Yealink

# Yealink Auto Provisioning User Guide

# SIP-T2xP/SIP-T3xG/VP530

# IP Phone Family

Version 1.3

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# Changes from Previous Versions

## Changes from Version 1.2

The following sections are new for this version:

- Customizing a Wallpaper on page 13
- Customizing a Screensaver on page 14
- Customizing Replace Rule File on page 17
- Customizing Dial-now File on page 19

Major updates have occurred to the following sections:

- Customizing Local Contact File on page 15
- Updating Firmware on page 20

# Introduction

Yealink IP phones are full-featured telephones that can be plugged directly into an IP network and can be used easily without manual configuration.

This guide shows you how to provision Yealink IP phones with the minimum settings required. Yealink IP phones support the FTP, TFTP, HTTP, and HTTPS protocols for file provisioning and are configured by default to use Trivial File Transfer Protocol (TFTP).

The purpose of this guide is to serve as a basic guidance for auto provisioning Yealink IP phones, including:

- Yealink VP530
- Yealink SIP-T38(G)
- Yealink SIP-T32(G)
- Yealink SIP-T28(P)
- Yealink SIP-T26(P)
- Yealink SIP-T22(P)
- Yealink SIP-T20(P)

The provisioning process outlined in this document applies to the firmware V70 or higher version of Yealink IP phones. If your phones are running a firmware version earlier than 70, please contact your system administrator for help.

# Getting Started

This section shows you how to get ready for the provisioning. The provisioning process discussed in this guide uses TFTP and a personal computer (PC) as the provisioning server.

To begin the provisioning process, the following are required:

- Obtaining Configuration Information
- Managing Configuration Files

# Obtaining Configuration Information

## Obtaining Configuration Files

Before beginning provisioning, you need to obtain the configuration files. There are 2 configuration files both of which are CFG formatted. We call these two files Common CFG file and MAC-Oriented CFG file. The phone will try to download these CFG files from the server during provisioning.

The MAC-Oriented CFG file is only effectual for the specific phone. It uses the 12-digit MAC address of the phone as the file name. For example, if the MAC address of the phone is 0015651130F9, then the MAC-Oriented CFG file name must be 0015651130F9.cfg. However, the Common CFG file is effectual for all the phones with the same model. It uses a fixed name "y0000000000XX.cfg" as the file name, where "XX" equals to the hardware version of the phone model, except 0 for T28 which is special.

The names of the Common CFG file for each phone model are:

| Phone Model | Common Configuration File |
|---|---|
| VP530 | y000000000023.cfg |
| SIP-T38G | y000000000038.cfg |
| SIP-T32G | y000000000032.cfg |
| SIP-T28(P) | y000000000000.cfg |
| SIP-T26(P) | y000000000004.cfg |
| SIP-T22(P) | y000000000005.cfg |
| SIP-T20(P) | y000000000007.cfg |

You can ask the distributor or the Yealink FAE for configuration files.

## Obtaining Phone Information

Before beginning the provisioning, you will also need the phone information. Such as, MAC address and the SIP account of the phone.

**MAC Address**: The unique 12-digit serial number of the phone. You can obtain it from the phone's bar code at the back of the phone.

**SIP Account**: This may include SIP credentials such as user name, password and the address of the phone's registration server. Ask your system administrator for SIP account information you need. Although SIP accounts may not be required to get the phone working, we strongly recommend using them.

# Managing Configuration Files

Auto provisioning enables Yealink IP phones to update automatically via downloading the Common CFG file and MAC-Oriented CFG file. Before provisioning you may need to edit and customize your configuration files.

## Editing Common CFG File

Common CFG file contains configuration parameters which apply to all phones of the same phone model, such as the language displays on the phone LCD screen.

Common.cfg

```
#!version:1.0.0.1

##File header "#!version:1.0.0.1" can not be edited or deleted.##

##############################################################################################
##                                    Network                                               ##
##############################################################################################

#Configure the WAN port type; 0-DHCP(default), 1-PPPoE, 2-Static IP Address;
#Require reboot;
network.internet_port.type =

#Configure the static IP address,submask,gateway and DNS server for the phone;
#Require Reboot;
network.internet_port.ip =
network.internet_port.mask =
network.internet_port.gateway =
network.primary_dns=
network.secondary_dns =

#Configure the username and password for PPPOE connection;
#Require reboot;
network.pppoe.user =
network.pppoe.password =

#Configure the PC port type;0-Router,1-Bridge(default);
#Require reboot;
network.bridge_mode =
```

The line beginning with "#" is considered to be a comment.

The file header "#!version:1.0.0.1" is not a comment, it must not be edited or be deleted and must be placed in the first line.

The parameters commonly edited in the Common CFG file (T2xP as an example) are detailed as following:

```
#######################################################
##                    Common CFG File                ##
#######################################################
#!version:1.0.0.1
##File header "#!version:1.0.0.1" cannot be edited or deleted and must be placed in the first line.##

#Configure the WAN port type; 0-DHCP(default), 1-PPPoE, 2-Static IP Address
#Require reboot

network.internet_port.type = 0

#Configure the static IP address, submask, gateway and DNS server for the phone
#Require reboot

network.internet_port.ip = 192.168.1.10

network.internet_port.mask = 255.255.255.0

network.internet_port.gateway =192.168.1.1

network.primary_ dns= 202.101.103.55

network.secondary_dns = 202.101.103.54

#Configure the duplex mode and the speed of the WAN port.
#0-Auto negotiate (default), 1-Full duplex 10Mbps, 2-Full duplex 100Mbps, 3-Half duplex 10Mbps, 4-Half duplex 100Mbps;

network.internet_port.speed_duplex =

#Configure the username and password for PPPOE connection.
#Require reboot

network.pppoe.user =

network.pppoe.password =

#Configure the PC port type; 0-Router, 1-Bridge (default)
#Require reboot

network.bridge_mode = 1

#LAN port as Router settings
#Require reboot

network.pc_port.ip = 10.0.0.1

network.pc_port.mask = 255.255.255.0

network.pc_port.speed_duplex = 0

network.pc_port.dhcp_server = 1

network.dchp.start_ip = 10.0.0.10
```

network.dchp.end_ip = 10.0.0.100

#Enable or disable the Plug and Play feature; 0-Disabled, 1-Enabled (default)

auto_provision.pnp_enable = 1

#Configure the domain name of the PNP server.

auto_provision.pnp_domain_name =

#Configure the value (manufacturer of the device) of the PNP subscribe message.

auto_provision.pnp_event_vendor =

#Configure the auto provision mode;
#0-Disabled (default), 1-Power on, 4-Repeatedly, 5-Weekly, 6-Power on + Repeatedly, 7-Power on + Weekly;

auto_provision.mode = 1

#Configure the interval (in minutes) for the phone to check new configuration files. It ranges from 1 to 43200, the default value is 1440.
#It is only applicable to "Repeatedly" and "Power on + Repeatedly" modes.

auto_provision.schedule.periodic_minute = 1440

#Configure the start time of the day for the phone to check new configuration files. The default value is 00:00.
#It is only applicable to "Weekly" and "Power on + Weekly" modes.
#If the desired start time of the day is seven forty-five a.m., the value format is 07:45.

auto_provision.schedule.time_from = 00:00

#Configure the end time of the day for the phone to check new configuration files. The default time is 00:00.
#It is only applicable to "Weekly" and "Power on + Weekly" modes.
#If the desired end time of the day is seven forty-five p.m., the value format is 19:45.

auto_provision.schedule.time_to = 00:00

#Configure the day of week for the phone to check new configuration files. The default vaule is 0123456.
#0-Sunday,1-Monday,2-Tuesday,3-Wednesday,4-Thursday,5-Friday,6-Saturday;
#It is only applicable to "Weekly" and "Power on + Weekly" modes.
#If the desired week is Monday, Tuesday and Wednesday, the value format is 012.

auto_provision.schedule.dayofweek = 0123456

#Configure the URL of the auto provisioning server.

auto_provision.server.url =

#Configure the username and password for downloading.

auto_provision.server.username =

auto_provision.server.password =

#Configure the name of the common file.
#T28P: y000000000000.cfg, T26P: y000000000004.cfg, T22P: y000000000005.cfg,
#T20P: y000000000007.cfg-T20P;

auto_provision.common_file_name =

#Enable or disable DHCP option mode; 0-Disabled, 1-Enabled (default);

auto_provision.dhcp_option.enable =

#Configure the value (manufacturer of the device) of DHCP option 60.

auto_provision.dhcp_option.option60_value =

#Configure the custom DHCP option number. It ranges from 128 to 254.

auto_provision.dhcp_option.list_user_options =

#Set the AES key used for decrypting the Common CFG file

auto_provision.aes_key_16.com =

#Set the AES key used for decrypting MAC-Oriented CFG file

auto_provision.aes_key_16.mac =

#Set the language used on the Web page

#The available values are: English, Chinese_S, Turkish, Portuguese, Spanish, Italian,
#French, Russian, Deutsch and Czech

lang.wui =

#Set the language used on the phone LCD screen

#The available values are: English (default), Chinese_S, Chinese_T, German, French,
#Turkish, Italiano, Polish, Spanish and Portuguese

lang.gui = English

#Set the web server access type (0-Disabled, 1-HTTP&HTTPS (default), 2-HTTP only,
#3-HTTPS only)
#Require reboot

network.web_server_type = 1

#Set the HTTP port (80 by default)
#Require reboot

network.port.http = 80

#Set the HTTPS port (443 by default)
#Require reboot

network.port.https = 443

#Set the new password (admin123) for the administrator

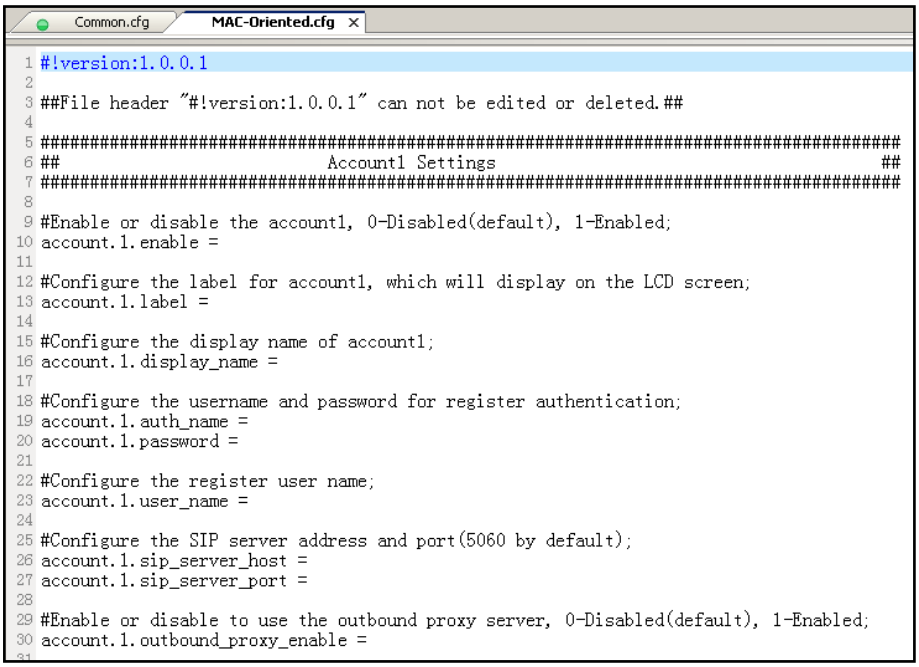
security.user_password = admin:admin123

#Set the new password (user123) for the user

security.user_password = user:user123

## Editing MAC-Oriented CFG File

MAC-Oriented CFG file contains configuration parameters which are expected to be updated per phone, such as the registration information.




```
#!version:1.0.0.1

##File header "#!version:1.0.0.1" can not be edited or deleted.##

##########################################################################################
##                                Account1 Settings                                     ##
##########################################################################################

#Enable or disable the account1, 0-Disabled(default), 1-Enabled;
account.1.enable =

#Configure the label for account1, which will display on the LCD screen;
account.1.label =

#Configure the display name of account1;
account.1.display_name =

#Configure the username and password for register authentication;
account.1.auth_name =
account.1.password =

#Configure the register user name;
account.1.user_name =

#Configure the SIP server address and port(5060 by default);
account.1.sip_server_host =
account.1.sip_server_port =

#Enable or disable to use the outbound proxy server, 0-Disabled(default), 1-Enabled;
account.1.outbound_proxy_enable =
```

The parameters commonly edited in the MAC-Oriented CFG file (Take T2xP IP phone as an example) are detailed as following:

```
##########################################################
##                MAC-Oriented CFG File                 ##
##########################################################
```

#!version:1.0.0.1

#File header "#!version:1.0.0.1" cannot be edited or deleted and must be placed in the first line.##

#Line1 settings

#Enable or disable the account1, 0-Disabled (Default), 1-Enabled

account.1.enable =

#Configure the label displayed on the LCD screen for account1

account.1.label =

#Configure the display name of account1

account.1.display_name =

#Configure the user name and password for register authentication

account.1.auth_name =

account.1.password =

#Configure the register user name

account.1.user_name =

#Configure the SIP server address and port (5060 by default)

account.1.sip_server_host =

account.1.sip_server_port = 5060

#Line2 settings

#Enable or disable the account2, 0-Disabled (Default), 1-Enabled

account.2.enable =

#Configure the label displayed on the LCD screen for account2

account.2.label =

#Configure the display name of account2

account.2.display_name =

#Configure the user name and password for register authentication

account.2.auth_name =

account.2.password =

#Configure the register user name

account.2.user_name =

#Configure the SIP server address and port (5060 by default)

account.2.sip_server_host =

account.2.sip_server_port = 5060

#Line3 settings (Except SIP-T20P IP phones)

#Enable or disable the account3, 0-Disabled (Default), 1-Enabled

account.3.enable =

#Configure the label displayed on the LCD screen for account3

account.3.label =

#Configure the display name of account3

account.3.display_name =

#Configure the user name and password for register authentication

account.3.auth_name =

account.3.password =

#Configure the register user name

account.3.user_name =

#Configure the SIP server address and port (5060 by default)

account.3.sip_server_host =

account.3.sip_server_port = 5060

#Line4 settings (For SIP-T28P, SIP-T38G and VP530 IP phones only)

#Enable or disable the account4, 0-Disabled (Default), 1-Enabled

account.4.enable =

#Configure the label displayed on the LCD screen for account4

account.4.label =

#Configure the display name of account4

account.4.display_name =

#Configure the user name and password for register authentication

account.4.auth_name =

account.4.password =

#Configure the register user name

account.4.user_name =

#Configure the SIP server address and port (5060 by default)

account.4.sip_server_host =

account.4.sip_server_port = 5060

#Line5 settings (For SIP-T28P and SIP-T38G IP phones only)

#Enable or disable the account5, 0-Disabled (Default) 1-Enabled

account.5.enable =

# Configure the label displayed on the LCD screen for account5

account.5.label =

#Configure the display name of account5

account.5.display_name =

#Configure the user name and password for register authentication

account.5.auth_name =

account.5.password =

#Configure the register user name

account.5.user_name =

#Configure the SIP server address and port (5060 by default)

account.5.sip_server_host =

account.5.sip_server_port = 5060

#Line6 settings (For SIP- T28P and SIP-T38G IP phones only)

#Enable or disable the account6, 0-Disabled (Default), 1-Enabled

account.6.enable =

#Configure the label displayed on the LCD screen for account6

account.6.label =

#Configure the display name of account6

account.6.display_name =

#Configure the user name and password for register authentication

account.6.auth_name =

account.6.password =

#Configure the register user name

account.6.user_name =

#Configure the SIP server address and port (5060 by default)

account.6.sip_server_host =

account.6.sip_server_port = 5060

# Customizing Resource Files

You can configure the phone features via the parameters in the configuration files. You can also customize your phone with a personalized ringtone, language or logo.

## Customizing a Ringtone

Yealink IP phones have built-in system ringtones and the default ring type is Ring1. You can change the ring type, or you can customize your personal ringtone and make it take effect via auto provisioning.

The ringtone file must be PCMU audio format, mono channel, 8K sample rate and 16 bit resolution.

The ringtone file format must be .wav.

All ringtone files uploaded must be within 100KB.

##########################################################

## Configure the access URL of the customizing ringtone ##

##########################################################

ringtone.url =

#ringtone.delete =http://localhost/all

#Delete all the custom ringtones uploaded through auto provisioning

ringtone.delete =

For example: enter “ftp://192.168.1.100/Ring9.wav” in the “ringtone.url =” field. During the auto provisioning process, the phone connects to the provisioning server “192.168.1.100”, and downloads the ringtone file “Ring9.wav”.

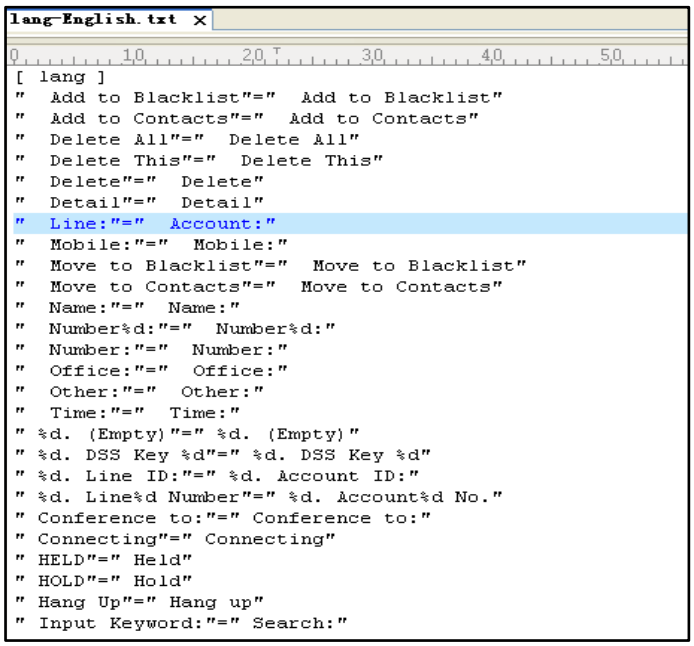
You'd better check that the ringtone file has been uploaded to the root directory of the server before provisioning.

For more information about customizing a ringtone file, you can refer to Customizing a Ringtone Using Cool Edit Pro in this guide.

## Customizing a LCD Language

You can modify the translation of the languages of the IP phones, but you cannot add new language to the phone. To modify the existing language, you need to edit the language file and upload it to the root directory of the provisioning server, then specify the access URL in the configuration file.

The following figure shows a portion of the language file:




```
##########################################################
##              Configure the access URL of the LCD language file              ##
##########################################################
gui_lang.url =
#gui_lang.delete = =http://localhost/all
#Delete all custom languages downloaded through auto provision
gui_lang.delete =
```

For example: enter "ftp://192.168.1.100/lang-English.txt" in the "gui_lang.url = " field. During the auto provisioning process, the phone connects to the provisioning server "192.168.1.100", and downloads the language file "lang-English.txt".

Available languages may be different between different firmware versions. Ask the distributor for the language template file.

## Customizing a LCD Logo

Yealink SIP-T2xP IP phones allow you to customize the logo displayed on the phone LCD screen (The SIP-T20P IP phones only support displaying the text logo). Ask the distributor for the logo file, or you can customize a .dob logo file. Upload the logo file to the root directory of the provisioning server and then specify the access URL in the configuration file:

```
##########################################################
##              Configure the access URL of the Logo File              ##
##########################################################
#(SIP-T2xP except T20P IP phones)
lcd_logo.url =
#lcd_logo.delete = =http://localhost/all
#Delete all custom logo files
lcd_logo.delete =
```

For example: enter "ftp://192.168.1.100/logo.dob" in the "lcd_logo.url =" field. During the auto provisioning process, the phone connects to the provisioning server "192.168.1.100", and downloads the logo file "logo.dob".

The following table lists the logo file format and resolution for each phone model:

| Phone Model | Logo File Format | Resolution |
|---|---|---|
| SIP-T28P | .dob | **<=236*82** 2 gray scale |
| SIP-T26P | .dob | **<=132*64** 2 gray scale |
| SIP-T22P | .dob | **<=132*64** 2 gray scale |

Upload the logo file to the root directory of the provisioning server. After provisioning, the phone boots up, and you will then find that the customized logo displays on the phone LCD screen.

For more information about customizing a Logo file, refer to Customizing a Logo File Using PictureExDemo in this guide.

## Customizing a Wallpaper

Yealink SIP-T3xG and VP530 IP phones allow you to customize the wallpaper displayed on the phone LCD screen. Upload the wallpaper image to the root directory of the provisioning server and then specify the access URL in the configuration file:

```
##########################################################
##              Configure the access URL of the wallpaper              ##
##########################################################
#(SIP-T3xG/VP530 IP phones only)
wallpaper_upload.url =
```

For example: enter "ftp://192.168.1.100/wallpaper.jpg" in the "wallpaper_upload.url =" field. During the auto provisioning process, the phone connects to the provisioning server "192.168.1.100", and downloads the wallpaper image "wallpaper.jpg".

The following table lists the wallpaper image format and resolution for each phone model:

| Phone Model | Wallpaper Image Format | Resolution |
|---|---|---|
| VP530 | .jpg/.png/.bmp | <=1920*1200 |
| SIP-T38G | .jpg/.png/.bmp | <=480*272 |
| SIP-T32G | .jpg/.png/.bmp | <=480*272 |

## Customizing a Screensaver

Yealink SIP-T3xG IP phones allow you to customize the screensaver displayed on the phone LCD screen. The screensaver will automatically start each time your phone is idle a certain period of time. You can stop the screensaver at any time by pressing any key. Upload the screensaver image to the root directory of the provisioning server and then specify the access URL in the configuration file:

```
##################################################
##              Configure the access URL of the screensaver              ##
##################################################
#(SIP-T3xG IP phones only)
screen_saver.pic.url =
```

For example: enter "ftp://192.168.1.100/screensaver.jpg" in the "screen_saver.pic.url =" field. During the auto provisioning process, the phone connects to the provisioning server "192.168.1.100", and downloads the screensaver image "screensaver.jpg".

The following table lists the screensaver image format and resolution for each phone model:

| Phone Model | Screensaver Image Format | Resolution |
|---|---|---|
| SIP-T38G | .jpg/.png/.bmp | <=480*272 |
| SIP-T32G | .jpg/.png/.bmp | <=480*272 |

## Customizing Local Contact File

Yealink IP phones allow you to batch upload contact data by auto provisioning. You can create multiple contacts using the supplied template local contact file.

When editing the template local contact file, remember the following:

- <contactData> indicates the start of a contact file and </contactData> indicates the end of a contact file (Applicable to SIP-T2xP/T3xG IP phones).
- Add groups between <groupinfo> and </groupinfo> (applicable to SIP-T2xP/T3xG IP phones).
- Add groups between <root_group> and </ root_group> (Applicable to VP530 IP phones).
- Add local contacts between <group> and </group> (Applicable to SIP-T2xP/T3xG IP phones).
- Add local contacts between <root_contact> and </ root_contact> (Applicable to VP530 IP phones).
- Add contacts to the blacklist between <blacklist> and </blacklist> (Applicable to SIP-T2xP/T3xG IP phones).
- When specifying the desired line for the contact, the valid values are 0 and line ID, 0 stands for Auto.
- When specifying a ring tone for the contact or the group, the valid values are Auto, Resource:RingN.wav (for the default system ring tone) and Custom:Name.wav (For the customized ring tone).

**To customize a local contact file:**

1. Open the template file using an ASCII editor.
2. For each contact that you wish to add, add the following string to the file, each starting on a separate line:

   <contact sDisplayName="" sOfficeNumber="" sMobilNumber="" sOtherNumber="" sLine="" sRing="" group=""/> *#(For T2xP IP phones)*

   <contact sDisplayName="" sOfficeNumber="" sMobilNumber="" sOtherNumber="" sLine="" sRing="" group="" photoDefault="" photoSelect=""/> *#(For T3xG IP phones)*

   <contact display_name="" office_number="" mobile_number="" other_number="" line="" ring="" group_id_name="" default_photo="" selected_photo=""/> *#(For VP530 IP phones, entering "blacklist" in the "group_id_name ="""field to add the contacts to blacklist)*

   **Where**:

   sDisplayName=""/display_name="" specifies the name of the contact (This value cannot be blank or duplicated).

   OfficeNumber=""/office_number="" specifies the office number of the contact.

sMobilNumber=""/mobile_number="" specifies the mobile number of the contact.

sOtherNumber=""/other_number="" specifies the other number of the contact.

sLine=""/line="" specifies the line you want to add this contact to.

sRing=""/ring="" specifies the ring tone for this contact.

group=""/group_id_name="" specifies the existing group you want to add the contact to.

photoDefault=""/default_photo="" specifies the customized photo for the contact. The value format is "Config:name.png".

photoSelect=""/selected_photo="" specifies the system photo for the contact.

3. For each group that you want to add, add the following string to the file, each starting on a separate line:

   <group name="" ring=""/> *#(For T2xP IP phones)*

   <group name="" Ring=""/> *#(For T3xG IP phones)*

   <group display name="" ring=""/> *#(For VP530 IP phones)*

   **Where:**

   group name=""/group display name="" specifies the name of the group.

   ring=""/Ring="" specifies the desired ring tone for this group.

4. For each contact that you want to add to the blacklist, add the following string to the file, each starting on a separate line:

   <contact sDisplayName="" sOfficeNumber="" sMobilNumber="" sOtherNumber="" sLine=""/> *#(For T2xP/T3xG IP phones)*

5. Specify the values within double quotes.
6. Save the change.

After editing the template local contact file, upload the file to the root directory of the provisioning server and then specify the access URL in the configuration file.

The following shows an example of the contactData.xml file used for SIP-T2xP and SIP-T3xG IP phones:

```
<contactData>
 <group>
  <contact sDisplayName="Mary" sOfficeNumber="123" sMobilNumber="456"
  sOtherNumber="2201" sLine="0" sRing="Auto" group="Family"
  photoDefault="Config:family.png" photoSelect="0"/>
  <contact sDisplayName="Damy" sOfficeNumber="124" sMobilNumber="789"
  sOtherNumber="2202" sLine="1" sRing="Resource:Ring2.wav" group=""
  photoDefault="" photoSelect="3"/>
  <contact sDisplayName="Jack" sOfficeNumber="125" sMobilNumber="234"
  sOtherNumber="2203" sLine="2" sRing="Custom:lin.wav" group="Family"
  photoDefault="" photoSelect="2"/>
 </group>
 <blacklist>
  <contact sDisplayName="Ada" sOfficeNumber="8800" sMobilNumber="1234"
  sOtherNumber="0000" sLine="0"/>
 </blacklist>
</contactData>
```

```
#########################################################
##                  Upload local contact file          ##
#########################################################
```

local_contact.data.url =

For example: enter "ftp://192.168.1.100/ ContactData.xml" in the "local_contact.data.url =" field. During the auto provisioning process, the phone connects to the provisioning server "192.168.1.100", and downloads the contact file "ContactData.xml".

Yealink IP phones support both the .xml and .csv formats.

## Customizing Replace Rule File

You can create replace rules directly in the configuration files, or create multiple replace rules using the supplied template replace rule file. When the IP phones download the replace rule file, the existing replace rules on the phone will be overwritten.

When editing the template replace rule file, remember the following:

- <DialRule> indicates the start of the template file and </DialRule> indicates the end of the template file (Applicable to SIP-T2xP/T3xG IP phones).

- <dialrule> indicates the start of the template file and </dialrule> indicates the end of the template file (Applicable to VP530 IP phones).
- Create replace rules between <DialRule> (<dialrule>) and </DialRule> (</dialrule>).
- When specifying the desired line(s) to apply the replace rule, the valid values are 0 and line IDs. The digit 0 stands for all lines, multiple line IDs are separated by comma.
- Do not modify the file name.
- Refer to the phone-specific user guide for the basic expression syntax of the replace rule.

**To customize a replace rule file:**

1. Open the template file using an ASCII editor.
2. For each replace rule you wish to add, add the following string to the file, each starting on a separate line:

   <Data Prefix="" Replace="" LineID=""/> *#(For T2xP/T3xG IP phones)*

   <data rule="" replace="" lines=""/> *#(For VP530 IP phones)*

   **Where:**

   Prefix=""/rule="" specifies the numbers to be replaced.

   Replace=""/replace="" specifies the alternate string.

   LineID=""/lines="" specifies the desired line(s) for this rule. When leaving it blank, this replace rule will apply to all lines.
3. Specify the values within double quotes.
4. Save the change.

The following is an example of a replace rule file used for SIP-T2xP and SIP-T3xG IP phones:

```
<DialRule>
   <Data Prefix="1" Replace="05928665234" LineID=""/>
   <Data Prefix="2(xx)" Replace="002$1" LineID="0"/>
</DialRule>
```

```
##########################################################
##                    Upload replace rule file                    ##
##########################################################
```

dialplan_replace_rule.url =

For example: enter "ftp://192.168.1.100/DialPlan.xml" in the "dialplan_replace_rule.url =" field. During the auto provisioning process, the phone connects to the provisioning server "192.168.1.100", and downloads the replace rule file "DialPlan.xml".

## Customizing Dial-now File

You can create multiple dial-now rules using the supplied template dial-now file. After creating the dial-now rules, save the dial-now file to the root directory of the provisioning server and specify the access URL in the configuration files.

When editing a dial-now file, remember the following:

- <DialNow> indicates the start of a template and </DialNow> indicates the end of a template (applicable to SIP-T2xP/T3xG IP phones).
- <dialnow> indicates the start of a template and </dialnow> indicates the end of a template (applicable to VP530 IP phones).
- Create dial-now rules between <DialNow> (<dialnow >) and </DialNow> (</dialnow>).
- When specifying the desired line(s) for the dial-now rule, the valid values are 0 and line ID. 0 stands for all lines, multiple line IDs are separated by comma.
- Do not modify the file name.
- Refer to the phone-specific user guide for the basic expression syntax of the dial-now rule.

**To customize a dial-now file:**

1. Open the template file using an ASCII editor.
2. For each dial-now rule you wish to add, add the following string to the file, each starting on a separate line:

   <Data DialNowRule="" LineID=""/> *#(For T2xP/T3xG IP phones)*

   <data rule="" lines=""/> *#(For VP530 IP phones)*

   **Where:**

   DialNowRule=""/ rule="" specifies the dial-now rule.

   LineID=""/ lines="" specifies the desired line(s) for this rule. When leaving it blank, this rule will apply to all lines.
3. Specify the values within double quotes.
4. Save the change.

The following is an example of a dial-now file used for SIP-T2xP and SIP-T3xG IP phones:

```
<DialNow>
  <Data DialNowRule="1234" LineID="1"/>
  <Data DialNowRule="52[0-6]" LineID="1"/>
  <Data DialNowRule="xxxxxx" LineID=""/>
</DialNow>
```

```
#######################################################
##                  Upload dial-now file             ##
#######################################################
```

dialplan_dialnow.url =

For example: enter "ftp://192.168.1.100/DialNow.xml" in the "dialplan_dialnow.url =" field. During the auto provisioning process, the phone connects to the provisioning server "192.168.1.100", and downloads the dial-now file "DialNow.xml".

## Updating Firmware

Yealink IP Phones allow you to update the firmware manually via web user interface, or batch update the firmware via the auto provisioning. To batch update the phones' firmware via auto provisioning, ask the distributor for the firmware file, upload it to the root directory of the provisioning server, and then specify the access URL in the configuration files.

```
#######################################################
##          Configure the access URL of the firmware file          ##
#######################################################
```

firmware.url =

For example: enter "ftp://admin:password@192.168.1.100/2.70.0.35.rom" in the "firmware.url =" field. During the auto provisioning process, the phone connects to the provisioning server "192.168.1.100" ("admin" as the authentication user name and "password" as the authentication password), and downloads the firmware file "2.70.0.35.rom".

The following table lists the firmware version for each phone mode:

| Phone Model | Firmware Version |
|---|---|
| VP530 | 23.x.x.x.rom |
| SIP-T38G | 38.x.x.x.rom |
| SIP-T32G | 32.x.x.x.rom |
| SIP-T28(P) | 2.x.x.x.rom |
| SIP-T26(P) | 6.x.x.x.rom |
| SIP-T22(P) | 7.x.x.x.rom |
| SIP-T20(P) | 9.x.x.x.rom |

# Configuring a TFTP Server

Yealink IP Phones support using the FTP, TFTP, HTTP and HTTPS protocols to download the configuration files. TFTP server is used by default. You can use any protocol for provisioning. The following section takes the TFTP server as an example.

We recommend that you can use 3CDaemon or TFTPD32 tool as a TFTP server. 3CDaemo and TFTPD32 are free applications for Windows. You can download the 3CDaemon software at: http://www.oldversion.com/3Com-Daemon.html and TFTPD32 at: http://tftpd32.jounin.net/.

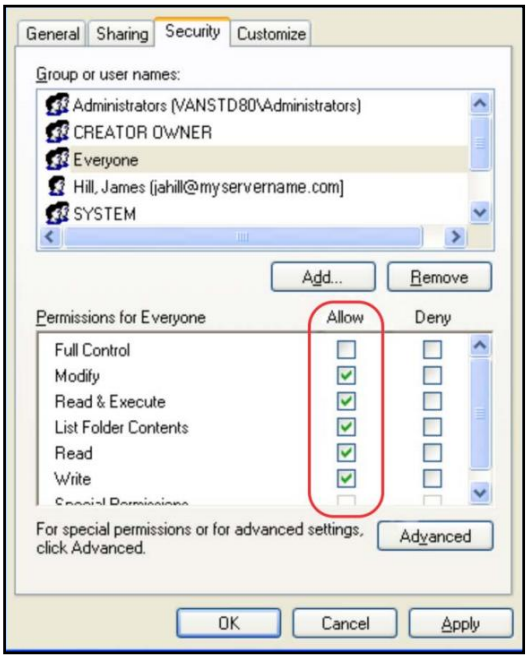
We provide a simple instruction of configuring a FTP server using 3CDaemon tool in the Configuring a FTP server section.

## Preparing a Root Directory

**To prepare a root directory:**

1. Create a root TFTP directory on the local computer.
2. Place the configuration files to this root directory.
3. Set the security permissions for the TFTP directory folder.
4. You need to define a user or a group name, and set the permissions: read, write, and modify files. Security permissions vary by organization.

   An example of using the Windows platform is shown as below:

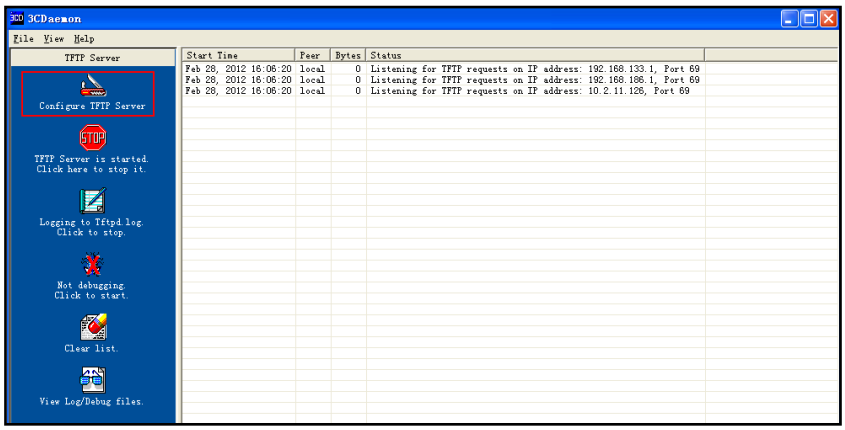


# Configuring a TFTP Server

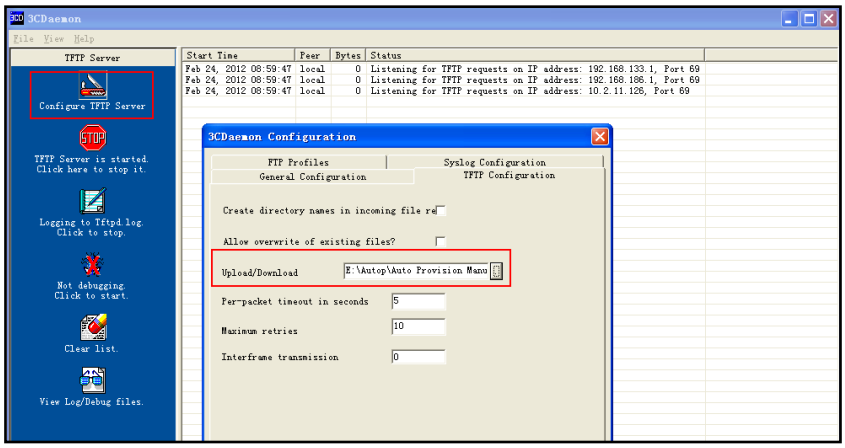
If you have a 3CDaemon application installed on your computer, use it directly. Otherwise, download and install it.

**To configure a TFTP server:**

1. Double click the 3CDaemon.exe to start the application. A configuration page shows as below:




2. Select **Configure TFTP Server**. Click the button to locate the TFTP root directory on the computer:




3. Click the **Confirm** button to finish configuring the TFTP server. The server URL "tftp://IP/" (Here "IP" means the IP address of the provisioning server, for example, "tftp://192.168.1.100/") is capable of TFTP downloading.

# Obtaining the Address of Provisioning Server

Yealink IP phones support to obtain the provisioning server address during bootup process in the following ways:

- Zero Touch
- Plug and Play (PNP) Server
- DHCP Options
- Phone Flash

When the phone boots up, it will go by the above process to try to obtain the provisioning server address. The priority of obtaining the provisioning server address is as following: Zero Touch -->PNP server -->DHCP options (Custom option --> option 66 -->option 43) -->Phone Flash.

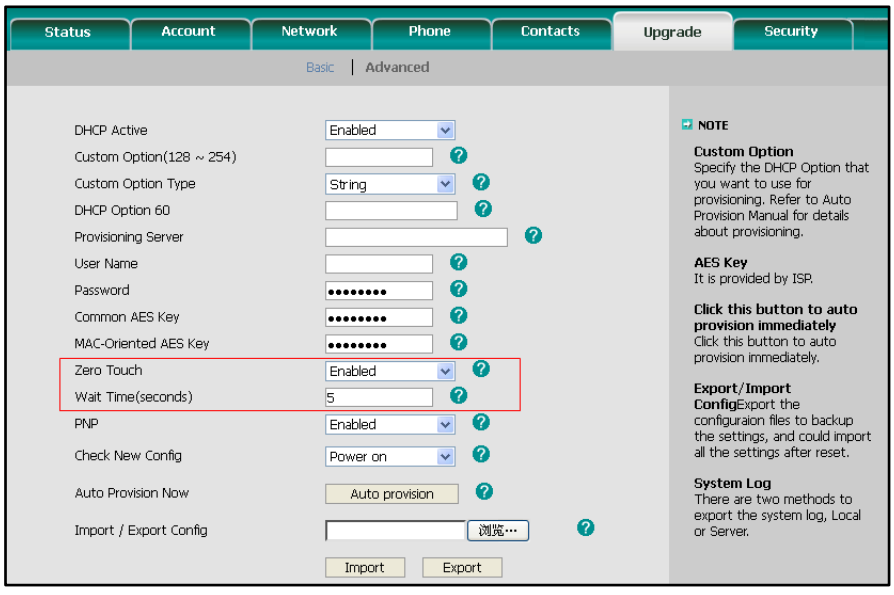
The following sections detail each process.

## Zero Touch

Zero Touch allows you to configure the network and provisioning server address via phone user interface during bootup. This feature is helpful when there is a system failure on the phone. To use Zero Touch, you need to make sure that this feature is enabled.

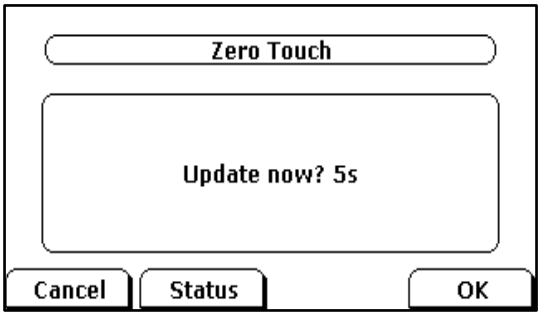
**To configure the Zero Touch via web user interface:**

1. Click on **Upgrade** ->**Advanced**.
2. Select **Enabled** from the pull-down list of **Zero Touch**.
3. Set the waiting time (in seconds) in the **Wait Time (seconds)** filed.

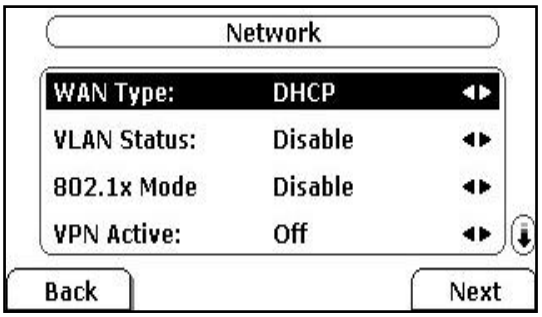


4. Click **Confirm** to accept the change.

When the Zero Touch is enabled, there will be a configure wizard during the bootup:



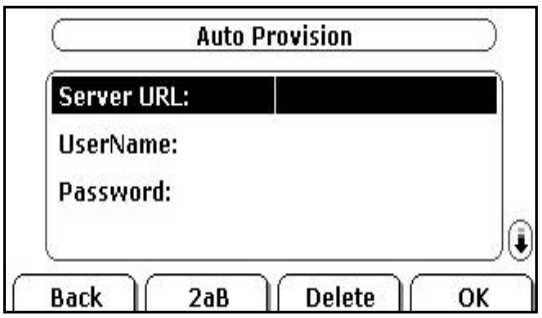

Press the **OK** soft key. Then you can configure the network via phone user interface:




Press the **Next** soft key after finishing the network configuration.

Configure the provisioning server address, authentication username (optional) and password (optional) in the **Auto Provision** interface.

A sample screenshot is shown as below:

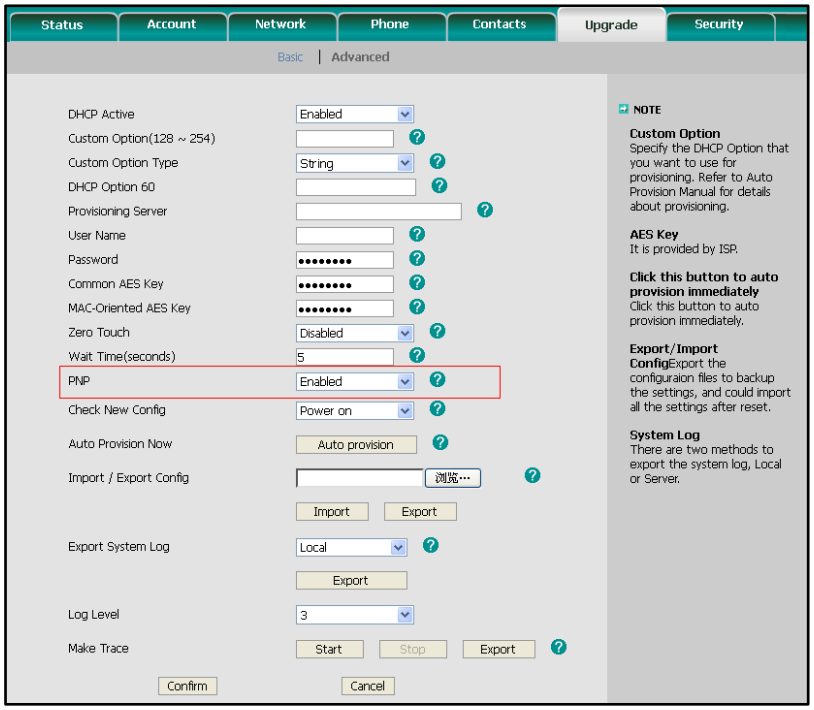


# Plug and Play (PNP) Server

Yealink IP phones support obtaining the provisioning server address from the PNP server. The phone broadcast the PNP subscribe message to obtain a provisioning server address during bootup. To use Plug and play, make sure this feature is enabled.

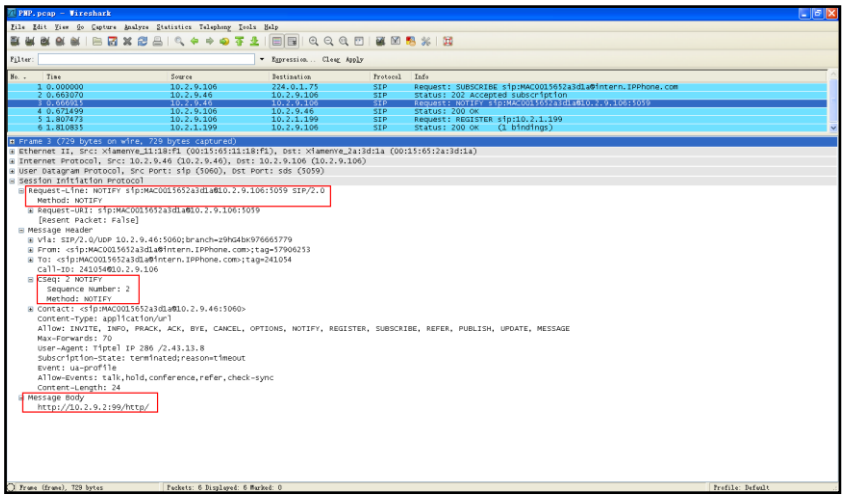
**To configure the PNP via web user interface:**

1. Click on **Upgrade** ->**Advanced**.
2. Select **Enabled** from the pull-down list of **PNP**.




3. Click **Confirm** to accept the change.

Any PNP server activated in the network responses with a **SIP NOTIFY** message and an address of the provisioning server contained in the message body. The phone can then connect to the provisioning server and performs the provisioning process.



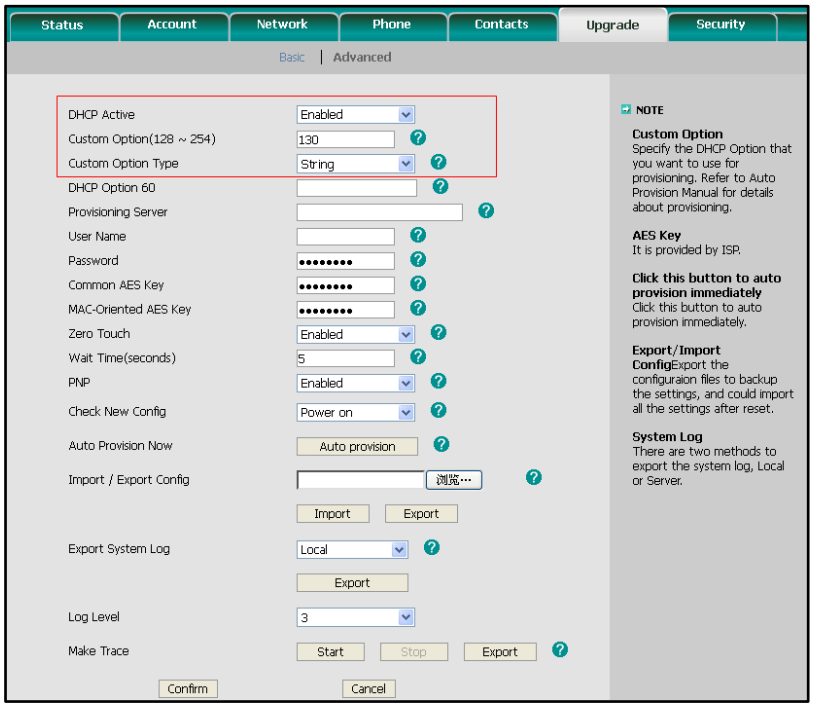
# DHCP Options

Yealink IP phones support obtaining the provisioning server address from DHCP options. You can configure the phone to obtain a provisioning server address from a custom DHCP option, or the phone will automatically detect the Option 66 or Option 43. The Option 66 is used to identify the TFTP server.

To obtain a provisioning server by a custom DHCP option, make sure that the DHCP option is set properly.

**To configure the DHCP option via web user interface:**

1. Click on **Upgrade** ->**Advanced**.
2. Select **Enabled** from the pull-down list of **DHCP Active**.
3. Enter the value in the **Custom Option (128~254)** field.
4. Select the desired type from the pull-down list of **Custom Option Type**.




5. Click **Confirm** to accept the change.

A valid Custom Option is from 128 to 254. The Custom Option Type must be in accordance with the one defined in the DHCP server.

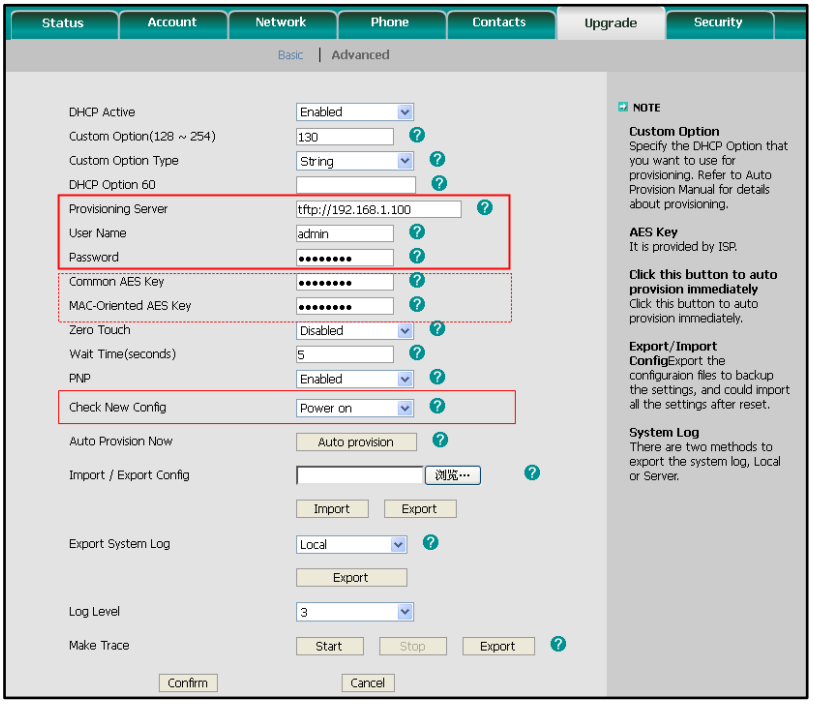
# Phone Flash

Yealink IP phones support obtaining a provisioning server address from the phone flash.

To obtain a provisioning server address by reading the phone flash, make sure the configuration is set properly.

**To configure the Phone Flash via web user interface:**

1. Click on **Upgrade** ->**Advanced**.
2. Enter the URL, username and password of the provisioning server in the **Provisioning Server**, **User Name** and **Password** fields (the authentication username and password is optional).
3. Select **Power on** from the pull-down list of **Check New Config**.




4. Click **Confirm** to accept the change.

If the configuration files have been AES encrypted, the AES Keys will be needed. The Common AES Key is for decrypting the Common CFG file. The MAC-Oriented AES Key is for decrypting the MAC-Oriented CFG file. The keys must be 16 bytes and the supported characters are: 0 ~ 9, A ~ Z, a ~ z and the following special characters are also supported: # $ % * +, - . : = ? @ [ ] ^ _ { } ~.

Reboot the phone after the above configurations. During bootup, the phone will connect to the provisioning server, using the authentication user name and password filled in the **User Name** and **Password** fields. If the phone fails to get any information from the phone flash, the current round of auto provisioning process will stop.

# Downloading and Verifying Configurations

## Downloading Configuration Files

Once obtained a provisioning server address from one of the ways introduced above, the phone will connect to the provisioning server and download the configuration files. During the provisioning process, the phone will try to download the Common CFG file firstly, and then try to download the MAC-Oriented CFG file from the root directory of the provisioning server. If resource files need to be updated and the access URL has been specified in the configuration files. The phone will then try to download and update the resource files.

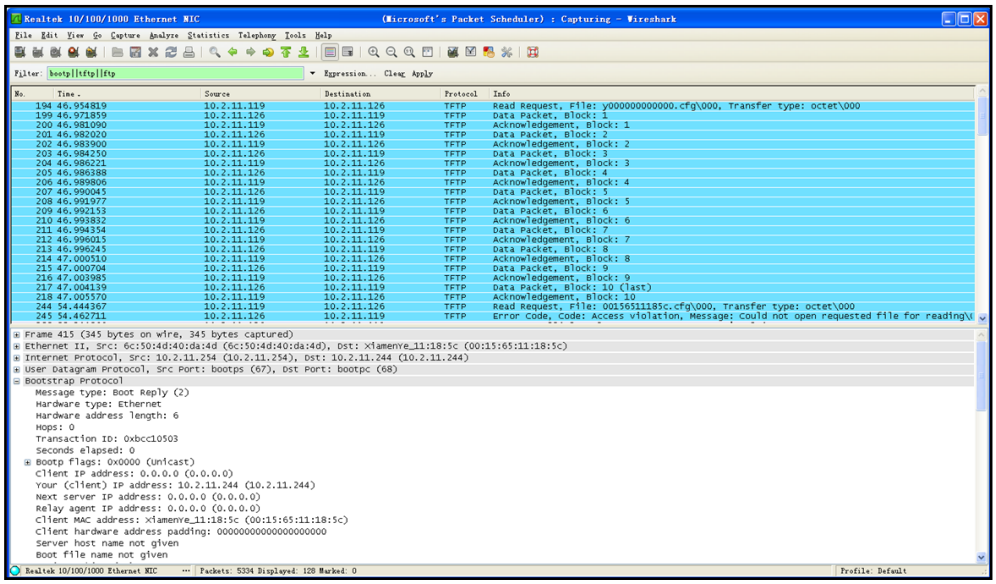
## Verifying Configurations

After auto provisioning, the phone boots up. You can then verify the update via phone user interface, or you can verify it via web user interface of the phone. For more information, refer to the user guide of the Yealink IP phones.

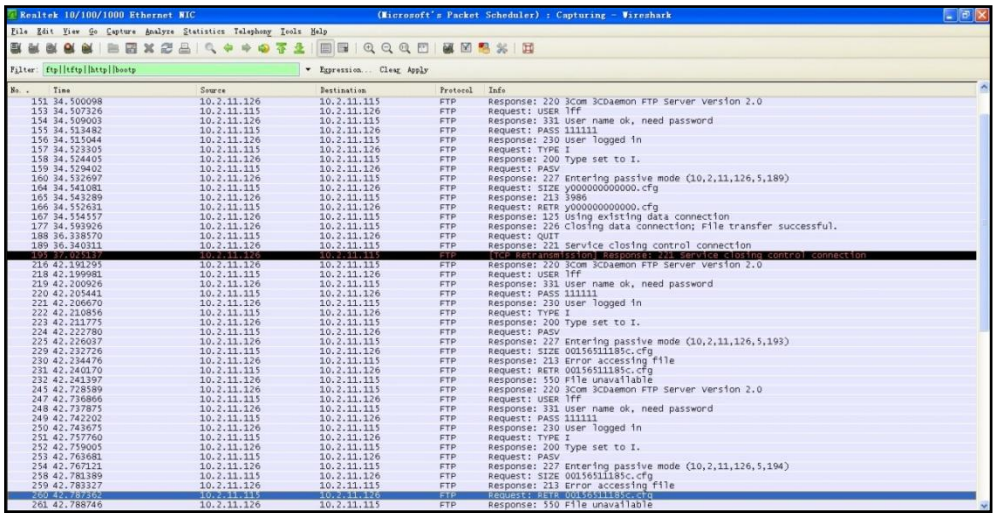
During the auto provisioning process, you can monitor the downloading request and response message by a WinPcap tool.

If the MD5 value of the CFG file is different from that of the last one, the phone updates the configuration and then reboots. Otherwise, the phone gives up update and doesn't reboot.

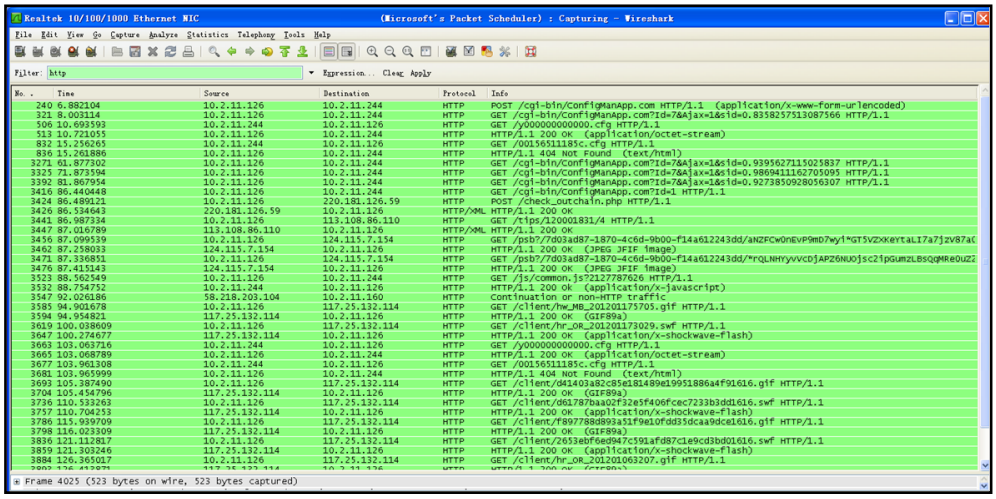
**Example1:** Yealink IP phone downloads configuration files from the TFTP server.



**Example 2:** Yealink IP phone downloads the configuration files from the FTP server.




**Example 3:** Yealink IP phone downloads the configuration files from the HTTP server.



# Troubleshooting

This chapter provides general troubleshooting information to help you solve the problems you might encounter when deploying the phones.

If you require additional information or assistance with the deployment, contact your system administrator.

**Why does the phone fail to download the configuration file?**

- Ensure that the Auto Provisioning feature is enabled.
- Check that the provisioning server or the network is reachable.
- Check that authentication credentials configured on the phone are correct.
- Ensure that the configuration file exists on the provisioning server.

**Why does the provisioning server return a HTTP 404?**

- Check that the provisioning server is properly set up.
- Revisit the path configuration (URL rewriting, port).
- Ensure that the requested file exists on the provisioning server.

**Why does the phone display "Network Unavailable"?**

- Ensure that the Ethernet cable is plugged into the Internet port on the phone and the ethernet cable is not loose.
- Ensure that the switch or hub in your network is operational.
- Check the configuration of network is properly set in the configuration files.
- Contact your system administrator for more information.

**Why does the permission denied when uploading files to a FTP server?**

- Ensure that the root directory of the FTP server contains the full directory path.
- On the provisioning server, check the file permissions, if necessary, change the file permission.
- Contact your system administrator for more information.

**Why does not the phone obtain the IP address from DHCP server?**

- Ensure that your settings are right on the DHCP Server.
- Ensure your phone is configured to obtain the IP address via DHCP server.
- Contact your system administrator for more information.

**Why does not the phone download the ringtone?**

- Make sure that the ringtone file's type is .wav format.
- Make sure that the size of the ringtone file is no larger than the phone support.
- Check the ringtone's properties are all right for the phone.
- Ensure the network is available and the root directory is right for downloading.
- Ensure that the ringtone file exists on the provisioning server.

**Why does not the phone apply the configurations?**

- Ensure the configuration files are different from the last ones.
- Ensure the phone have downloaded the configuration files.
- Ensure the parameters are correctly set in the configuration files.
- Contact your system administrator for more information.

# Glossary

**MAC Address:** A Media Access Control address (MAC address) is a unique identifier assigned to network interfaces for communications on the physical network segment.

**MD5:** The MD5 Message-Digest Algorithm is a widely used cryptographic hash function that produces a 128-bit (16-byte) hash value.

**DHCP:** Dynamic Host Configuration Protocol (DHCP) is a network configuration protocol for hosts on Internet Protocol (IP) networks. Computers that are connected to IP networks must be configured before they can communicate with other hosts.

**FTP:** File Transfer Protocol (FTP) is a standard network protocol used to transfer files from one host to another host over a TCP-based network, such as the Internet. It is often used to upload web pages and other documents from a private development machine to a public web-hosting server.

**HTTP:** The Hypertext Transfer Protocol (HTTP) is an application protocol for distributed, collaborative, hypermedia information systems. HTTP is the foundation of data communication for the World Wide Web.

**HTTPS:** Hypertext Transfer Protocol Secure (HTTPS) is a combination of Hypertext Transfer Protocol (HTTP) with SSL/TLS protocol. It provides encrypted communication and secure identification of a network web server.

**TFTP:** Trivial File Transfer Protocol (TFTP) is a simple protocol to transfer files. It has been implemented on top of the User Datagram Protocol (UDP) using port number 69.

**AES:** Advanced Encryption Standard (AES) is a specification for the encryption of electronic data.

**URL:** A uniform resource locator or universal resource locator (URL) is a specific character string that constitutes a reference to an Internet resource.

**XML:** Extensible Markup Language (XML) is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.

# Appendix

## Configuring a FTP Server

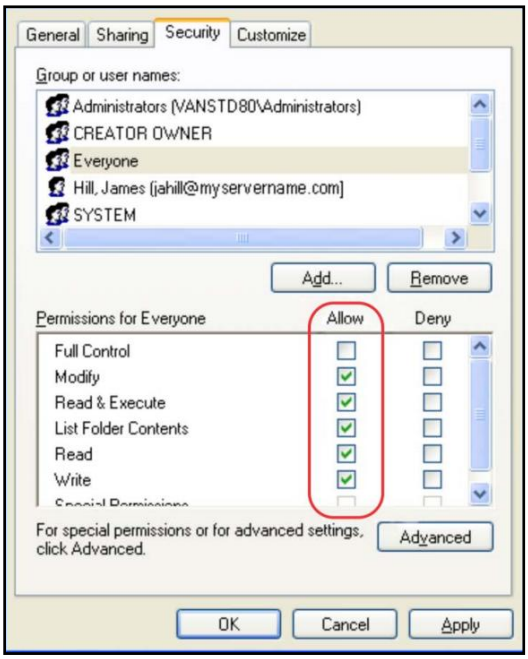
This chapter shows you how to configure a FTP server using 3CDaemon and how to configure a HTTP server using HFS tool. You can download the 3CDaemon software at: http://www.oldversion.com/3Com-Daemon.html and HFS at: http://www.snapfiles.com/get/hfs.html

### Preparing a Root Directory

**To prepare a root directory:**

1. Create a root FTP directory on the local computer.
2. Place the configuration files to this root directory.
3. Set the security permissions for the FTP directory folder.
4. You need to define a user or group name, and set the permissions: read, write, and modify files. Security permissions vary by organization.

   An example of using the Windows platform is shown as below:



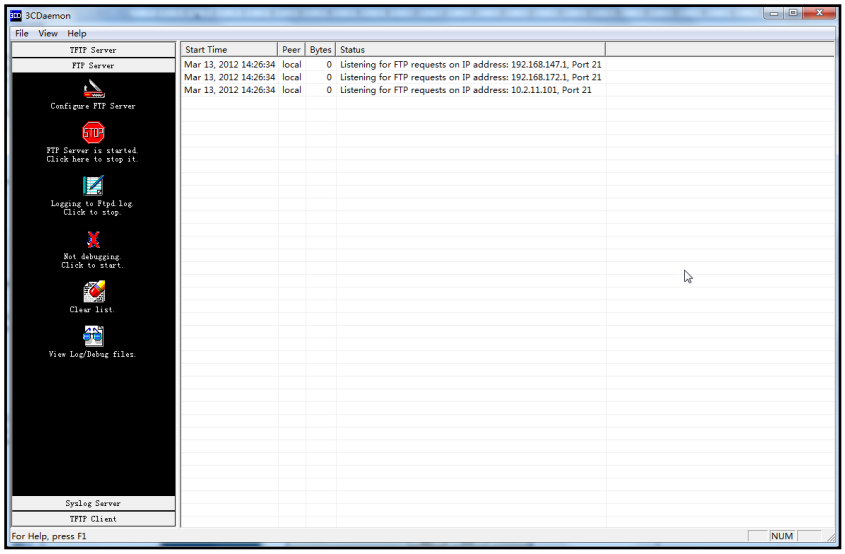
# Configuring a FTP server

If you have a 3CDaemon application installed on your computer, open it now, or otherwise, download and install it.

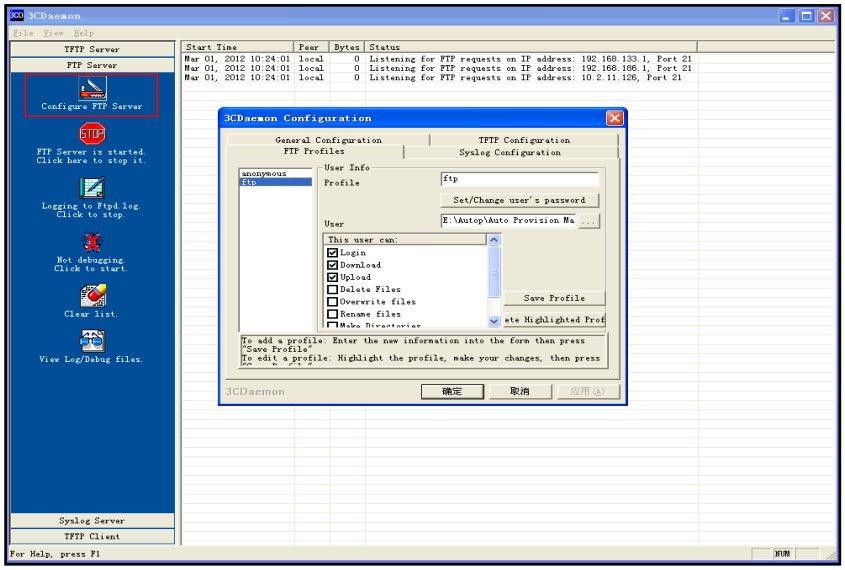
**To configure a FTP server:**

1. Double click the 3CDaemon.exe to start the application.
2. Click the **FTP Server** button on the left of the main page.

   A screenshot is shown as below:




3. Select **Configure FTP Server**.
4. Click the button to locate the FTP root directory on the computer:

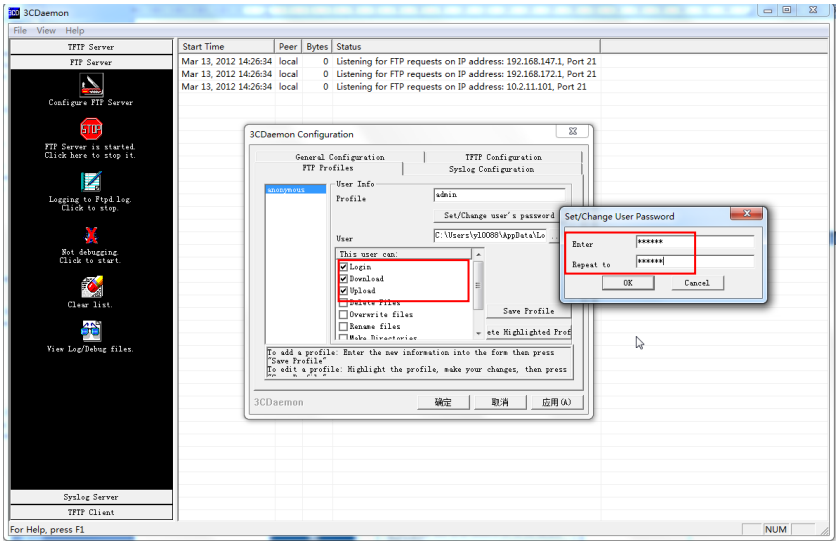



5. Enter the new authentication username in the **Profile** filed.
6. Click the **Set/Change user's password** button to set the password in the pop-up

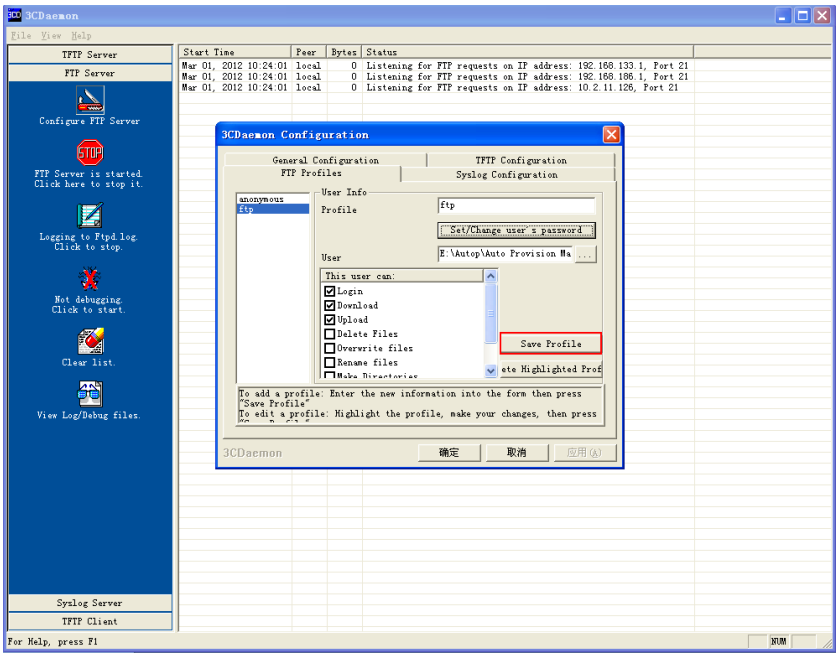
dialogue box.

7. Click the **OK** button to save.

8. Mark the check boxes of **Login**, **Download** and **Upload** to make sure the FTP user has the login, download and upload permission.




9. Click the **Save Profile** button to save the settings and finish the configurations.




10. Click the **Confirm** button to finish configuring the FTP server.

    The server URL "ftp://username:password@IP/" (Here "IP" means the IP address of the provisioning server, "username" and "password" are the authentication for FTP download. For example, "ftp://admin:123456@192.168.1.100/") is capable of FTP download.

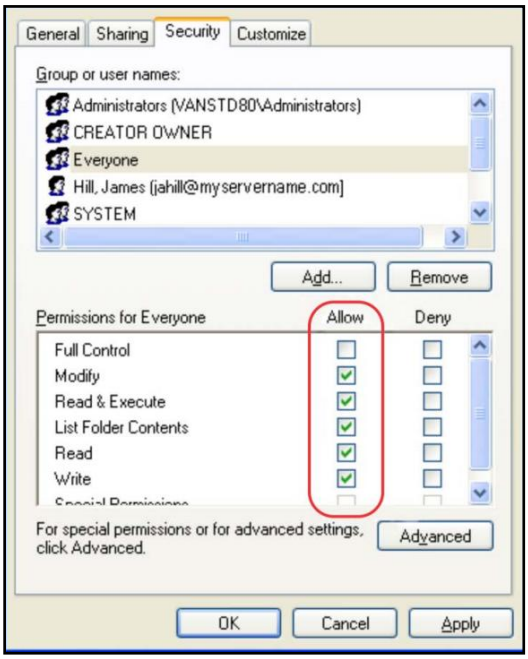
# Configuring a HTTP Server

## Preparing a Root Directory

**To prepare a root directory:**

1. Create a root HTTP directory on the local computer.
2. Place the configuration files to this root directory.
3. Set the security permissions for the HTTP directory folder.
4. You need to define a user or group name and set the permissions: read, write, and modify files. Security permissions vary by organization.

   An example of using the Windows platform is shown as below:



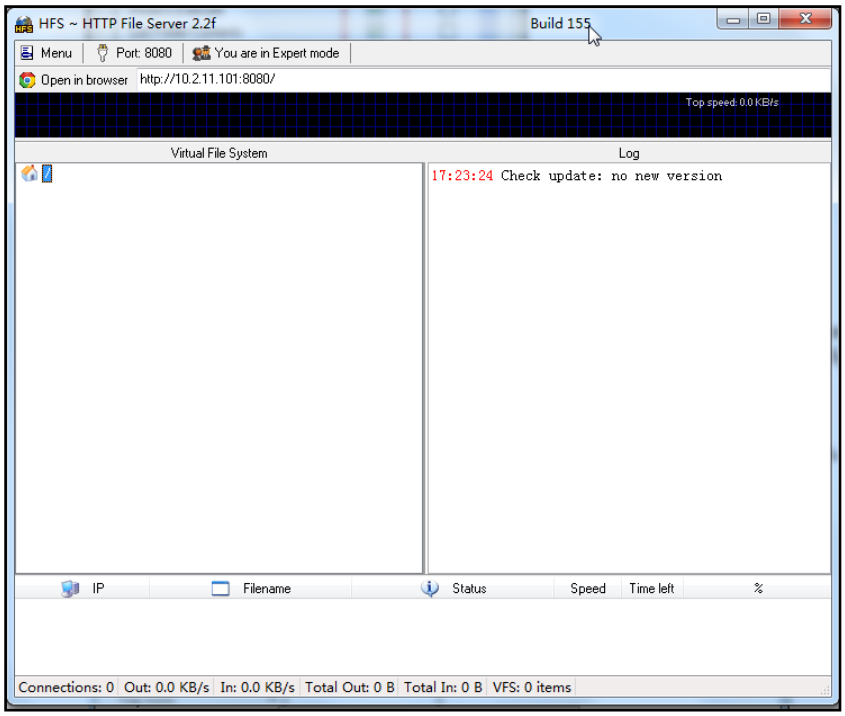

## Configuring a HTTP Server

HFS tool is an executable application, so you don't need to install it.

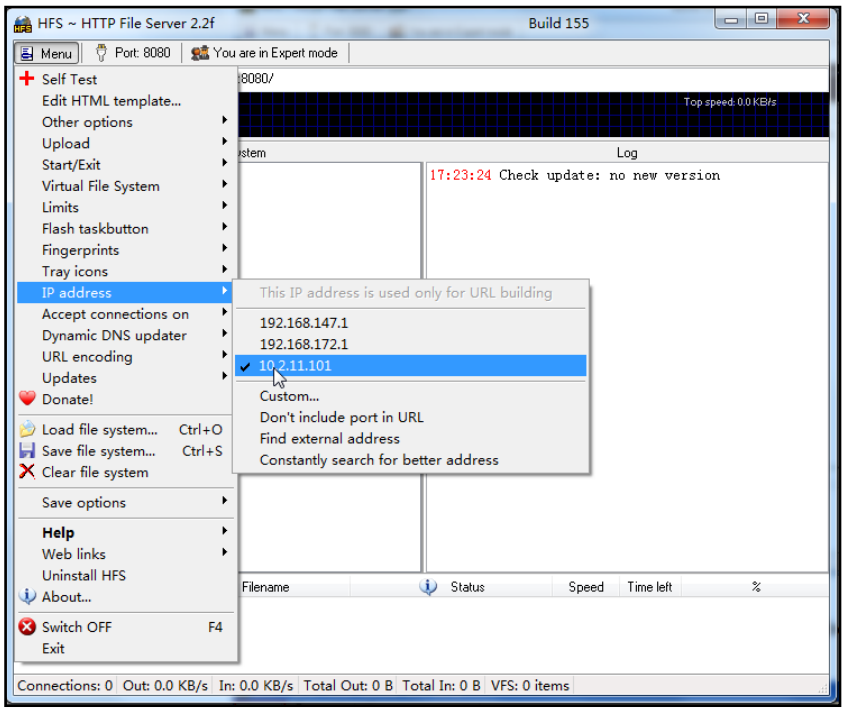
**To configure a HTTP server:**

1. Download the application file to your local directory, double click the hfx.exe.

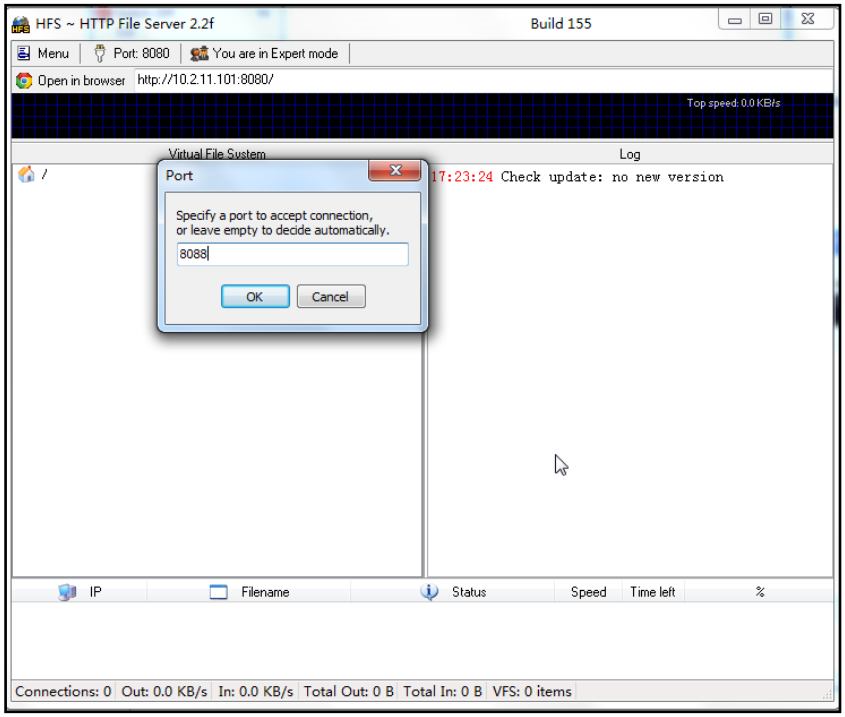
The main configuration page is shown as below:



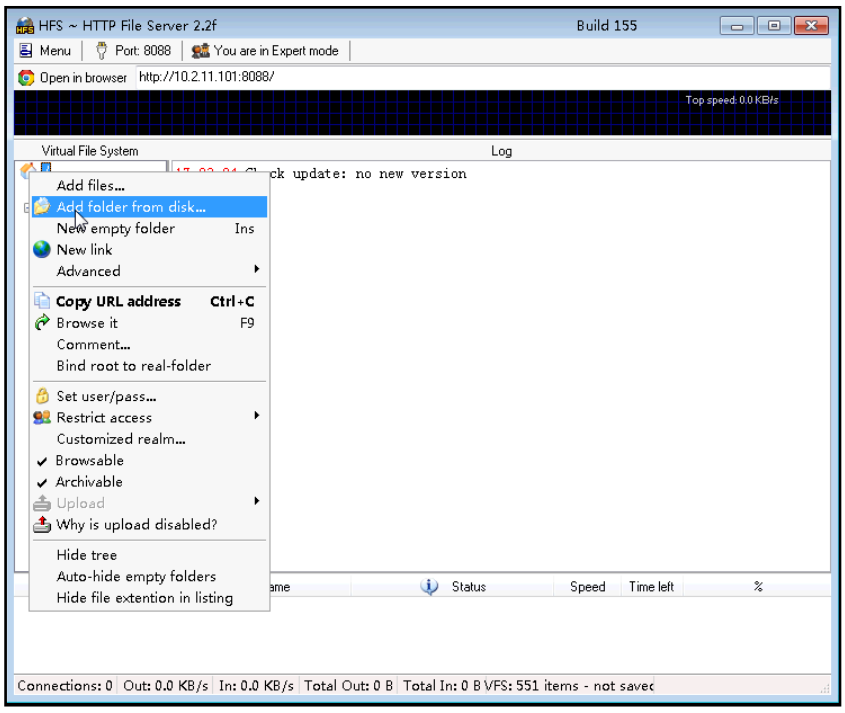

2. Click **Menu** in the main page and select the IP address of the PC from **IP address**.



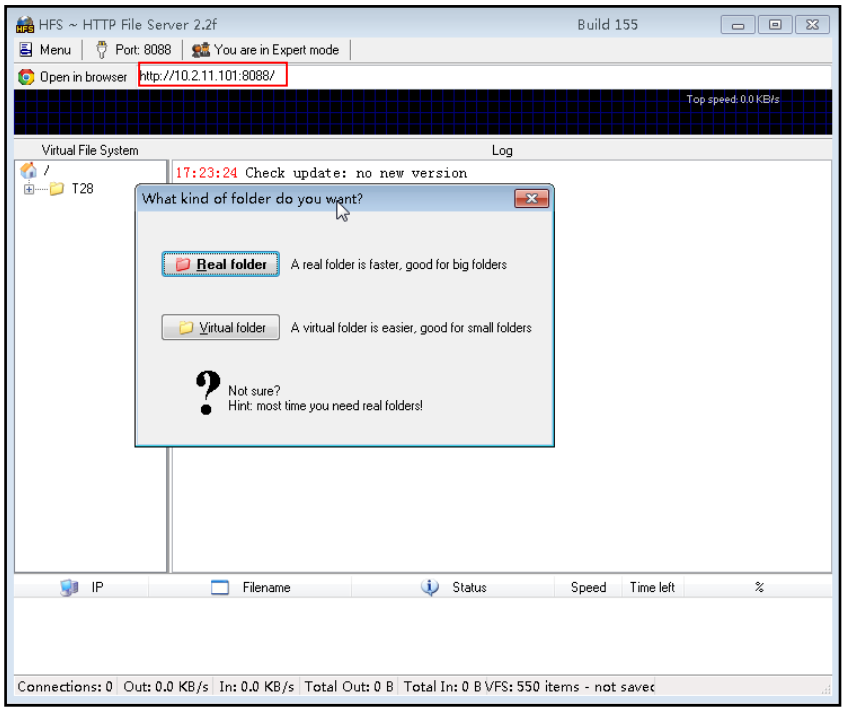
The default HTTP port is 8080. You can also reset the HTTP port (make sure the port isn't used before you reset).




3. Right click the icon on the left of the main page, select **Add folder from disk** to add the HTTP Server root directory.



4. Locate the root directory from the computer system. Select the kind of folder which you want.




5. Check the server URL "http:// IP:Port/" in the "**Open in browser**" address bar (For example, the server URL "http:// 10.2.11.101:8088/" is showed on the screenshot) . We recommend that you can fill the server URL in the address bar of the web browser and then press <Enter> key to check the HTTP server before provisioning.

Yealink IP phones also support the Hypertext Transfer Protocol with SSL/TLS (HTTPS) protocol for auto provisioning. HTTPS protocol provides the encrypted communication and secure identification. For more information about installing and configuring an Apache HTTPS Server, refer to the network resource.

# Configuring a DHCP server

This section shows you how to configure a DHCP server for windows using DHCP Turbo. You can down this software from website at: http://www.tucows.com/preview/265297 and install it following the setup wizard.

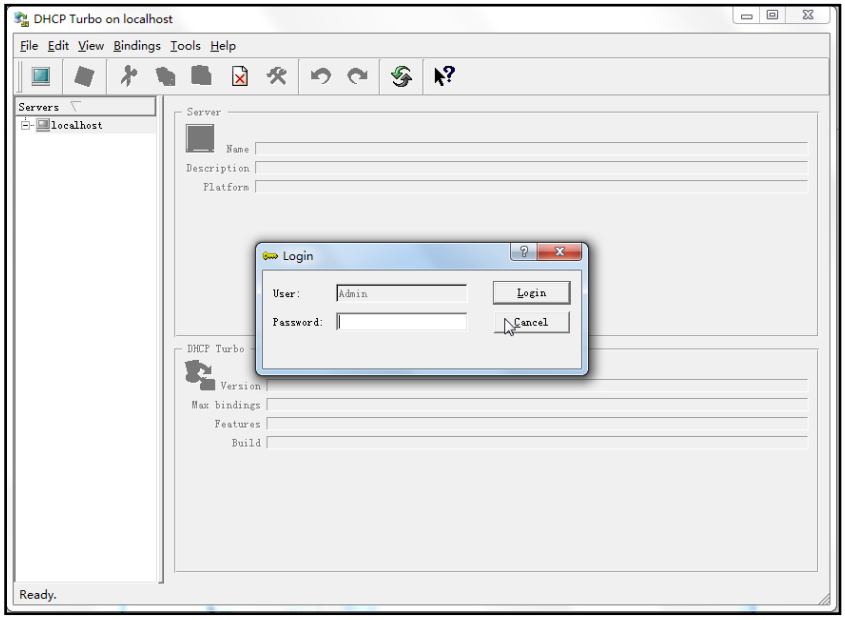
Before configuring the DHCP Turbo, make sure that:

- The firewall on the PC is disabled.
- There is no DHCP server in your local system.

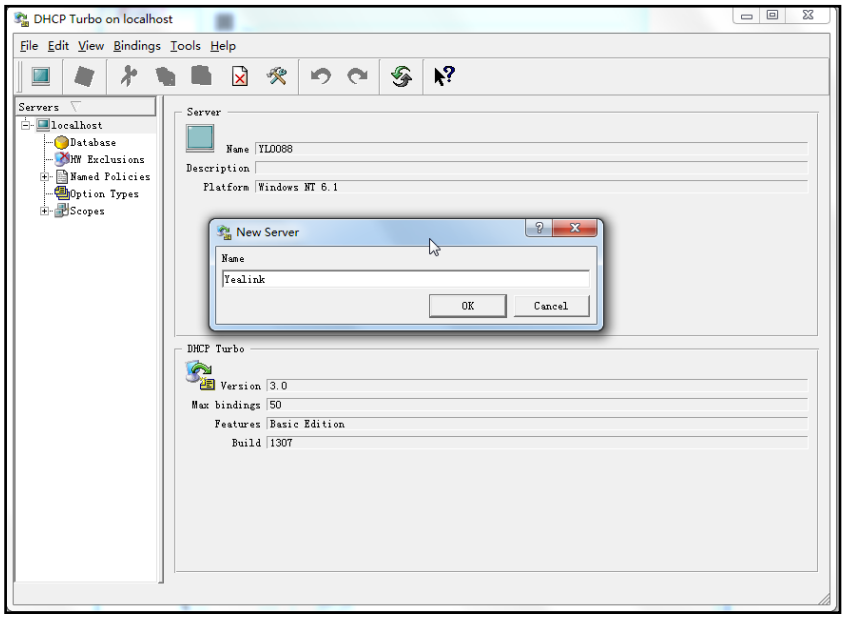
**To configure the DHCP Turbo:**

1. To start the DHCP Turbo application, double click the **localhost**.

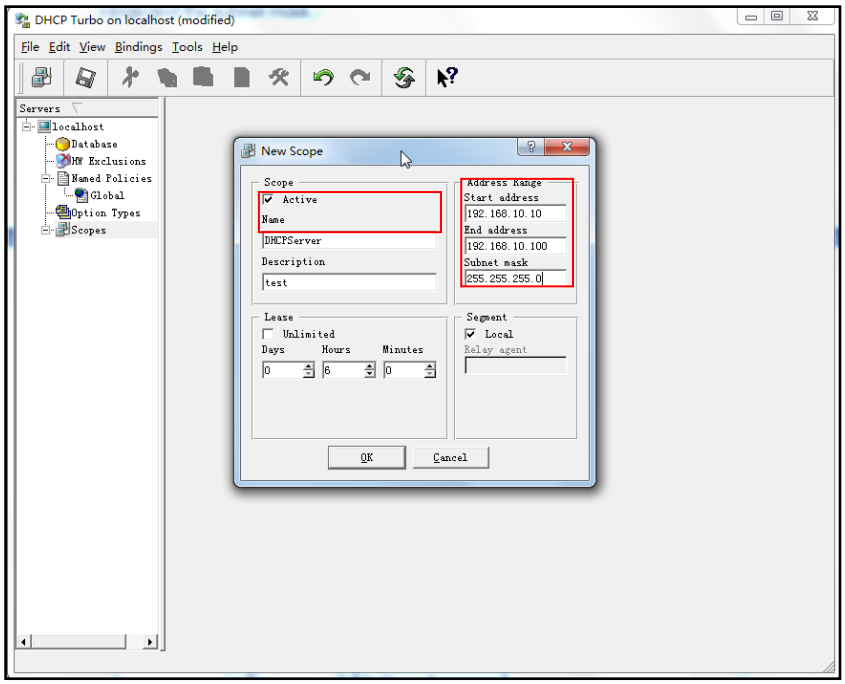
2. Click the **Login** button (the login password is blank) to log in.



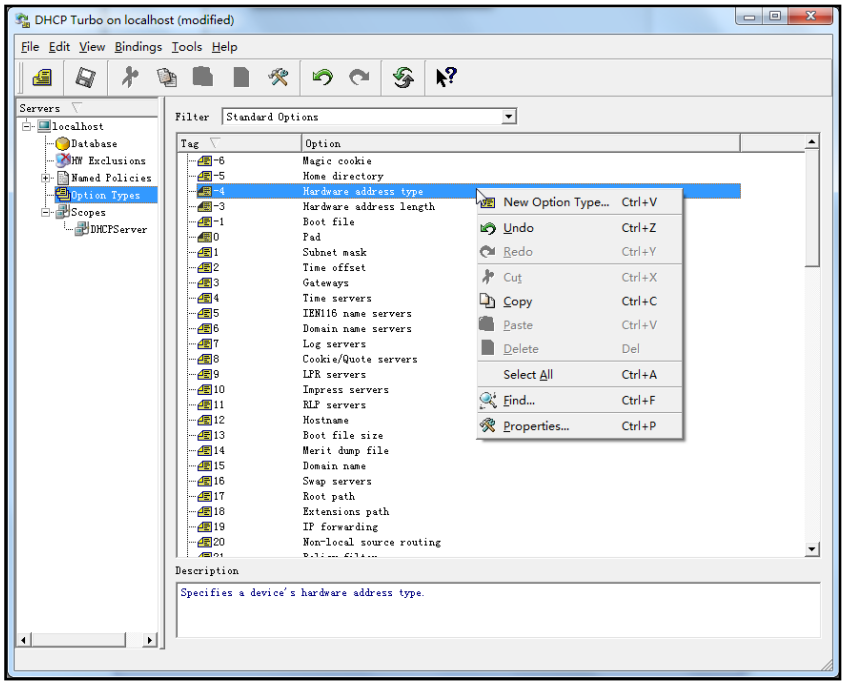

3. You can then edit the existed DHCP server, or you can right click the **localhost** and select **"New Server"** to add a new DHCP server.



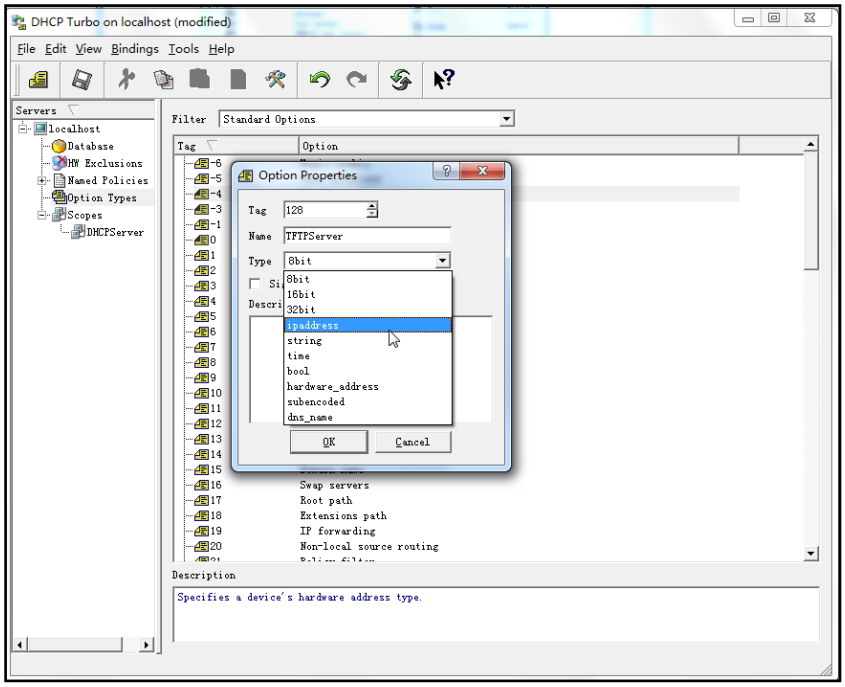
4. Right click the **Scopes** and select **New Scope**.
5. Configure the DHCP server name, the DHCP IP range and the subnet mask.



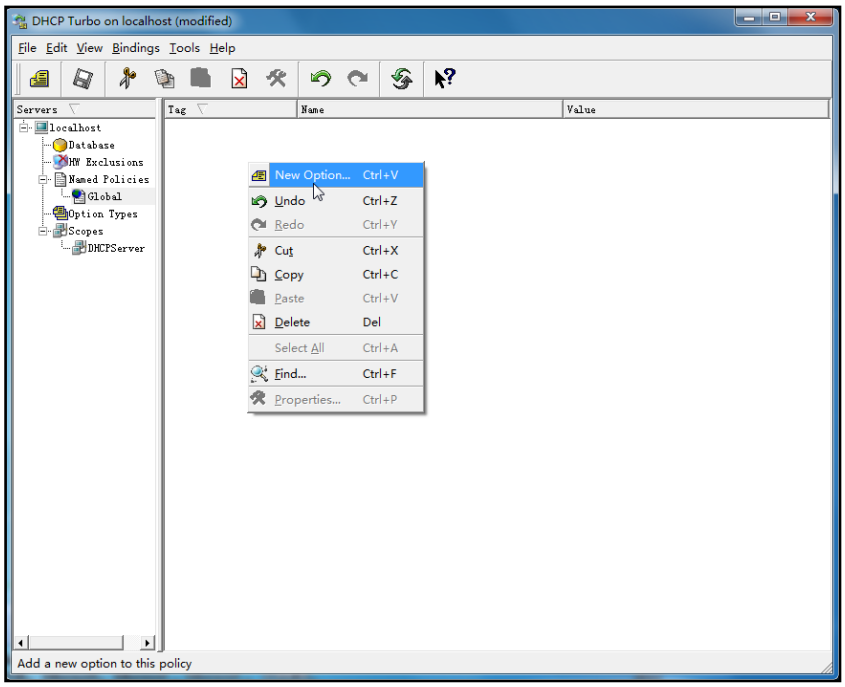

6. You can add a custom option via DHCP Turbo. Click **Option Type,** right click and select the **New Option Type** on the right of the main page.



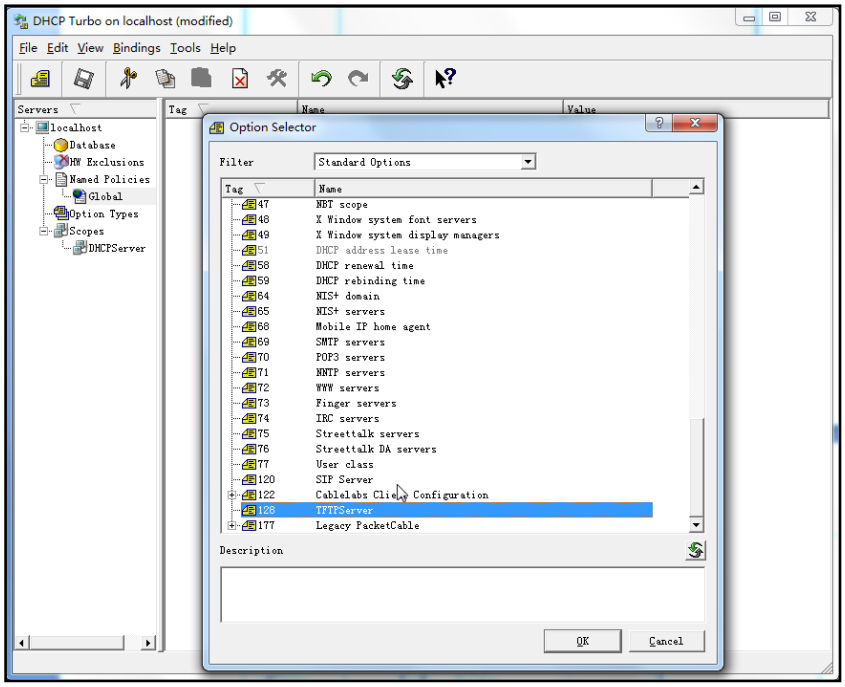
7. Set the custom DHCP option (custom DHCP option tag number ranges from 128 to 254) and select the option type (Yealink support the **String** and **IP Address** option type only). Click the **OK** button to finish setting the option properties. Click to save the change.



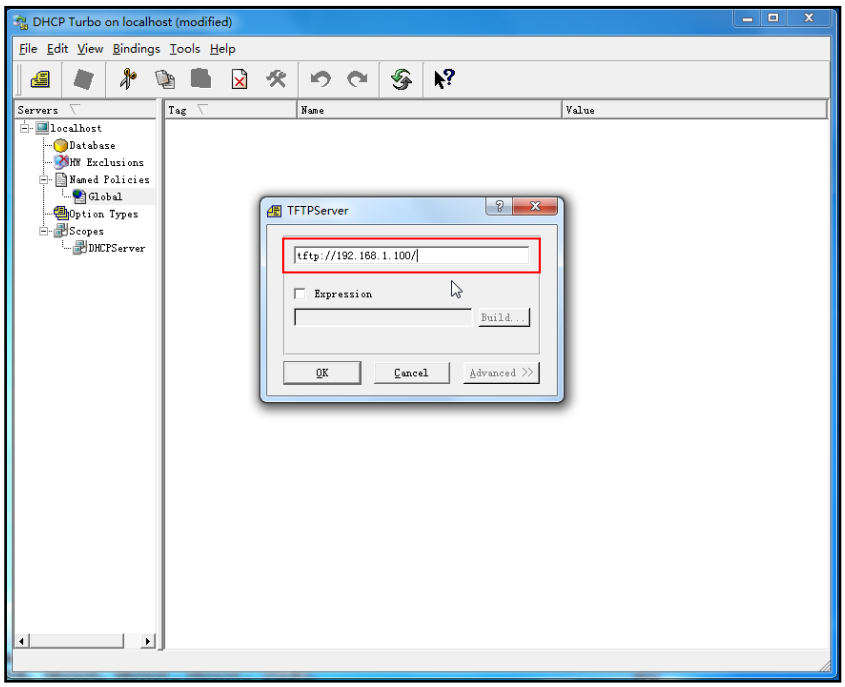

8. Click **Named Policies**-->**Global**, right click and select **New Option** on the left of the main page.



9. Scroll down and double click the custom option 128.

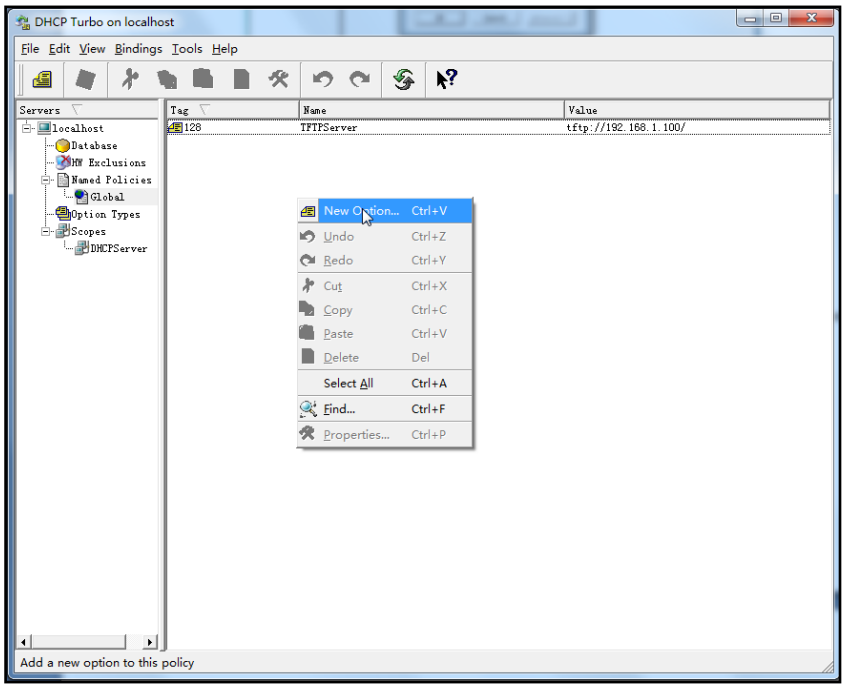



10. Fill the provisioning server address in the input field.
11. Click the **OK** button to finish setting a custom option.
12. Click to save the change.

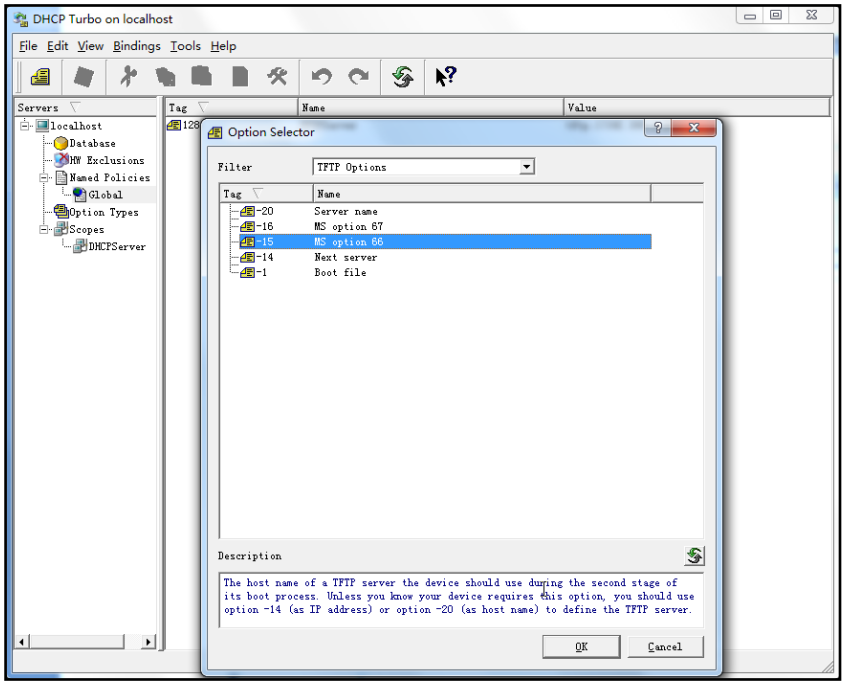


You can add the option 66 via DHCP Turbo. The following figures show the detailed processes.

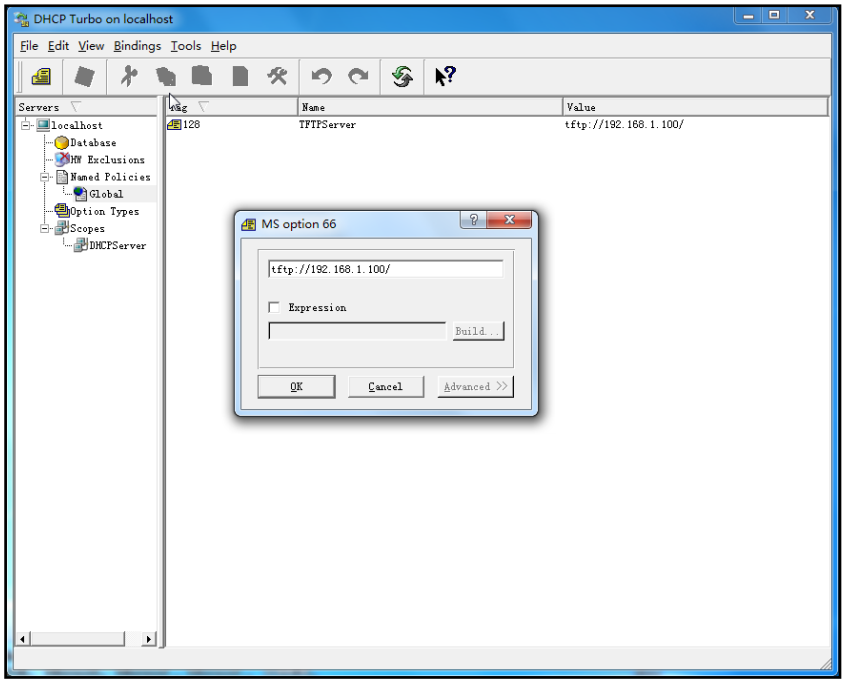
1. Click **Named Policies**-->**Global**, right click and select **New Option** on the left of the main page.




2. Select the **TFTP Options** in the **Filter** field.
3. Scroll down and double click the **MS option 66**.



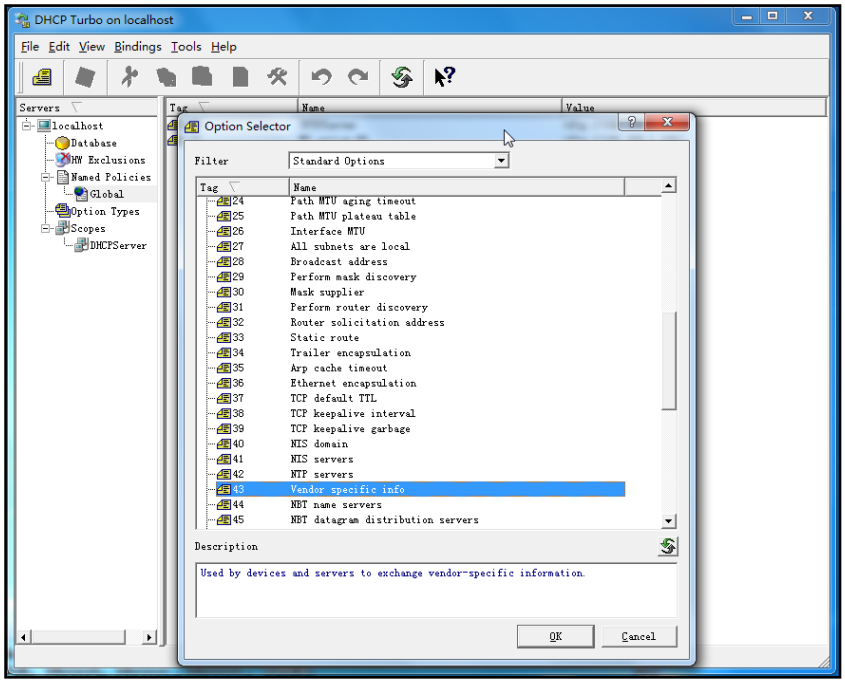
4. Fill the provisioning server address in the input field.



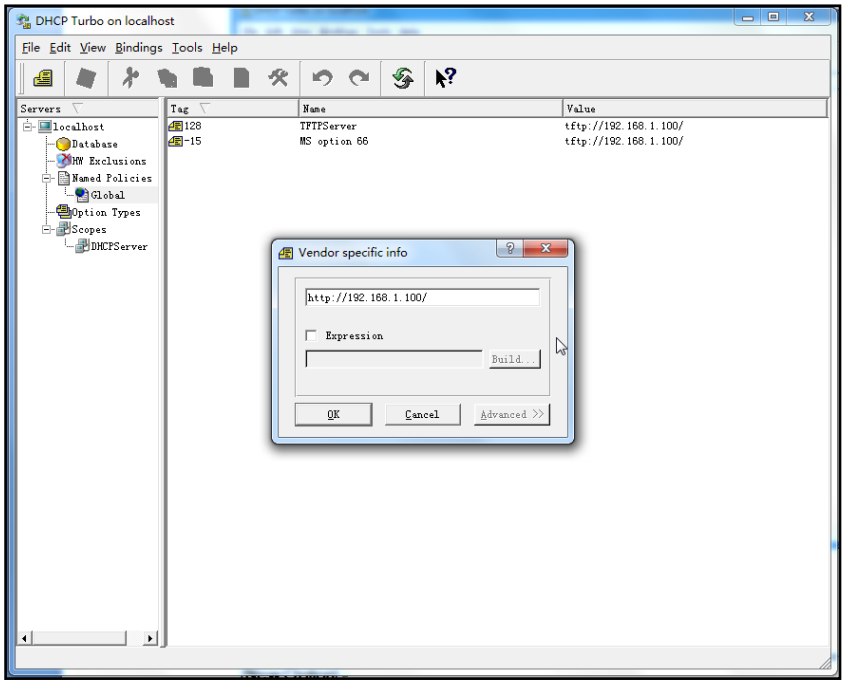

5. Click the **OK** button to finish setting a custom option.
6. Click to save the change.

You also can add the option 44. The following figures show the detailed processes.

1. Click **Named Policies**-->**Global**, right click and select **New Option** on the left of the main page.
2. Select the **Standard Options** in the **Filter** field.
3. Scroll down and double click the **option 43**.



4. Fill the provisioning server address in the input field.




5. Click the **OK** button to finish setting a custom option.
6. Click to save the change.

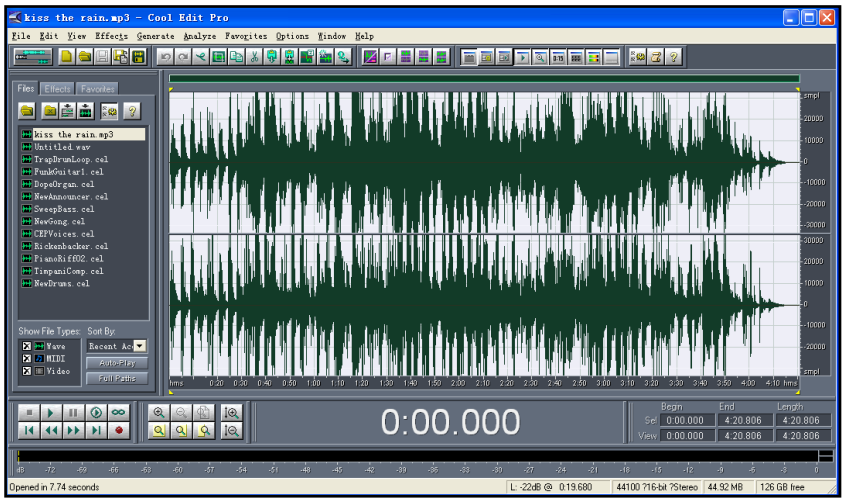
# Customizing a Ringtone Using Cool Edit Pro

If you have installed the Cool Edit application, double click to open it. Otherwise, you can download the installation package from the website: http://www.toggle.com/lv/group/view/kl36218/Cool_Edit_Pro.htm and install it.

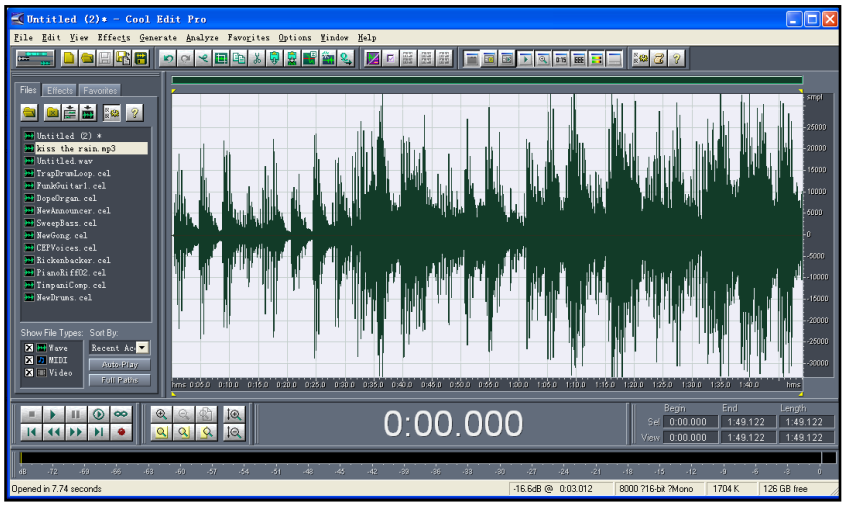
**To customize a ringtone using Coo Edit Pro:**

1. Open the **Cool Edit Pro** application.
2. Click **File** to open an audio file.
3. Locate the ringtone file, click **Open**, the file is uploaded as follows.

   A sample audio file loaded is shown as below:




4. Select and copy the audio waveform.
5. Select **File**->**New** to create a new file, set the audio format as **PCMU**, the channels as **Mono**, the sample rate as **8000** and the resolution as **16-bit**.
6. Paste the audio waveform to the new file.



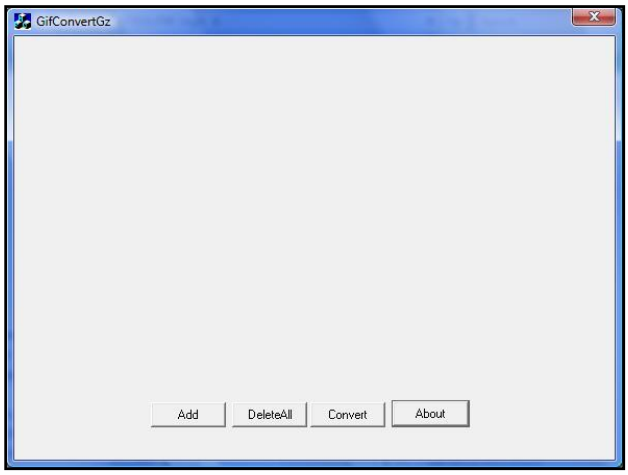

7. Select **File**->**Save as** to save the new audio file. On the Save waveform page,

select the file format as **A/mu-law wave**.

# Customizing a Logo File Using PictureExDemo

The original picture format must be .bmp or .gif. We recommend placing all files and the PictureExDemo application to the root directory of the PC.

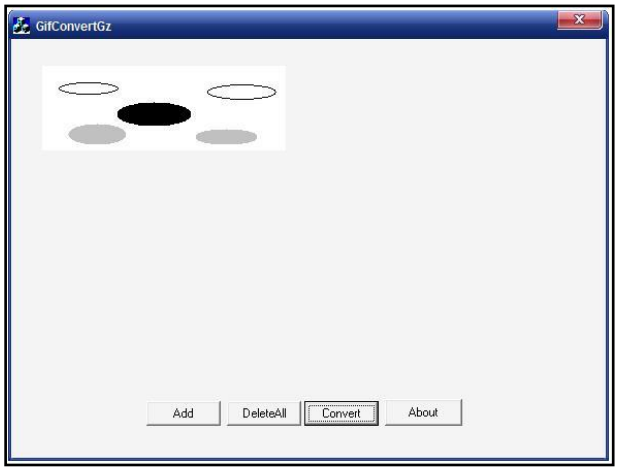
1. Double click the PictureExDemo.exe.




2. Click **Add** button to open a .bmp or .gif file.

   You can repeat the second step to add multiple original picture files.

3. Click the **Convert** button.




Then you can find the **.dob** logo files in the **adv** directory.