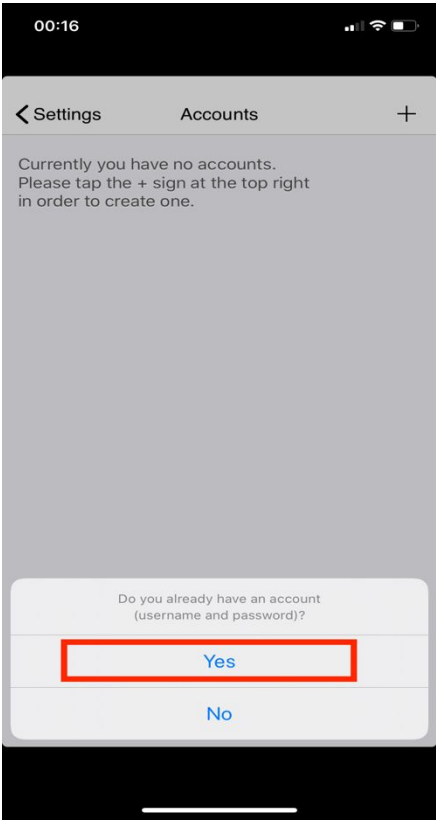
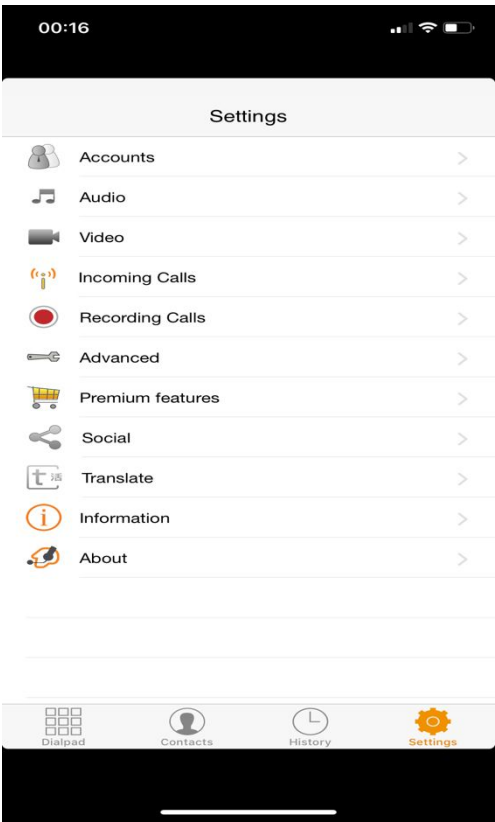
Koniec

III O <

## ★ Zoiper configuration ( iOS app)







**V. How to call**

- **Phone1 has 6001 number and Phone2 has 6002 number.**