



# **SIP-T2 Series/T19(P) E2/T4 Series IP Phones Auto Provisioning Guide**



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## Summary of Changes

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This section describes the changes to this guide for each release and guide version.

### Changes for Release 80, Guide Version 80.60

Documentations of the newly released SIP-T19(P) E2 IP phones have been added.

The following sections are new:

- [Provisioning Yealink IP Phones](#) on page 5
- [Creating a New CFG File](#) on page 11

The following section is removed to [Yealink\\_SIP-T2\\_Series\\_T19\(P\) E2\\_T4\\_Series\\_IP\\_Phones\\_Administrator\\_Guide](#):

- Specific Scenarios- Keep User Personalized Settings

The following section is removed to [Yealink\\_SIP-T2\\_Series\\_T19\(P\) E2\\_T4\\_Series IP phones\\_Description of Configuration Parameters in CFG Files.xlsx](#):

- Description of Configuration Parameters in CFG file

Major updates have occurred to the following section:

- [Customizing Resource Files](#) on page 13

### Changes for Release 80, Guide Version 80.20

This version is updated to incorporate SIP-T48G IP phones. Documentations of the newly released SIP-T27P and SIP-T21(P) E2 IP phones have also been added.

Major updates have occurred to the following sections:

- [Editing Common CFG File](#) on page 9
- [Editing MAC-Oriented CFG File](#) on page 10
- [Customizing Resource Files](#) on page 13
- [Obtaining the Provisioning Server Address](#) on page 19

### Changes for Release 80, Guide Version 80.6

This version is updated to incorporate SIP-T46G, SIP-T42G, SIP-T41P and T29G IP phones.

Major updates have occurred to the following sections:

- [Customizing Resource Files](#) on page 13

- [Configuring Wildcard of the Provisioning Server URL on page 25](#)

# Introduction

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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 provides instructions on how to provision Yealink IP phones with the minimum settings required. Yealink IP phones support FTP, TFTP, HTTP, and HTTPS protocols for auto provisioning and are configured by default to use the TFTP protocol.

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

- Yealink SIP-T48G
- Yealink SIP-T46G
- Yealink SIP-T42G
- Yealink SIP-T41P
- Yealink SIP-T29G
- Yealink SIP-T27P
- Yealink SIP-T23P/G
- Yealink SIP-T21(P) E2
- Yealink SIP-T19(P) E2

The auto provisioning process outlined in this guide applies to Yealink SIP-T48G/T46G/T42G/T41P/T29G/T27P/T23P/T23G/T21(P) E2/T19(P) E2 IP phones running firmware version 80 or later. We recommend that IP phones running the latest firmware **CANNOT** be downgraded to an earlier firmware version. The new firmware is compatible with old configuration parameters, but not vice versa.



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## Getting Started

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This section provides instructions on how to get ready for auto provisioning. To begin the auto provisioning process, the following steps are required:

- [Obtaining Configuration Files](#)
- [Obtaining Phone Information](#)

### Obtaining Configuration Files

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

IP phones also support a local configuration file named as <MAC>-local.cfg. When a user modifies configurations via web user interface or phone user interface, the configurations will be automatically saved to the MAC-local CFG file on the IP phone.

You can ask the distributor or Yealink FAE for Common CFG and MAC-Oriented files. You can also obtain the Common CFG file and MAC-Oriented file online:

<http://support.yealink.com/documentFront/forwardToDocumentFrontDisplayPage>.

**To download Common CFG and MAC-Oriented files:**

1. Go to Yealink [Document Download](#) Page and select the desired phone model.
2. Download and extract the combined configuration files to your local system.
3. Open the folder you extracted to and identify the files you will edit.

### Obtaining Phone Information

Before beginning provisioning, you also need the IP phone information. For example, MAC address and the SIP account information of the IP phone.

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

**SIP Account Information:** This may include SIP credentials such as user name, password and IP address of the SIP server. Ask your system administrator for SIP account information.



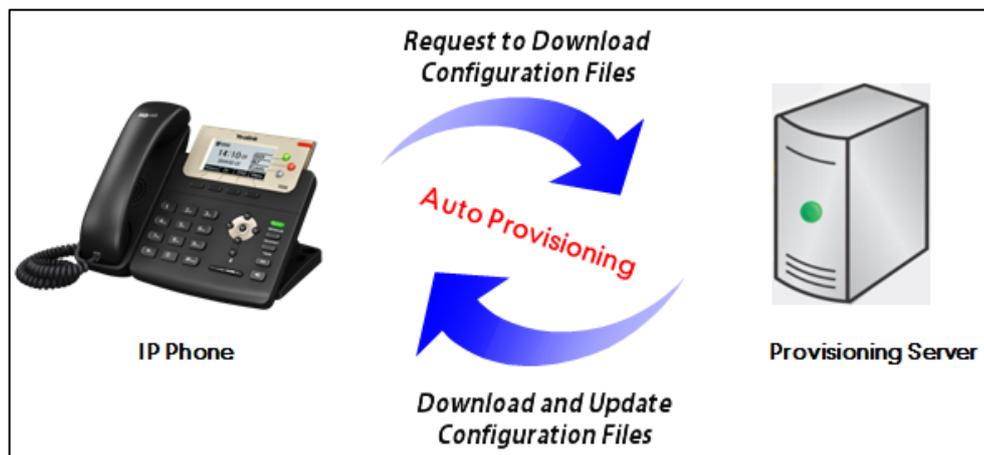
## Provisioning Yealink IP Phones

This section provides instructions on how IP phones interoperate with provisioning server for auto provisioning, and shows you four major tasks to provision the phones. It will help users who are not familiar with auto provisioning to understand this process more easily and quickly.

### Auto Provisioning Process

When IP phones are triggered to perform auto provisioning, it will request to download the configuration files from the provisioning server. During the auto provisioning process, the IP phone will download and update configuration files to the phone flash.

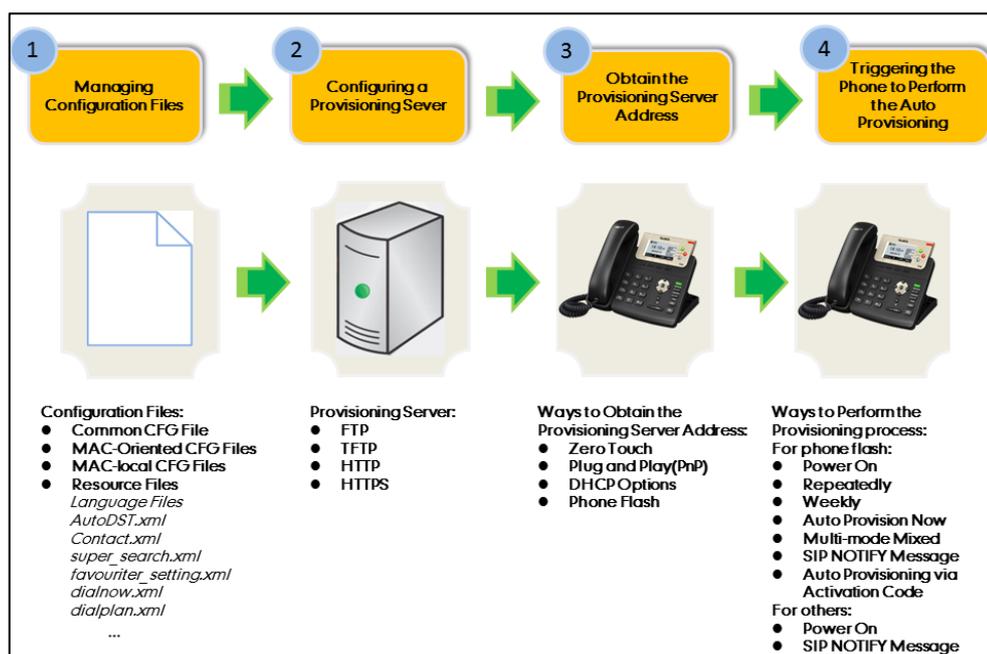
The following figure shows how the IP phone interoperates with the provisioning server:



### Major Tasks for Auto Provisioning

You need to complete four major tasks to provision Yealink IP phones.

The following figure shows an overview of four major provisioning tasks:



For more information on how to manage configuration files, refer to [Managing Configuration Files](#) on page 9.

For more information on how to configure a provisioning server, refer to [Configuring a Provisioning Server](#) on page 15.

For more information on how to obtain the provisioning server address, refer to [Obtaining the Provisioning Server Address](#) on page 19.

For more information on how to perform the auto provisioning process, refer to [Triggering the IP Phone to Perform the Auto Provisioning](#) on page 27.

If you are not familiar with auto provisioning process on Yealink IP phones, you can refer to [An Instance of Auto Provision Configuration](#) on page 6.

## An Instance of Auto Provision Configuration

This section shows an instance of auto provision configuration.

### 1. Manage configuration files.

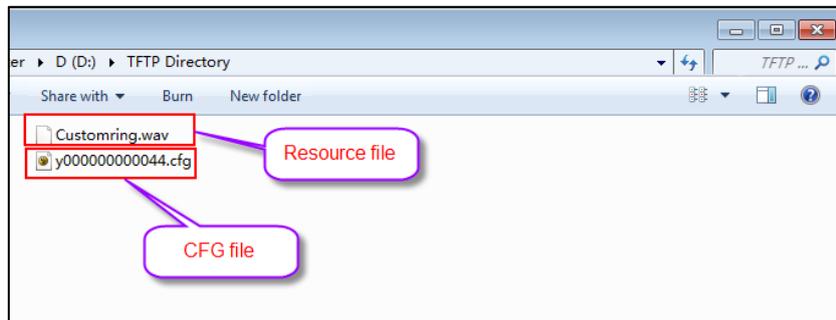
Add/Edit the desired configuration parameters in the CFG file (e.g., y000000000044.cfg) you want the IP phone to download. For more information on how to manage configuration files, refer to [Managing Configuration Files](#) on page 9.

```

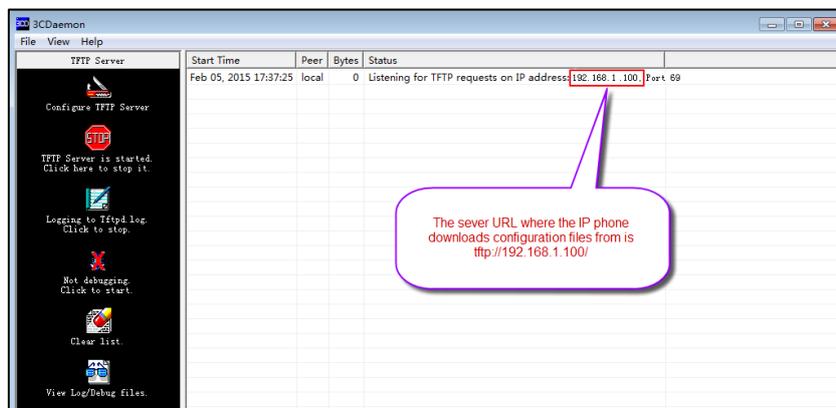
0 10 20 30 40 50 60 70 80
1 #!version:1.0.0.1
2 features.dnd_mode = 0
3 features.dnd.enable = 1
4 ringtone.url = tftp://192.168.1.100/Customring.wav
    
```

2. Configure the TFTP server.

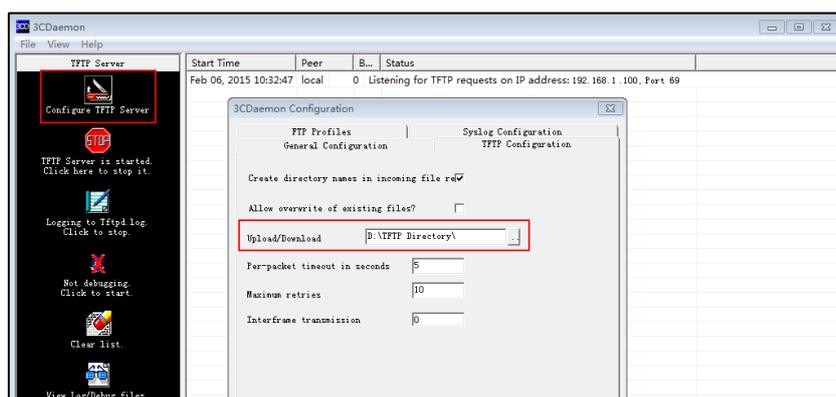
- 1) Place configuration files to TFTP root directory (e.g., D:\TFTP Directory).



- 2) Start the TFTP sever. The IP address of the TFTP server is shown as below:

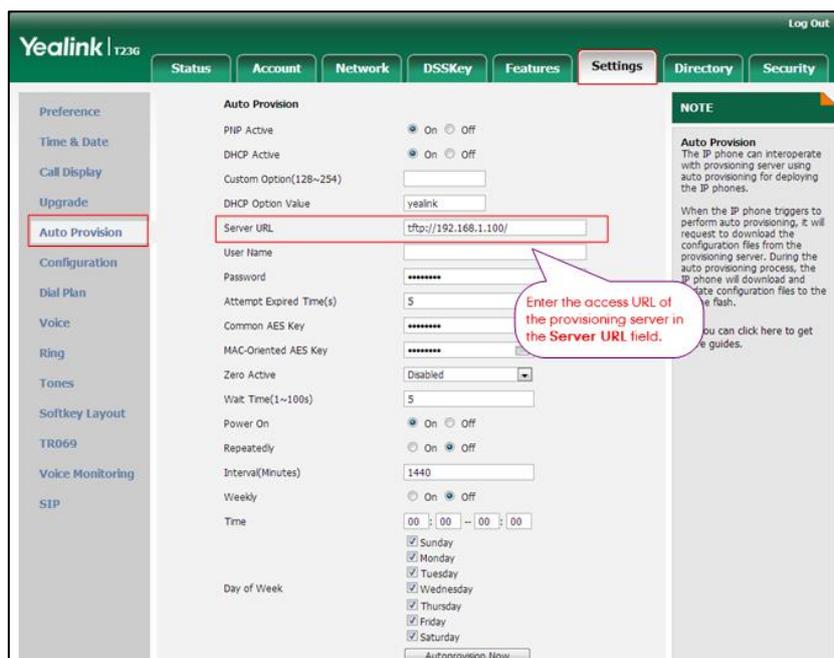


- 3) Select **Configure TFTP Server**. Click the **...** button to locate the TFTP root directory from your local system.



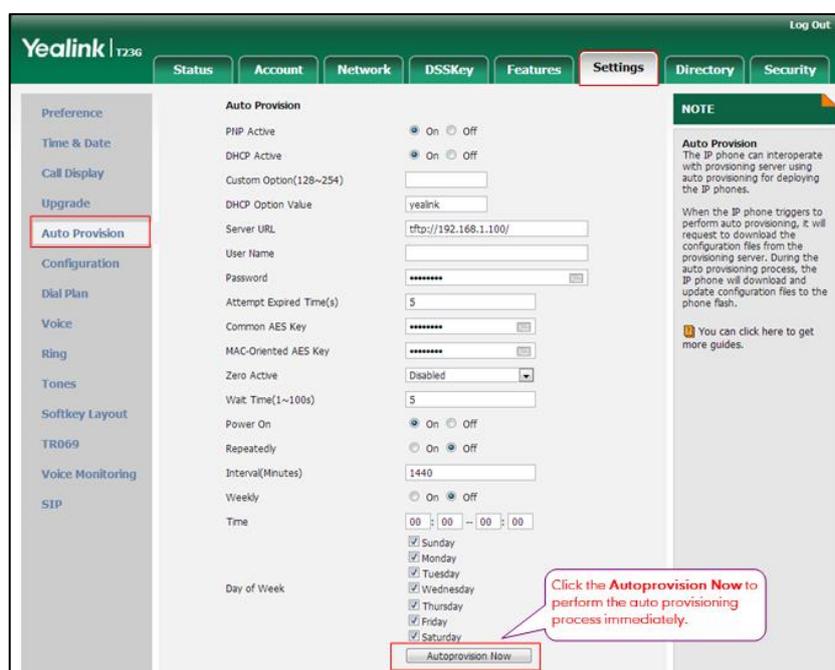
For more information on how to configure a provisioning server, refer to [Configuring a Provisioning Server](#) on page 15.

3. Configure the provisioning server address on the IP phone.



For more information on how to obtain the provisioning server address, refer to [Obtaining the Provisioning Server Address](#) on page 19.

4. Trigger the phone to perform the auto provisioning.



For more information on how to trigger the phone to perform the auto provisioning, refer to [Triggering the IP Phone to Perform the Auto Provisioning](#) on page 27.

## Managing Configuration Files

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

You can edit the template files directly or create a new CFG file as required. Open each configuration file with a text editor such as UltraEdit.

For information on description of all configuration parameters in configuration files, refer to [Yealink\\_SIP-T2\\_Series\\_T19\(P\)\\_E2\\_T4\\_Series\\_IP\\_phones\\_Description\\_of\\_Configuration\\_Parameters\\_in\\_CFG\\_Files.xlsx](#).

### Editing Common CFG File

The Common CFG file is effectual for all phones of the same model. It uses a fixed name "y0000000000XX.cfg" as the file name, where "XX" equals to the first two digits of the hardware version of the IP phone model.

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

Phone Model	Common CFG File
SIP-T48G	y000000000035.cfg
SIP-T46G	y000000000028.cfg
SIP-T42G	y000000000029.cfg
SIP-T41P	y000000000036.cfg
SIP-T29G	y000000000046.cfg
SIP-T27P	y000000000045.cfg
SIP-T23P/G	y000000000044.cfg
SIP-T21(P) E2	y000000000052.cfg
SIP-T19(P) E2	y000000000053.cfg

Common CFG file contains configuration parameters which apply to phones with the same model, such as language and volume.

The following figure shows a portion of the common CFG file:

```

#!version:1.0.0.1
##File header "#!version:1.0.0.1" can not be edited or deleted, and must be placed in the first line.##
##This template file is applicable to IP phones running firmware version 80 or later.##
##For more information on configuration parameters, refer to Description of Configuration Parameters in CFG Files.xlsx.##

#####
##                               Hostname                               ##
#####
network.dhcp_host_name =

#####
##                               PPPoE(Except T41P/T42G Models)         ##
#####
network.pppoe.user =
network.pppoe.password =

#####
##                               Network Advanced                       ##
#####
##It enables or disables the PC port.0-Disabled,1-Auto Negotiation.
##The default value is 1.It takes effect after a reboot.
network.pc_port.enable =

##It configures the transmission mode and speed of the Internet (WAN) port.
##0-Auto Negotiate
##1-Full Duplex 10Mbps
##2-Full Duplex 100Mbps
##3-Half Duplex 10Mbps
##4-Half Duplex 100Mbps
##5-Full Duplex 100Mbps (only applicable to SIP-T42G and SIP-T46G IP phones)
##The default value is 0.It takes effect after a reboot.
network.internet_port.speed_duplex =

```

When editing the Common CFG file, learn the following:

- The line beginning with “#” is considered to be a comment.
- The file header “#!version:1.0.0.1” is not a comment and must be placed in the first line. It cannot be edited or deleted.
- The file format must be \*.cfg.
- The filename complies with the requirements that are listed in the above table.
- Each line must use the following format and adhere to the following rules:

*Configuration Parameter= Valid Value*

- Separate each configuration parameter and value with an equal sign.
- Set only one configuration parameter per line.
- Put the configuration parameter and value on the same line, and do not break the line.

## Editing MAC-Oriented CFG File

The MAC-Oriented are only effectual for the specific phone. They use the 12-digit MAC address of the IP phone as the file name. For example, if the MAC address of the IP phone is 0015651130F9, the MAC-Oriented CFG file has to be named as 0015651130f9.cfg (case-sensitive) respectively.

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

The following figure shows a portion of the MAC-Oriented CFG file:

```

#!version:1.0.0.1
##File header “#!version:1.0.0.1” can not be edited or deleted, and must be placed in the first line.##
##This template file is applicable to IP phones running firmware version 80 or later.##
##For more information on configuration parameters, refer to Description of Configuration Parameters in CFG Files.xlsx.##
#####
## Account1 Basic Settings ##
#####
account.1.enable =
account.1.label =
account.1.display_name =
account.1.auth_name =
account.1.user_name =
account.1.password =
account.1.outbound_proxy_enable =
account.1.outbound_host =
account.1.outbound_port =
account.1.dial_tone =

##It configures the transport type for account 1. 0-UDP,1-TCP,2-TLS,3-DNS-NAPTR
##The default value is 0.
account.1.sip_server.1.transport_type =
account.1.sip_server.2.transport_type =

```

When editing the MAC-Oriented CFG file, learn the following:

- The line beginning with “#” is considered to be a comment.
- The file header “#!version:1.0.0.1” is not a comment and must be placed in the first line. It cannot be edited or deleted.
- The file format must be \*.cfg.
- The filename matches the MAC address of your phone.
- Each line must use the following format and adhere to the following rules:

*Configuration Parameter= Valid Value*

- Separate each configuration parameter and value with an equal sign.
- Set only one configuration parameter per line.
- Put the configuration parameter and value on the same line, and do not break the line.

SIP-T48G/T46G/T29G IP phones support 16 accounts, SIP-T42G IP phones support 12 accounts, SIP-T41P/T27P IP phones support 6 accounts, SIP-T23P/G IP phones support 3 accounts, SIP-T21(P) E2 IP phones support 2 accounts and SIP-T19 (P) E2 IP phones support only one account.

## Creating a New CFG File

If you want to create a new CFG file for your phone, follow these steps:

**To create a new CFG file:**

1. Create a CFG file for your phone. Ensure the file complies with the guidelines that are listed in [Editing Common CFG File](#) on page 9 or [Editing MAC-Oriented CFG File](#) on page 10.

- Copy configuration parameters from the template configuration files and set the valid values for them.



```
y000000000044. cfg x
0 10 20 30 40
1 #!version:1.0.0.1
2 lcd_logo.delete = http://localhost/all
3 phone_setting.phone_lock_enable = 1
4 phone_setting.phone_lock.lock_key_type = 0
5 syslog.server = 192.168.1.50
6 account.1.dtmf.type = 1
7 account.1.dtmf.info_type = 1
8 account.1.dnd.enable = 1
9 features.dnd_mode = 1
10 account.1.alert_info_url_enable = 1
11 lang.gui = English
12 lang.wui = English
```

- Save the changes and close the CFG file.

## Managing MAC-local CFG File

MAC-local CFG file automatically stores configurations modified via web user interface or phone user interface. The file is stored locally on the IP phone, but a copy can also be uploaded to the provisioning server. The file enables the phone to keep user personalization settings, even after auto provision. As with the MAC-Oriented CFG files, MAC-local CFG files are only effectual for the specific phone too. They use the 12-digit MAC address of the IP phone as the file name. For example, if the MAC address of the IP phone is 0015651130F9, MAC-local CFG file has to be named as 0015651130F9-local.cfg (case-sensitive) respectively.

If your IP phone's current firmware version doesn't support generating a <MAC>-local.cfg file, the IP phone will automatically generate a MAC-local CFG file after it is upgraded to the latest firmware.

For more information on how to keep user personalization settings, refer to [Yealink SIP-T2 Series T19\(P\) E2 T4 Series IP Phones Administrator Guide](#).

We recommend you do not edit the MAC-local CFG file. If you really want to edit MAC-local CFG file, you can export and then edit it. For more information on how to export this file, refer to [Yealink SIP-T2 Series T19\(P\) E2 T4 Series IP Phones Administrator Guide](#).

## Encrypting Configuration Files

To protect against unauthorized access and tampering of sensitive information (e.g., login password, registration information), you can encrypt configuration files using Yealink Configuration Encryption Tool. AES keys must be 16 characters and the supported characters contain: 0 ~ 9, A ~ Z, a ~ z and the following special characters are also supported: # \$ % \* + , - . : = ? @ [ ] ^ \_ { } ~. For more information on how to

encrypt configuration files, refer to [Yealink Configuration Encryption Tool User Guide](#).

## Customizing Resource Files

When configuring some particular features, you may need to upload resource files to IP phones, such as personalized ring tone file, language package file and logo file. Yealink supplies the following resource file templates:

Feature	Template File Name
DST	AutoDST.xml
Language Packs	For example, 000.GUI.English.lang 1.English_note.xml 1.English.js
Replace Rule	dialplan.xml
Dial-now	dialnow.xml
Softkey Layout	CallFailed.xml CallIn.xml Connecting.xml Dialing.xml (not applicable to SIP-T48G) RingBack.xml Talking.xml
Directory	favorite_setting.xml
Super Search in dialing	super_search.xml
Local Contact File	contact.xml
Remote XML Phone Book	Department.xml Menu.xml
Ring Tone	None
Logo customization	None
Wallpaper	None
Firmware	X.80.0.XX.rom For example,

Feature	Template File Name
	44.80.0.60.rom

Ask the distributor or Yealink FAE for resource file templates. For more information on an explanation of the configuration parameters that relate to these features, refer to [Yealink\\_SIP-T2\\_Series\\_T19\(P\) E2\\_T4\\_Series\\_IP\\_Phones\\_Administrator\\_Guide](#).

## Configuring a Provisioning Server

Yealink IP phones support using FTP, TFTP, HTTP and HTTPS protocols to download configuration files. You can use one of these protocols for provisioning. The TFTP protocol is used by default. The following section provides instructions on how to configure a TFTP server.

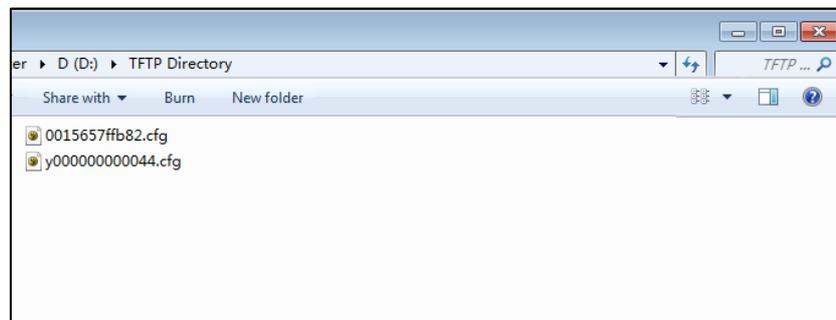
We recommend that you use 3CDaemon or TFTP32 as a TFTP server. 3CDaemon and TFTP32 are free applications for Windows. You can download 3CDaemon online: <http://www.oldversion.com/3Com-Daemon.html> and TFTP32 online: <http://tftpd32.jounin.net/>.

For more information on how to configure FTP and HTTP servers, refer to [Configuring an FTP Server](#) on page 43 and [Configuring an HTTP Server](#) on page 46.

## Preparing a Root Directory

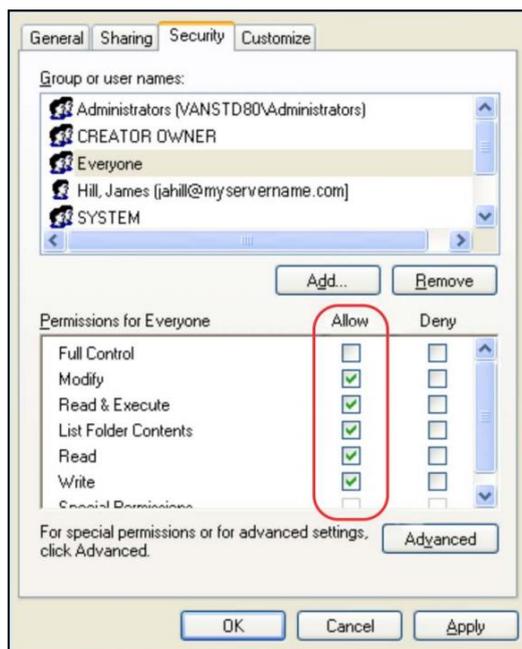
**To prepare a root directory:**

1. Create a TFTP root directory on the local system.
2. Place configuration files to this root directory.



3. (Optional.) Set security permissions for the TFTP directory folder.  
You need to define a user or a group name, and set the permissions: read, write or modify. Security permissions vary by organizations.

An example of configuration on the Windows platform is shown as below:

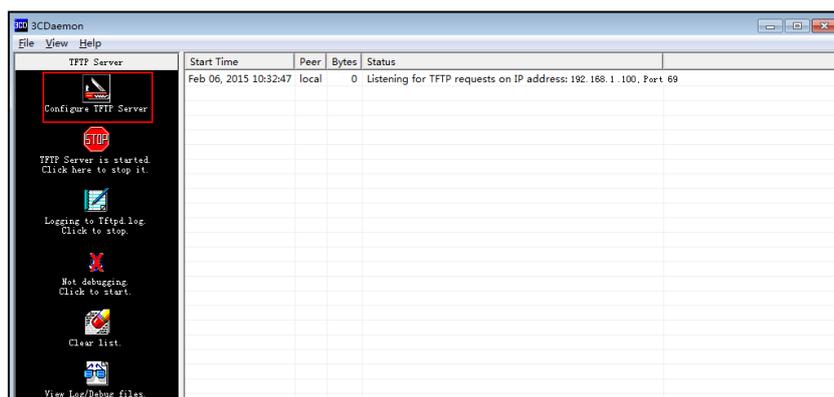


## Configuring a TFTP Server

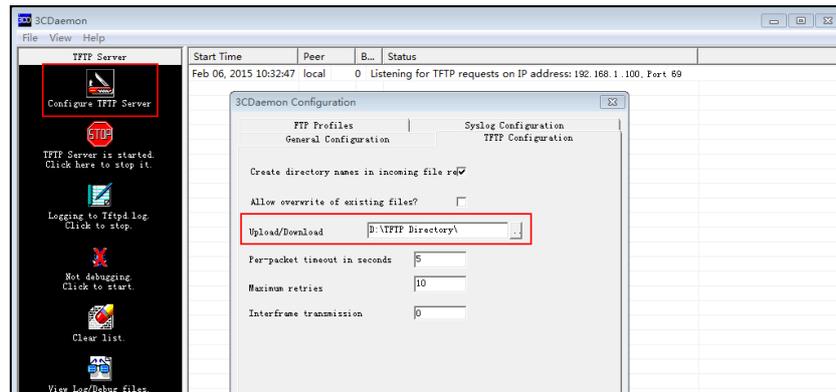
If you have a 3CDaemon application installed on your local system, use it directly. Otherwise, download and install it.

**To configure a TFTP server:**

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



2. Select **Configure TFTP Server**. Click the  button to locate the TFTP root directory from your local system:



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 where the IP phone downloads configuration files from.



## Obtaining the Provisioning Server Address

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Yealink IP phones support obtaining the provisioning server address in the following ways:

- [Zero Touch](#)
- [Plug and Play \(PnP\) Server](#)
- [DHCP Options](#)
- [Phone Flash](#)
- [Configuring Wildcard of the Provisioning Server URL](#)

The priority of obtaining the provisioning server address is as follows: Zero Touch-->PnP Server-->DHCP Options (Custom option-->option 66-->option 43) -->Phone Flash.

The following sections detail the process of each way (take the SIP-T23G IP phone as an example).

### Zero Touch

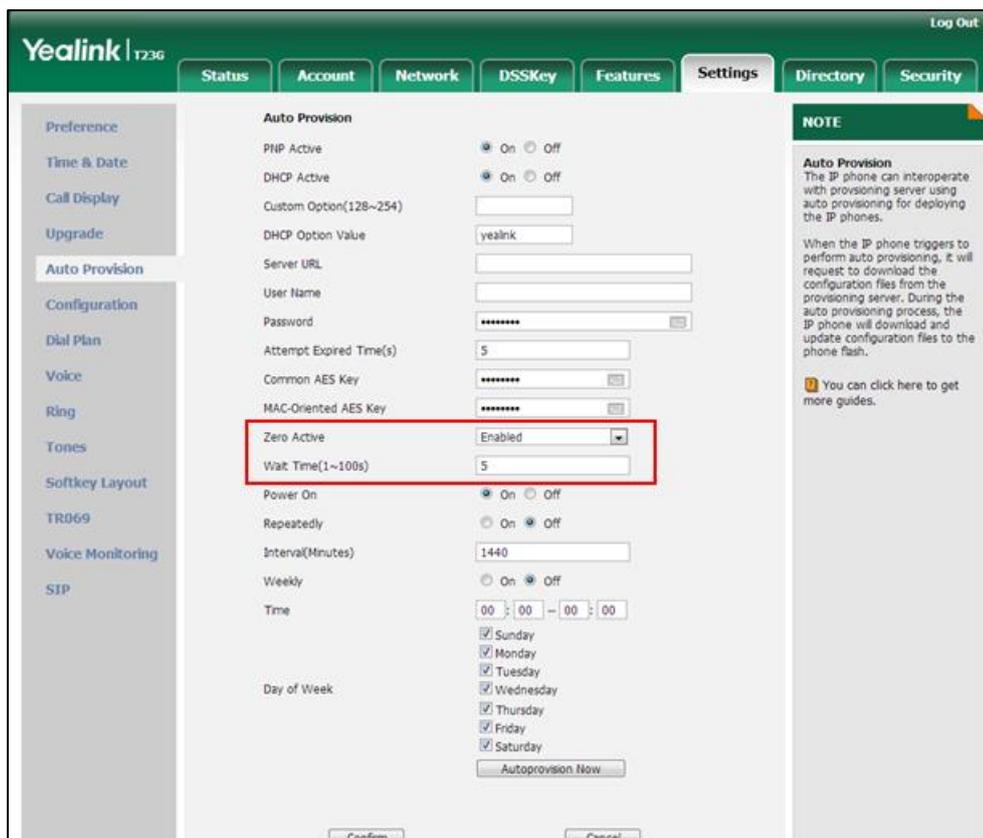
Zero Touch allows you to configure the network parameters and provisioning server address via phone user interface during startup. This feature is helpful when there is a system failure on the IP phone. To use Zero Touch, make sure this feature is enabled.

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

1. Click on **Settings->Auto Provision**.
2. Select **Enabled** from the pull-down list of **Zero Active**.

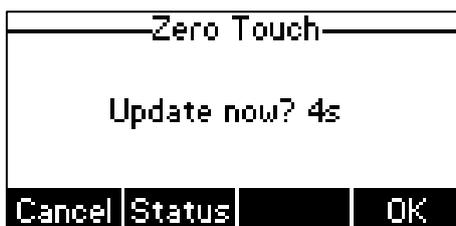
- Configure the wait time in the **Wait Time(1~100s)** field.

The default value is 5.



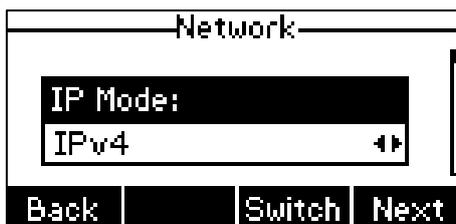
- Click **Confirm** to accept the change.

When Zero Touch is enabled, there will be a configuration wizard during startup:



Press the **OK** soft key.

The network parameters are configurable via phone user interface:



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

Configure the provisioning server address, authentication user name (optional) and

password (optional) in the **Auto Provision** screen.

An example of screenshot is shown as below:



Press the **OK** soft key.

After the above configuration is completed, the IP phone will connect to the configured provisioning server and perform the auto provisioning process during startup.

## Plug and Play (PnP) Server

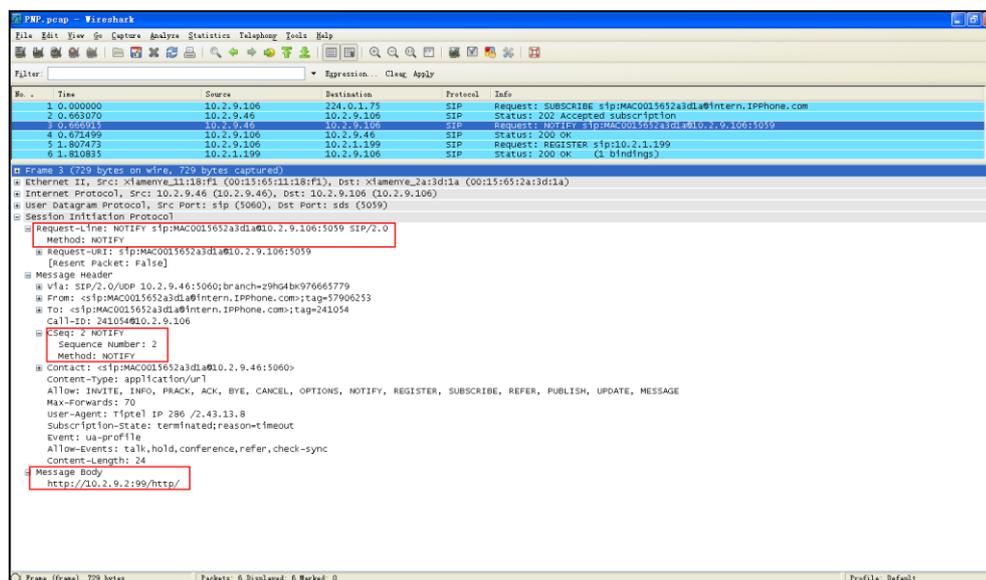
Yealink IP phones support obtaining the provisioning server address from the PnP server. The IP phone broadcasts the PnP SUBSCRIBE message to obtain the provisioning server address during startup. To use Plug and Play, make sure this feature is enabled.

**To configure PnP via web user interface:**

1. Click on **Settings->Auto Provision**.
2. Mark the **On** radio box in the **PNP Active** field.

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

Any PnP server activated in the network responds with a **SIP NOTIFY** message, and an address of the provisioning server is contained in the message body.



After the IP phone obtains the provisioning server address from the PNP server, it will connect to the provisioning server and perform the auto provisioning process during startup.

## DHCP Options

Yealink IP phones support obtaining the provisioning server address by detecting DHCP options during startup.

The phone will automatically detect the option 66 and option 43 for obtaining the provisioning server address. DHCP option 66 is used to identify the TFTP server. DHCP option 43 is a vendor-specific option, which is used to transfer the vendor-specific information.

You can configure the phone to obtain the provisioning server address via a custom DHCP option. To obtain the provisioning server address via a custom DHCP option, make sure the DHCP option is properly configured on the phone. The custom DHCP option must be in accordance with the one defined in the DHCP server.

For more information on how to configure a DHCP server, refer to [Configuring a DHCP Server](#) on page 50.

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

1. Click on **Settings->Auto Provision**.
2. Mark the **On** radio box in the **DHCP Active** field.

- Enter the desired value in the **Custom Option(128~254)** field.

The screenshot shows the Yealink T236 web interface with the 'Settings' tab selected. The 'Auto Provision' section is active, and the 'Custom Option(128~254)' field is highlighted with a red box, containing the value '128'. The 'DHCP Active' radio button is also selected. The interface includes a sidebar with navigation options like Preference, Time & Date, Call Display, Upgrade, Auto Provision, Configuration, Dial Plan, Voice, Ring, Tones, Softkey Layout, TR069, Voice Monitoring, and SIP. A 'NOTE' section on the right provides information about auto provisioning and a link to more guides.

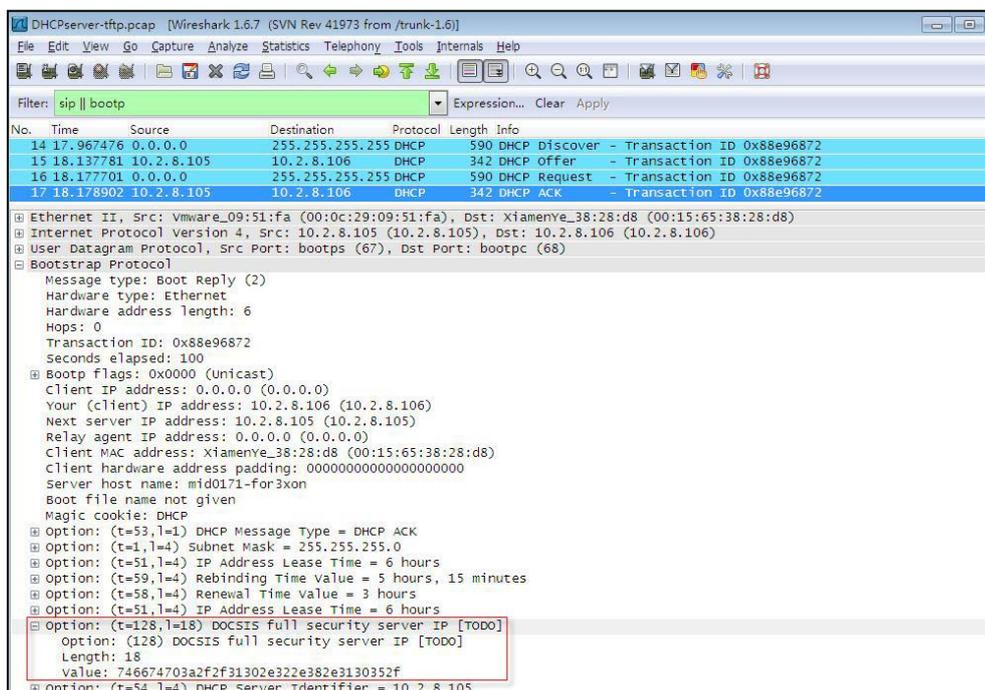
- Click **Confirm** to accept the change.

During startup, the phone will broadcast DHCP request with DHCP options for obtaining the provisioning server address. The provisioning server address will be found in the received DHCP response message.

After the IP phone obtains the provisioning server address from the DHCP server, it will connect to the provisioning server and perform the auto provisioning process during startup.

For more information on the DHCP options, refer to [Yealink\\_SIP-T2\\_Series\\_T19\(P\)\\_E2\\_T4\\_Series\\_IP\\_Phones\\_Administrator\\_Guide](#).

The following figure shows the example messages of obtaining the TFTP server address from a custom DHCP option:



Right click the root node of the custom option (e.g., option 128) shown on the above figure, and select **Copy->Bytes->Printable Text Only**. Paste the copied text in your favorite text editor to check the address, for example, tftp://192.168.1.100/.

## Phone Flash

Yealink IP phones support obtaining the provisioning server address from the IP phone flash. To obtain the provisioning server address by reading the IP phone flash, make sure the configuration is set properly.

**To configure the IP phone flash via web user interface:**

1. Click on **Settings->Auto Provision**.

- Enter the URL, user name and password of the provisioning server in the **Server URL**, **User Name** and **Password** fields (the user name and password are optional).

The screenshot shows the Yealink T236 web interface with the 'Auto Provision' settings page. The 'Server URL', 'User Name', and 'Password' fields are highlighted with a red box. The 'Server URL' field contains the text 'http://10.3.6.133:8080/y00000000004'. The 'User Name' and 'Password' fields are empty. The interface also shows other settings like 'PNP Active', 'DHCP Active', 'Custom Option(128~254)', and 'DHCP Option Value'. A 'NOTE' section on the right explains the auto provisioning process and provides a link to more guides.

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

After the above configuration is completed, the IP phone will connect to the configured provisioning server and perform the auto provisioning process by one of the following methods: Power On, Repeatedly, Weekly, Auto Provision Now, SIP NOTIFY Message and Multi-mode Mixed. For more information on these methods, refer to [Triggering the IP Phone to Perform the Auto Provisioning on Page 27](#).

## Configuring Wildcard of the Provisioning Server URL

Normally, many phone models may be deployed in your environment. To deploy many phone models using a unified provisioning server, it is convenient for the administrator to configure a unified provisioning server URL for different phone models. On the provisioning server, many directories need to be configured for different phone models, each with a unique directory name. Yealink IP phones support the following wildcards in the provisioning server URL:

- \$PN**: it is used to identify the directory name of the provisioning server directory where the corresponding configuration files are located.
- \$MAC**: it is used to identify the MAC address of the IP phone.

The parameter “auto\_provision.url\_wildcard.pn” is used to configure the directory name the configuration files located. For more information on the parameter, refer to [Yealink\\_SIP-T2\\_Series\\_T19\(P\)\\_E2\\_T4\\_Series\\_IP\\_phones\\_Description\\_of\\_Configuration\\_Parameters\\_in\\_CFG\\_Files.xlsx](#).

When the IP phone obtains a provisioning server URL containing the wildcard \$PN, it automatically replaces the character \$PN with the value of the parameter “auto\_provision.url\_wildcard.pn” configured on the IP phone. When the IP phone is triggered to perform auto provisioning, it will request to download the configuration files from the identified directory on the provisioning server.

The value of the parameter “auto\_provision.url\_wildcard.pn” must be configured in accordance with the directory name of the provisioning server directory where the configuration files of the IP phones are located.

The following example assists in explaining the wildcard feature:

You want to deploy SIP-T42G and SIP-T46G IP phones simultaneously in your environment. IP phones are configured to obtain the provisioning server address via DHCP option 66. The following details how to deploy the SIP-T42G and SIP-T46G IP phones using wildcard feature.

1. Create two directories on the root directory of provisioning server.
2. Configure the directory names of these two directories to be “T42G” and “T46G”.
3. Place the associated configuration files to the directory created above.
4. Configure the value of DHCP option 66 on the DHCP server as:  
tftp://192.168.1.100/\$PN.
5. Configure the value of the parameter “auto\_provision.url\_wildcard.pn”.

The default value of the parameter “auto\_provision.url\_wildcard.pn” is “T42G” for the SIP-T42G IP phones and “T46G” for the SIP-T46G IP phones. If the default value is different from the directory name, you need to configure the value of this parameter to be the directory name on the IP phones in advance.

During startup, IP phones obtain the provisioning server URL “tftp://192.168.1.100/\$PN” via DHCP option 66, and then replace the character “\$PN” in the URL with “T42G” for the SIP-T42G IP phones and “T46G” for the SIP-T46G IP phones. When performing auto provisioning, the SIP-T42G IP phones and the SIP-T46G IP phones request to download configuration files (<MAC>.cfg files, y000000000029.cfg for the SIP-T42G IP phones, and y000000000028.cfg for the SIP-T46G IP phones) from the provisioning server address “tftp://192.168.1.100/T42G” and “tftp://192.168.1.100/T46G” respectively.

If the URL is configured as “tftp://192.168.1.100/\$PN/\$MAC.cfg” on the DHCP server, the SIP-T42G IP phones and the SIP-T46G IP phones will replace the characters “\$PN” with “T42G” and “T46G” respectively, and replace the characters “\$MAC” with their MAC addresses. For example, the MAC address of one SIP-T42G IP phone is 00156543EC97. When performing auto provisioning, the IP phone will only request to download the 00156543ec97.cfg file from the provisioning server address “tftp://192.168.1.100/T42G”.

# Triggering the IP Phone to Perform the Auto Provisioning

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This chapter introduces the following methods to trigger the IP phone to perform the auto provisioning process:

- [Power On](#)
- [Repeatedly](#)
- [Weekly](#)
- [Auto Provision Now](#)
- [Multi-mode Mixed](#)
- [SIP NOTIFY Message](#)
- [Auto Provisioning via Activation Code](#)

When there is an active call on the IP phone during auto provisioning, the auto provisioning process will detect the call status every 30 seconds. If the call is released within 2 hours, the auto provisioning process will be performed normally. Otherwise, the process will end, due to timeout.

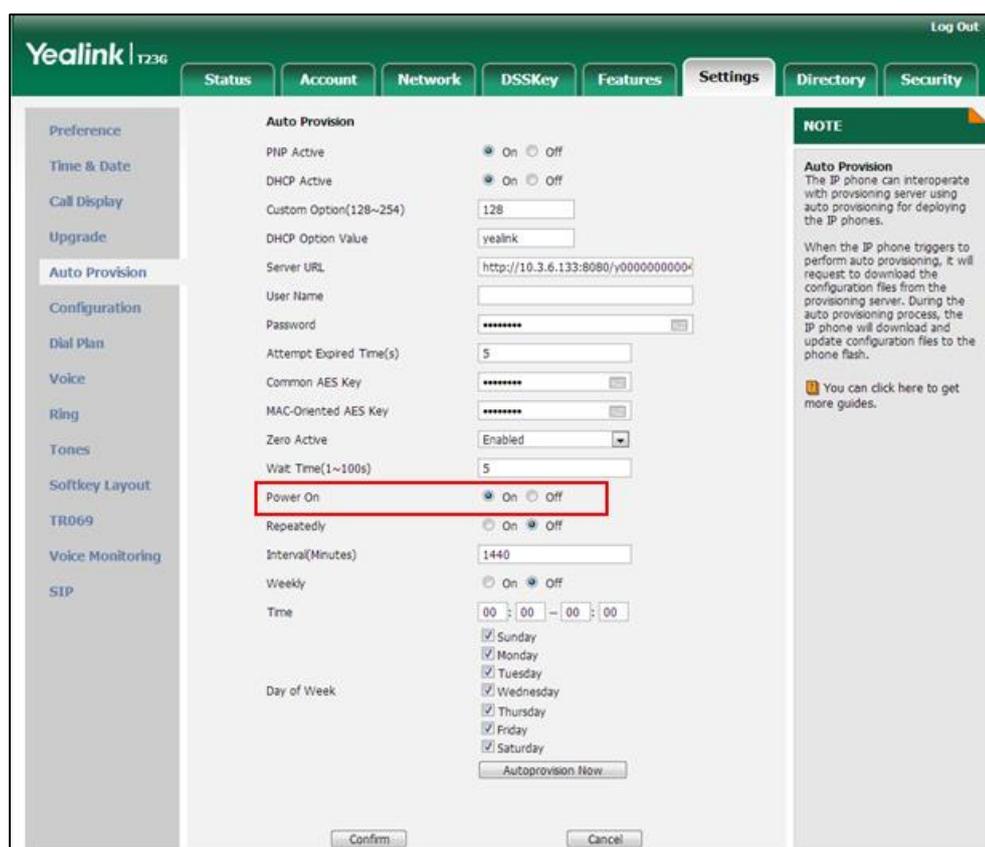
## Power On

The IP phone performs the auto provisioning process when the IP phone is powered on.

**To activate the power on mode via a web user interface:**

1. Click on **Settings->Auto Provision**.

2. Mark the **On** radio box in the **Power On** field.



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

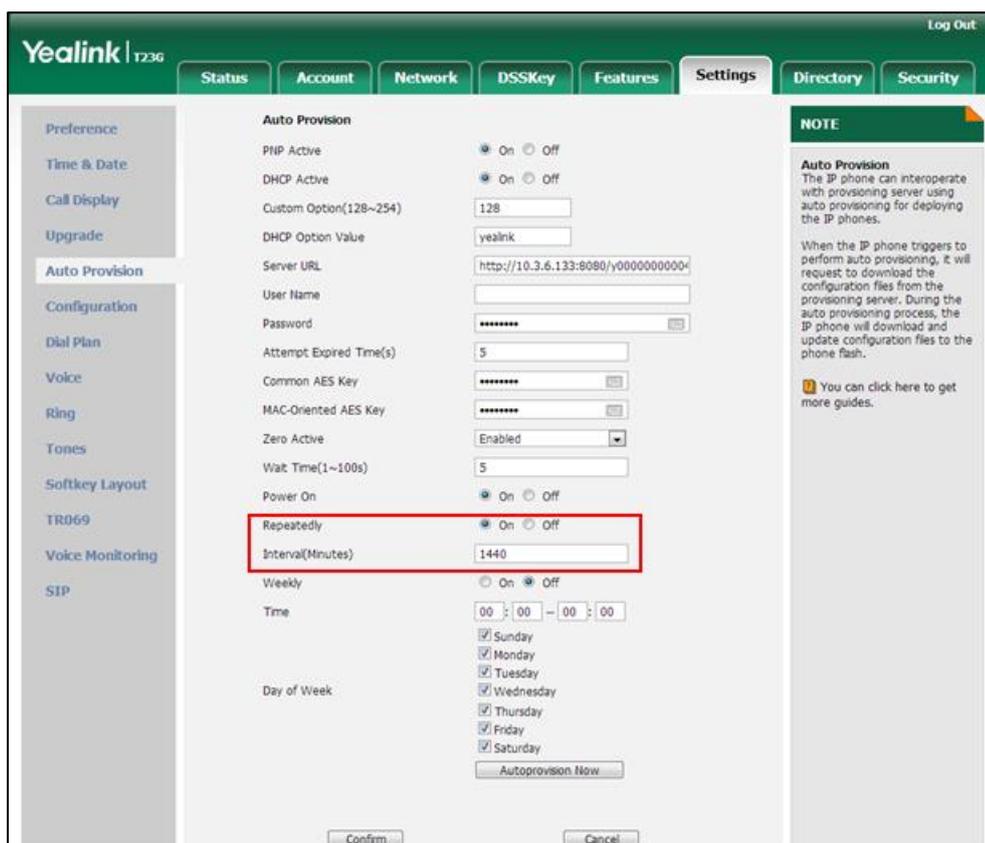
## Repeatedly

The IP phone performs the auto provisioning process at regular intervals. You can configure the interval for the repeatedly mode. The default interval is 1440 minutes.

**To activate the repeatedly mode via web user interface:**

1. Click on **Settings->Auto Provision**.
2. Mark the **On** radio box in the **Repeatedly** field.

3. Enter the interval time (in minutes) in the **Interval(Minutes)** field.



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

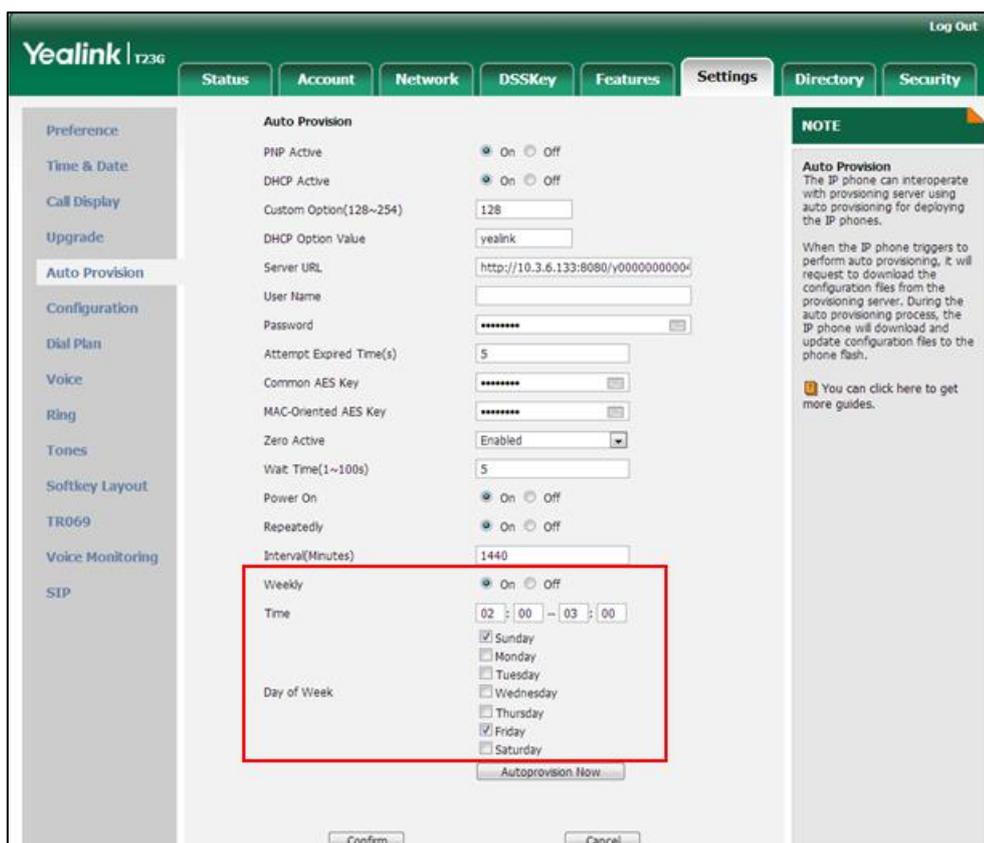
## Weekly

The IP phone performs the auto provisioning process at the fixed time every week. You can configure what time of the day and which day of the week to trigger the IP phone to perform the auto provisioning process. For example, you can configure the IP phone to check and update new configuration between 2 to 3 o'clock every Friday and Sunday.

**To activate the weekly mode via web user interface:**

1. Click on **Settings->Auto Provision**.
2. Mark the **On** radio box in the **Weekly** field.
3. Enter the desired time in the **Time** field.

4. Mark one or more checkboxes in the **Day of Week** field.



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

## Auto Provision Now

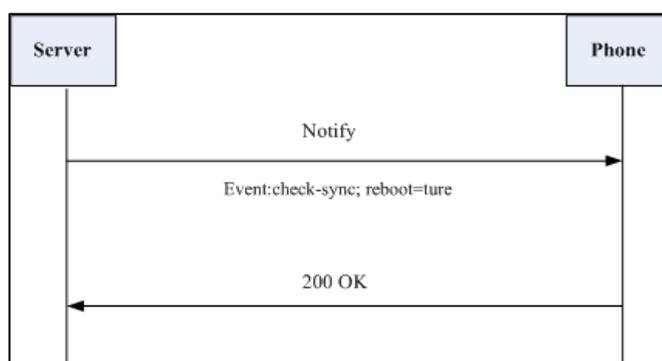
You can use auto provision now mode to manually trigger the IP phone to perform the auto provisioning process immediately.

**To use the auto provision now mode via web user interface:**

1. Click on **Settings->Auto Provision**.

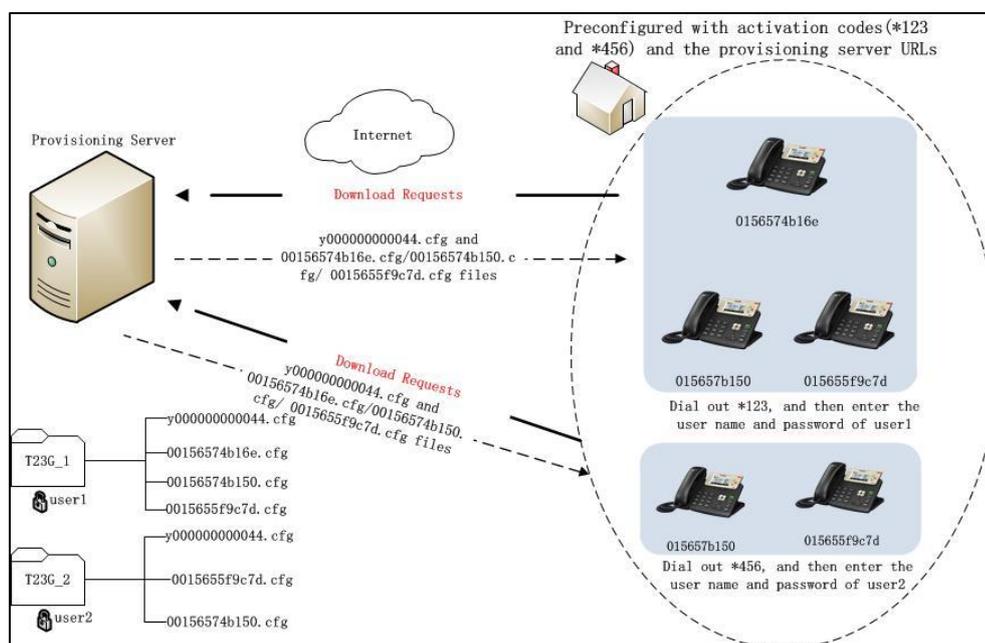


The following figure shows the message flow:



## Auto Provisioning via Activation Code

In addition to the updating modes introduced above, users can trigger IP phones to perform auto provisioning by dialing an activation code. To use this method, the activation code and the provisioning server address need to be pre-configured on the IP phones. This method is normally used for IP phones distributed by retail sales. It has the advantage that the IP phones do not need to be handled (e.g., registering account) before sending them to end-users.



The following lists the processes for triggering auto provisioning via activation code:

1. Create multiple directories (e.g., T23G\_1 and T23G\_2) on the provisioning server.
2. Store a common CFG file and multiple <MAC>.cfg files to each directory on the provisioning server.
3. Configure a user name and password for each directory.

The user name and password provides a means of conveniently partitioning the

configuration files for different IP phones. To access the specified directory, you need to provide the correct user name and password configured for the directory.

4. Configure unique activation codes and the provisioning server URLs on IP phones. The activation code can be numeric characters, special characters "#", "\*" or a combination of them within 32 characters.

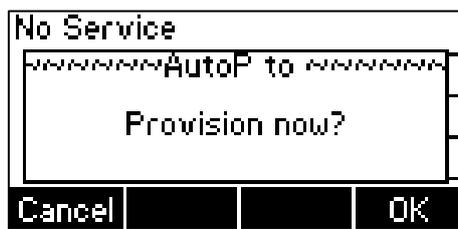
The following are example configurations in the configuration file for IP phones:

```

autoprovision.1.code = *123
autoprovision.1.url = tftp://192.168.1.30/T23G_1/
autoprovision.2.code = *456
autoprovision.2.url = tftp://192.168.1.30/T23G_2/
    
```

5. Send the specified activation code, associated user name and password to each end-user.
6. The user can set up the IP phone, and then input the activation code after the phone startup.

The LCD screen will prompt the following dialog box:



7. Press the **OK** soft key to trigger the IP phone to perform auto provisioning.

The LCD screen will prompt the following input box:



8. Enter the user name and password in the **User Name** and **Password** field respectively.

The entered user name and password must correspond to the directory where the configuration files of the IP phone are located. If you enter invalid user name or password, the LCD screen will prompt the message "Wrong user name or password!". The prompt message will disappear in two seconds, and the LCD screen will return to the idle screen. You need to input the activation code again to trigger the auto provisioning process.

The IP phone downloads the Common CFG file and the corresponding <MAC>.cfg files from the provisioning server to complete phone configurations.

The entered user name and password will be saved to the IP phone for next auto provisioning.

The LCD screen will not prompt for user name and password if the provisioning server does not require authentication, or the user name and password are already saved on the IP phone.

The following parameters are used to configure the auto provisioning via activation code method (X ranges from 1 to 50):

**#Configure the code name for triggering autop provisioning.**

autoprovision.X.name

**#Configure the activation code.**

autoprovision.X.code

**#Configure the URL of the provisioning server.**

autoprovision.X.url

**#Configure the username and password for downloading configuration files.**

autoprovision.X.user

autoprovision.X.password

# Downloading and Verifying Configurations

## Downloading Configuration Files

After obtaining the provisioning server address in one of the ways introduced above, the phone will request to download the configuration files from the provisioning server when it is triggered to perform auto provisioning. During the auto provisioning process, the IP phone will try to download the Common CFG file firstly, and then try to download the MAC-Oriented CFG file from the provisioning server. If the access URLs of the resource files have been specified in the configuration files, the phone will try to download the resource files.

## Resolving and Updating Configurations

After downloading, the phone resolves the configuration files and resource files (if specified in the configuration files), and then updates the configurations and resource files to the phone flash. Generally, updated configurations will automatically take effect after the auto provisioning process is completed. For update of some specific configurations which require a reboot before taking effect, for example, network configurations, the IP phone will reboot to make the configurations effective after the auto provisioning process is completed.

The IP phone calculates the MD5 values of the downloaded files before updating them. If the MD5 values of the Common and MAC-Oriented configuration files are the same as those of the last downloaded configuration files, this means these two configuration files on the provisioning server are not changed. The IP phone will complete the auto provisioning without repeated update. This is used to avoid unnecessary restart and impact of phone use. On the contrary, the IP phone will update configurations.

The latest values to be applied to the IP phone are the values that take effect.

The phone only reboots when there is at least a specific configuration requiring a reboot after auto provisioning. If you want to force the IP phone to perform a reboot after auto provisioning, you can configure "auto\_provision.reboot\_force.enable = 1" in the configuration file.

For more information on the specific configurations which require a reboot during auto provisioning and the parameter "auto\_provision.reboot\_force.enable", refer to [Yealink\\_SIP-T2\\_Series\\_T19\(P\) E2\\_T4\\_Series IP phones\\_Description of Configuration Parameters in CFG Files.xlsx](#).

If configuration files have been AES encrypted, the IP phone will use the Common AES key to decrypt the Common CFG file and the MAC-Oriented AES key to decrypt the <MAC>.cfg file after downloading the configuration files. For more information on how the IP phone decrypts configuration files, refer to [Yealink Configuration Encryption Tool](#)

*User Guide.*

## Using MAC-local CFG File

### Uploading and downloading the <MAC>-local.cfg file

You can configure whether the IP phone periodically uploads the <MAC>-local.cfg file to the provisioning server to back up this file, and downloads the <MAC>-local.cfg file from the provisioning server during auto provisioning to override the one stored on the phone. This process is controlled by the value of the parameter "auto\_provision.custom.sync". When the value of the parameter "auto\_provision.custom.sync" is set to 1, the IP phone will periodically upload the configuration files to the provisioning server, and download the configuration files from the provisioning server during auto provisioning.

### Updating configurations in the <MAC>-local.cfg file

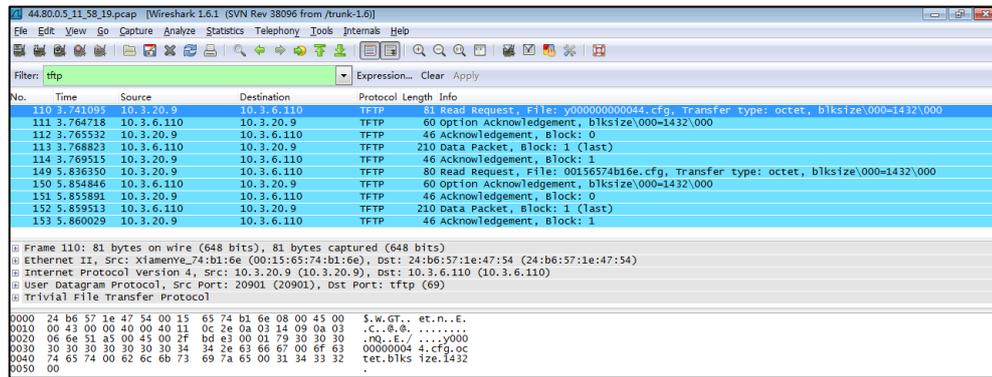
You can configure whether the IP phone updates configurations in the <MAC>-local.cfg file during auto provisioning. This process is controlled by the value of the parameter "auto\_provision.custom.protect". If the IP phone is configured to keep user personalized settings (by setting the value of the parameter "auto\_provision.custom.protect" to 1), it will update configurations in the <MAC>-local.cfg file. The IP Phone updates configuration files during auto provisioning in sequence:  
Common>MAC-Oriented>MAC-local. The configurations in the <MAC>-local.cfg file take precedence over the ones in the downloaded Common CFG file or <MAC>.cfg file. As a result, the personalized settings of the phone configured via the phone or web user interface can be kept after auto provisioning.

## Verifying Configurations

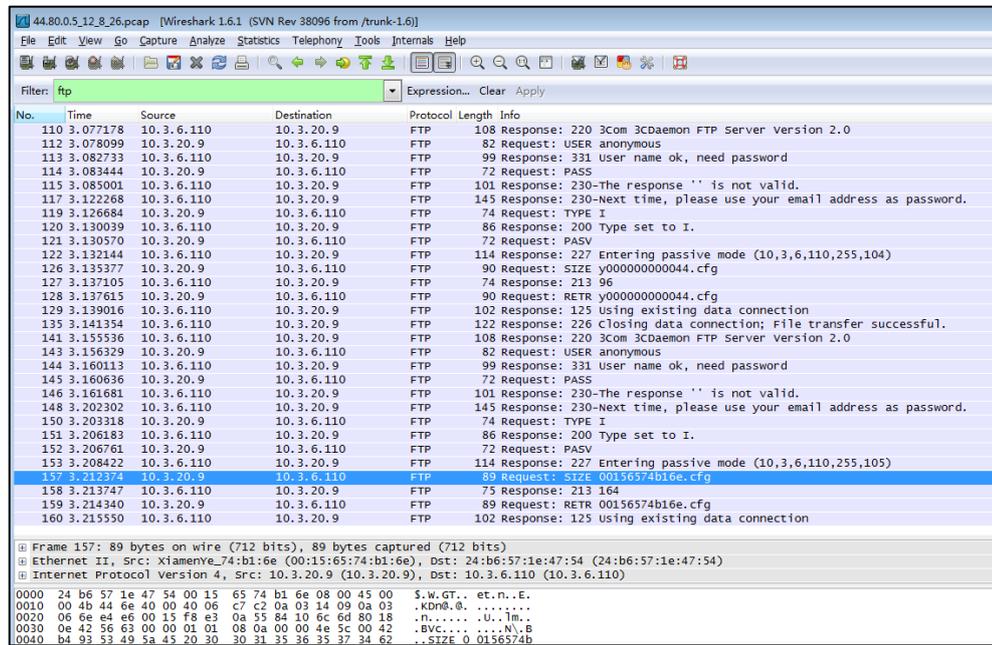
After auto provisioning, you can then verify the update via phone user interface or web user interface of the phone. For more information, refer to [Yealink phone-specific user guide](#).

During the auto provisioning process, you can monitor the downloading requests and response messages by a WinPcap tool. The following shows some examples.

**Example 1:** Yealink SIP-T23G IP phone downloads configuration files from the TFTP server.



**Example 2:** Yealink SIP-T23G IP phone downloads configuration files from the FTP server.



**Example 3:** Yealink SIP-T23G IP phone downloads configuration files from the HTTP server.

The image shows a Wireshark capture of network traffic. The filter is set to 'http'. The table below represents the data shown in the packet list pane, with the packet containing the configuration file download highlighted in blue.

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	10.3.20.9	10.3.6.110	HTTP	232	HTTP/1.1 302 Found
2	0.007935	10.3.6.110	10.3.20.9	HTTP	542	GET /servlet?p=settings-config&q=load HTTP/1.1
38	0.068955	10.3.20.9	10.3.6.110	HTTP	125	HTTP/1.1 200 OK
41	2.576460	10.3.6.110	10.3.20.9	HTTP	515	GET /servlet?p=settings-autop&q=load HTTP/1.1
77	2.643550	10.3.20.9	10.3.6.110	HTTP	982	HTTP/1.1 200 OK
87	10.797870	10.3.6.110	10.3.20.9	HTTP	86	POST /servlet?p=settings-autop&q=write&now=false HTTP/1.1 (application/x-www-form-urlencoded)
89	10.959182	10.3.20.9	10.3.6.110	HTTP	231	HTTP/1.1 302 Found
90	11.030754	10.3.6.110	10.3.20.9	HTTP	540	GET /servlet?p=settings-autop&q=load HTTP/1.1
126	11.098802	10.3.20.9	10.3.6.110	HTTP	991	HTTP/1.1 200 OK
134	13.523038	10.3.6.110	10.3.20.9	HTTP	84	POST /servlet?p=settings-autop&q=write&now=true HTTP/1.1 (application/x-www-form-urlencoded)
161	13.727710	10.3.20.9	10.3.6.110	HTTP	206	HTTP/1.1 200 OK
166	13.755655	10.3.20.9	10.3.6.110	HTTP	218	GET /y000000000044.cfg HTTP/1.1
169	13.796582	10.3.6.110	10.3.20.9	HTTP	205	HTTP/1.1 200 OK (application/octet-stream)
178	13.809749	10.3.20.9	10.3.6.110	HTTP	208	GET /ime.txt HTTP/1.1
185	13.836439	10.3.6.110	10.3.20.9	HTTP	1032	HTTP/1.1 200 OK (text/plain)
194	13.846276	10.3.20.9	10.3.6.110	HTTP	216	GET /Russian_ime.txt HTTP/1.1
201	13.883670	10.3.6.110	10.3.20.9	HTTP	1272	HTTP/1.1 200 OK (text/plain)
210	13.894060	10.3.20.9	10.3.6.110	HTTP	223	GET /00156574b16e-local.cfg HTTP/1.1
219	13.898442	10.3.6.110	10.3.20.9	HTTP	66	HTTP/1.1 404 Not Found (text/html)
224	18.779475	10.3.6.110	10.3.20.9	HTTP	493	GET /servlet?p=settings-autop&q=result&random=0.04913059249520302 HTTP/1.1
228	18.988420	10.3.20.9	10.3.6.110	HTTP	59	HTTP/1.1 200 OK [Malformed Packet]
231	19.996891	10.3.6.110	10.3.20.9	HTTP	524	GET /servlet?p=settings-autop&q=load HTTP/1.1
267	20.063444	10.3.20.9	10.3.6.110	HTTP	991	HTTP/1.1 200 OK
270	23.138206	10.3.6.110	10.3.20.9	HTTP	516	GET /servlet?p=settings-upgrade&q=load HTTP/1.1
300	23.195348	10.3.20.9	10.3.6.110	HTTP	853	HTTP/1.1 200 OK
302	23.278964	10.3.6.110	10.3.20.9	HTTP	522	GET /servlet?p=common-page&q=iframe-upload HTTP/1.1
305	23.298530	10.3.20.9	10.3.6.110	HTTP	1490	HTTP/1.1 200 OK
308	24.965106	10.3.6.110	10.3.20.9	HTTP	517	GET /servlet?p=settings-config&q=load HTTP/1.1
343	25.023340	10.3.20.9	10.3.6.110	HTTP	125	HTTP/1.1 200 OK
346	26.271142	10.3.6.110	10.3.20.9	HTTP	644	POST /servlet?p=settings-config&q=stopcapture HTTP/1.1

# Troubleshooting

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

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

## Why does the IP phone fail to download configuration files?

- Ensure that auto provisioning feature is configured properly.
- Ensure that the provisioning server and network are reachable.
- Ensure that authentication credentials configured on the IP phone are correct.
- Ensure that configuration files exist on the provisioning server.

## Why does the IP phone fail to authenticate the provisioning server during auto provisioning?

- Ensure that the certificate for the provisioning server has been uploaded to the phone's trusted certificates list. If not, do one of the following:
  - Import the certificate for the provisioning server to the phone's trusted certificates list (at phone's web path **Security->Trusted Certificates->Import Trusted Certificates**).
  - Disable the IP phone to only trust the server certificates in the trusted certificates list (at phone's web path **Security->Trusted Certificates->Only Accept Trusted Certificates**).

## Why does the provisioning server return HTTP 404?

- Ensure that the provisioning server is properly set up.
- Ensure that the access URL is correct.
- Ensure that the requested files exist on the provisioning server.

## Why does the IP phone display "Network unavailable"?

- Ensure that the Ethernet cable is plugged into the Internet port on the IP phone and the Ethernet cable is not loose.
- Ensure that the switch or hub in your network is operational.
- Ensure that the configurations of network are properly set in the configuration files.

**Why is the permission denied when uploading files to the root directory of the FTP server?**

- Ensure that the complete path to the root directory of the FTP server is authorized.
- Check security permissions on the root directory of the FTP server, if necessary, change the permissions.

**Why doesn't the IP phone obtain the IP address from the DHCP server?**

- Ensure that settings are correct on the DHCP server.
- Ensure that the IP phone is configured to obtain the IP address from the DHCP server.

**Why doesn't the IP phone download the ring tone?**

- Ensure that the file format of the ring tone is \*.wav.
- Ensure that the size of the ring tone file is no larger than that the IP phone supports.
- Ensure that the properties of the ring tone for the IP phone are correct.
- Ensure that the network is available and the root directory is right for downloading.
- Ensure that the ring tone file exists on the provisioning server.

**Why doesn't the IP phone update configurations?**

- Ensure that the configuration files are different from the last ones.
- Ensure that the IP phone has downloaded the configuration files.
- Ensure that the parameters are correctly set in the configuration files.

## Glossary

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**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 an FTP Server

Wftpd and FileZilla are free FTP application software for Windows. This section mainly provides instructions on how to configure an FTP server using wftpd for Windows. You can download wftpd online: <http://www.wftpd.com/products/products.html> or FileZilla online: <https://filezilla-project.org>.

We recommend that you use vsftpd as an FTP server for Linux platform if required.

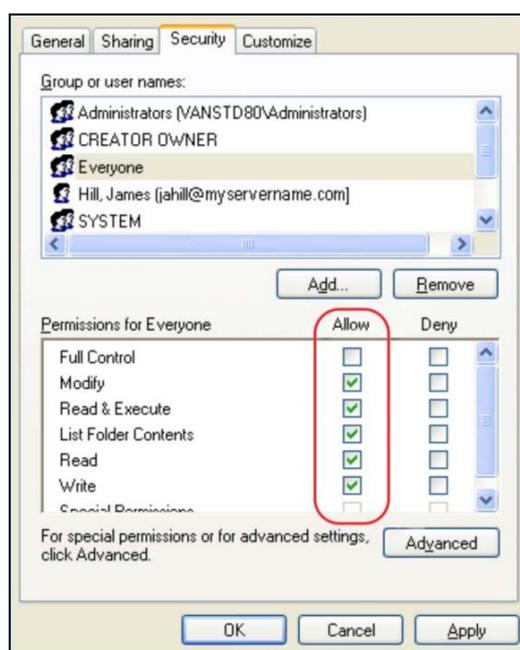
### Preparing a Root Directory

To prepare a root directory:

1. Create an FTP root directory on the local system.
2. Place the configuration files to this root directory.
3. Set the security permissions for the FTP directory folder.

You need to define a user or group name, and set the permissions: read, write, and modify. Security permissions vary by organizations.

An example of configuration on the Windows platform is shown as below:

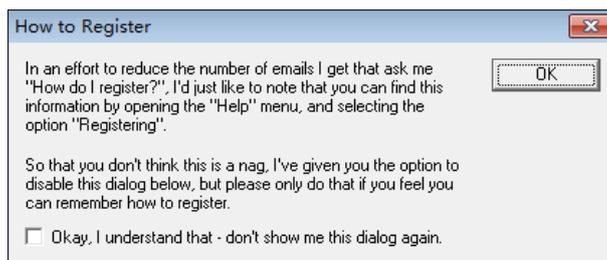


## Configuring an FTP Server

To configure a wftpd server:

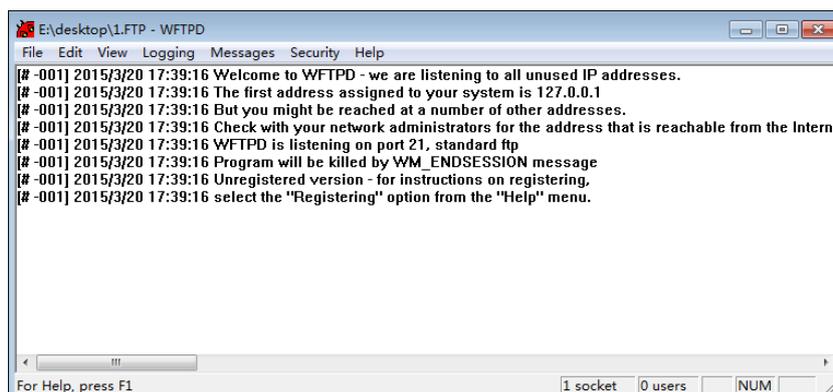
1. Download the compressed file of the wftpd application to your local directory and extract it.
2. Double click the WFTPD.EXE.

The dialogue box of how to register is shown as below:

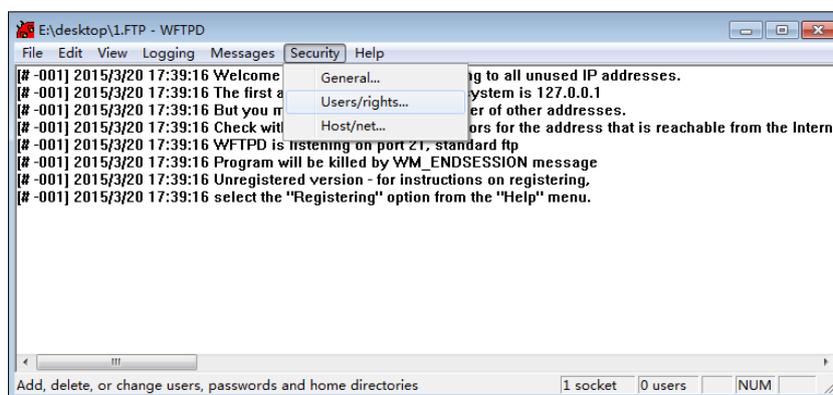


3. Check the check box and click **OK** in the pop-up dialogue box.

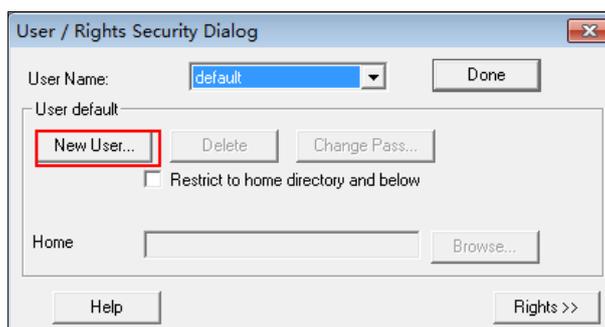
The log file of the wftpd application is shown as below:



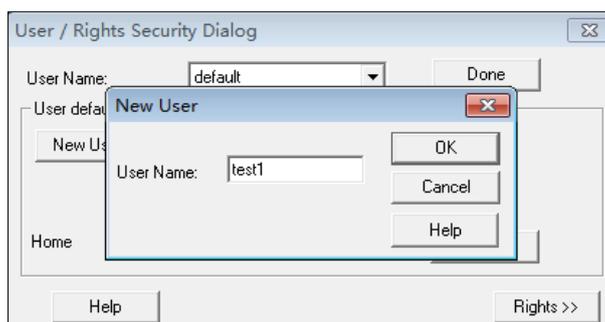
4. Click **Security->Users/rights**.



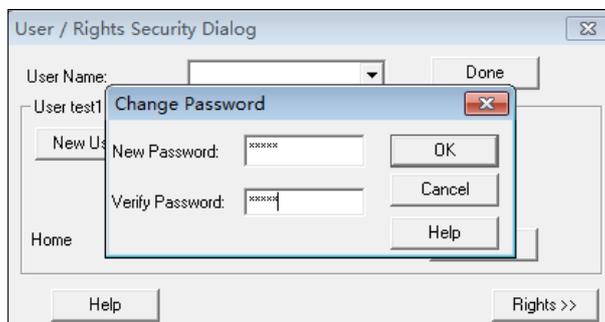
- Click **New User**.



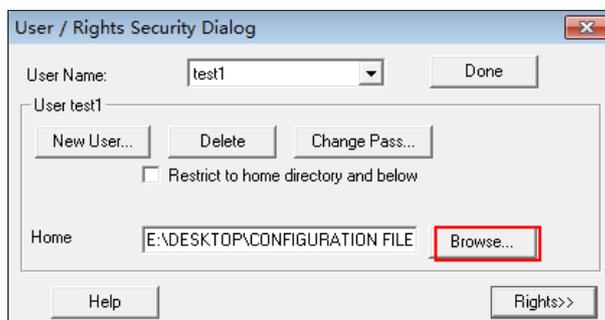
- Enter a user name (e.g., test1) in the **User Name** field and then click **OK**.



- Enter the password of the user (e.g., test1) created above in the **New Password** and **Verify Password** fields respectively, and then click **OK**.

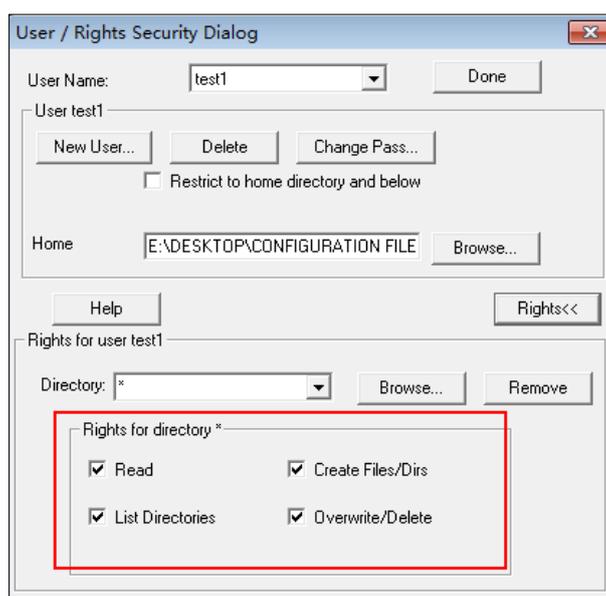


- Click **Browse** to locate the FTP root directory from your local system.



- Click **Rights>>** and assign the desired permission for the user (e.g., test1) created above.
- Check the check boxes of **Read, Create Files/Dirs, List Directories** and

**Overwrite/Delete** to make sure the FTP user has the read and write permission.



11. Click **Done** to save the settings and finish the configurations.

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://test1:123456@10.3.6.234/") is where the IP phone downloads configuration files from.

Before configuring a wftpd server, ensure that no other FTP servers exist in your local system.

## Configuring an HTTP Server

This section provides instructions on how to configure an HTTP server using HFS tool. You can download the HFS software online: <http://www.snapfiles.com/get/hfs.html>.

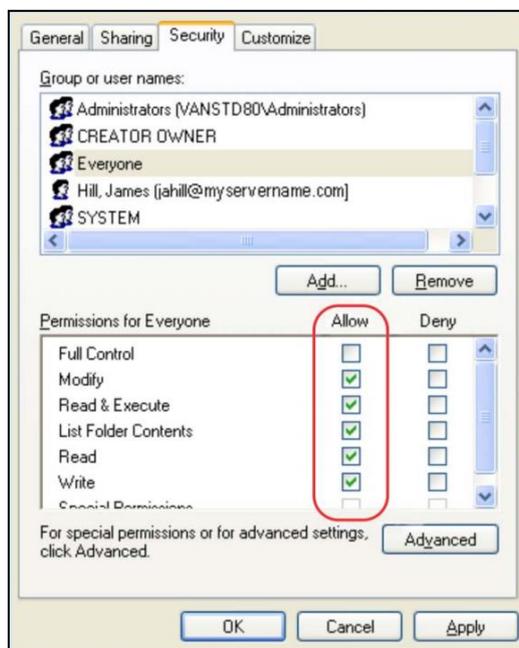
### Preparing a Root Directory

To prepare a root directory:

1. Create an HTTP root directory on the local system.
2. Place configuration files to this root directory.
3. Set the security permissions for the HTTP directory folder.

You need to define a user or group name and set the permissions: read, write, and modify. Security permissions vary by organizations.

An example of configuration on the Windows platform is shown as below:



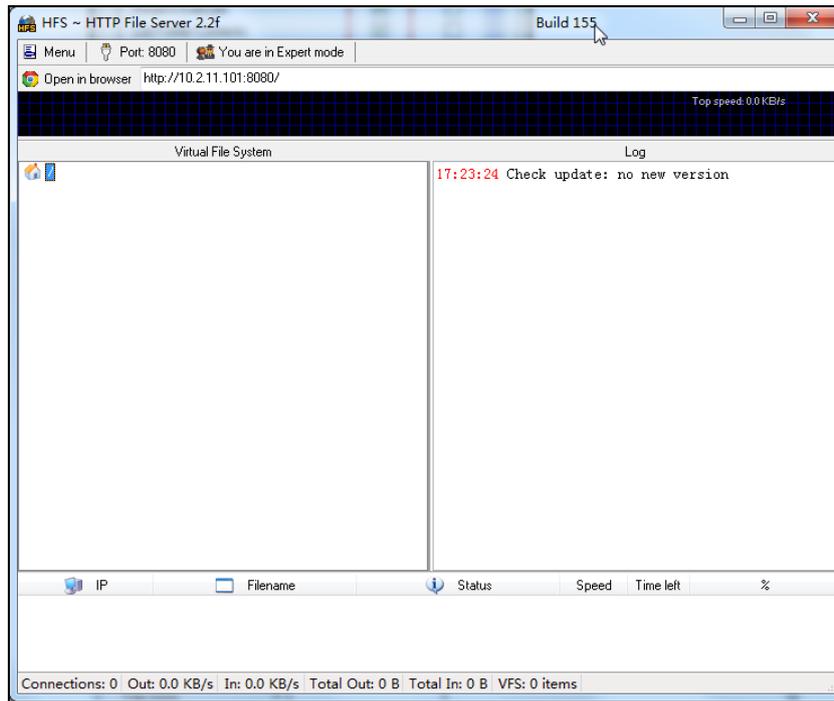
## Configuring an HTTP Server

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

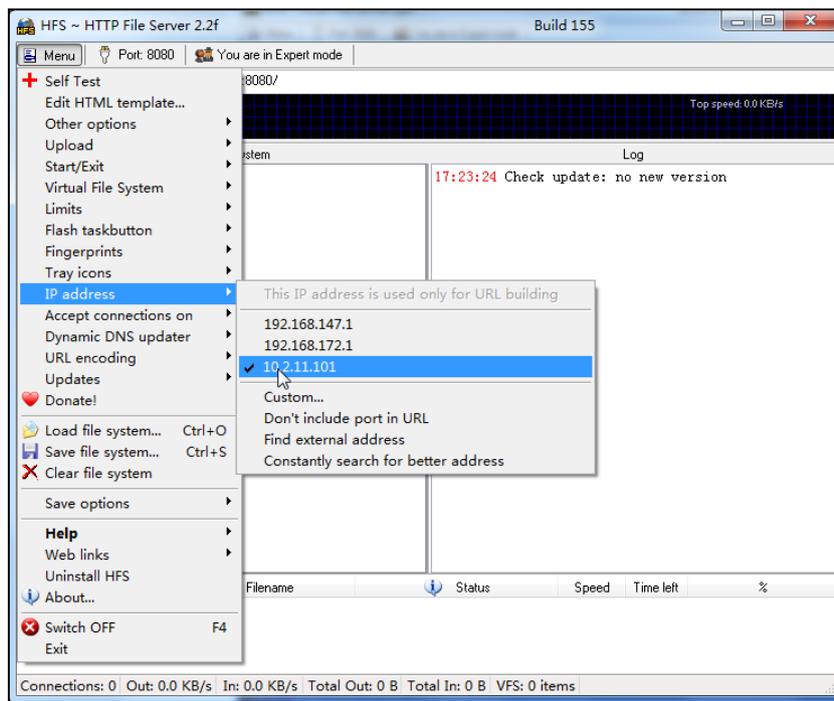
**To configure an HTTP server:**

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

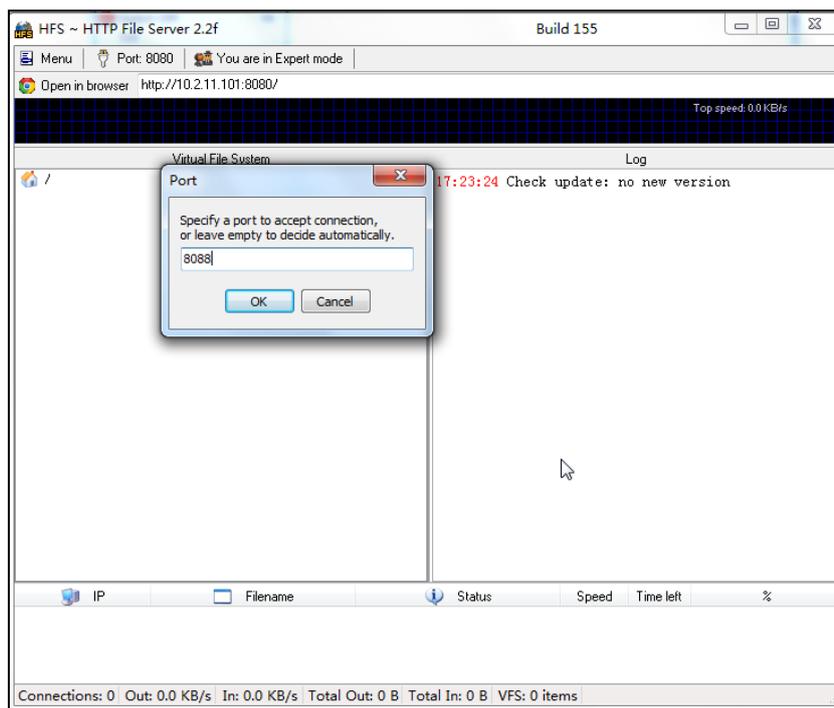
The main configuration page is shown as below:



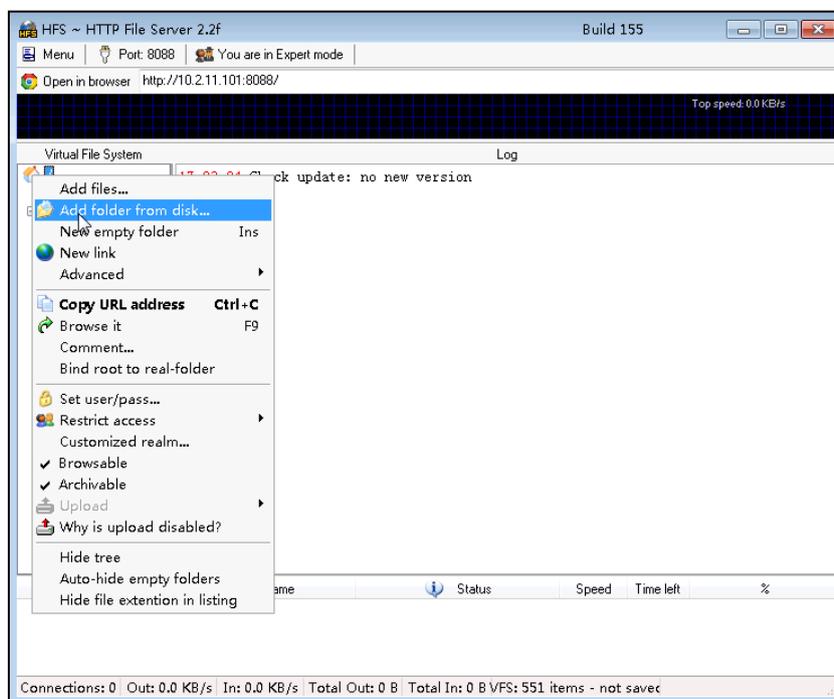
2. Click **Menu** in the main page and select the IP address of the PC from **IP address**.



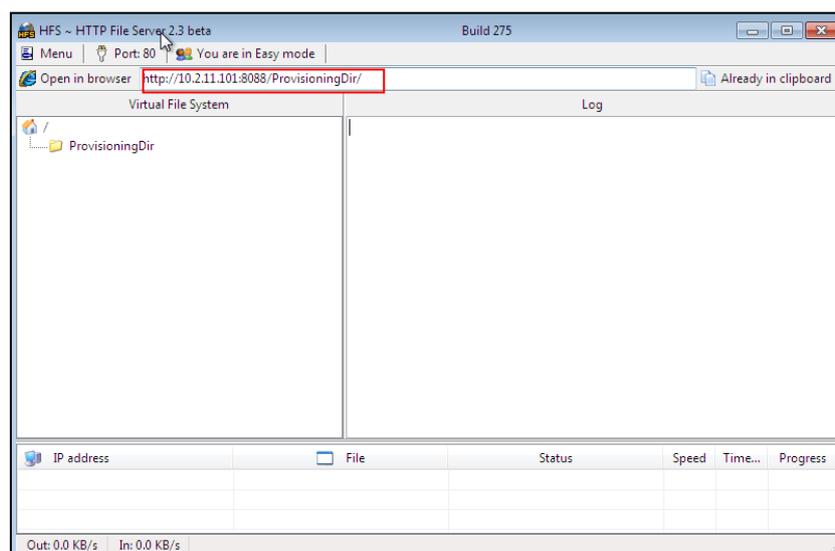
The default HTTP port is 8080. You can also reset the HTTP port (make sure there is no port conflict).



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 your local system.



5. Check the server URL (e.g., `http:// 10.2.11.101:8088/ProvisioningDir`) by clicking "Open in browser".

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 on installing and configuring an Apache HTTPS Server, refer to the network resource.

## Configuring a DHCP Server

This section provides instructions on how to configure a DHCP server for Windows using DHCP Turbo. You can download this software online:

<http://www.tucows.com/preview/265297> and install it following the setup wizard.

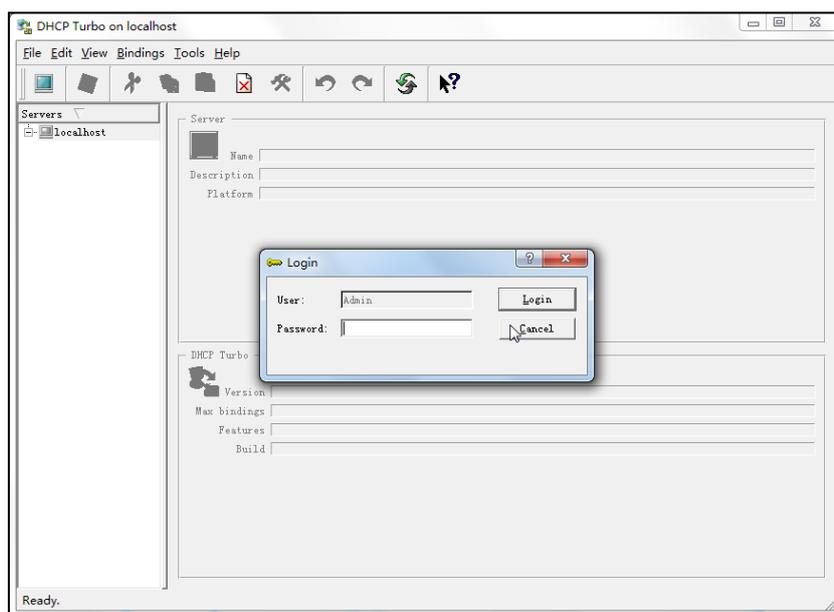
Before configuring the DHCP Turbo, make sure:

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

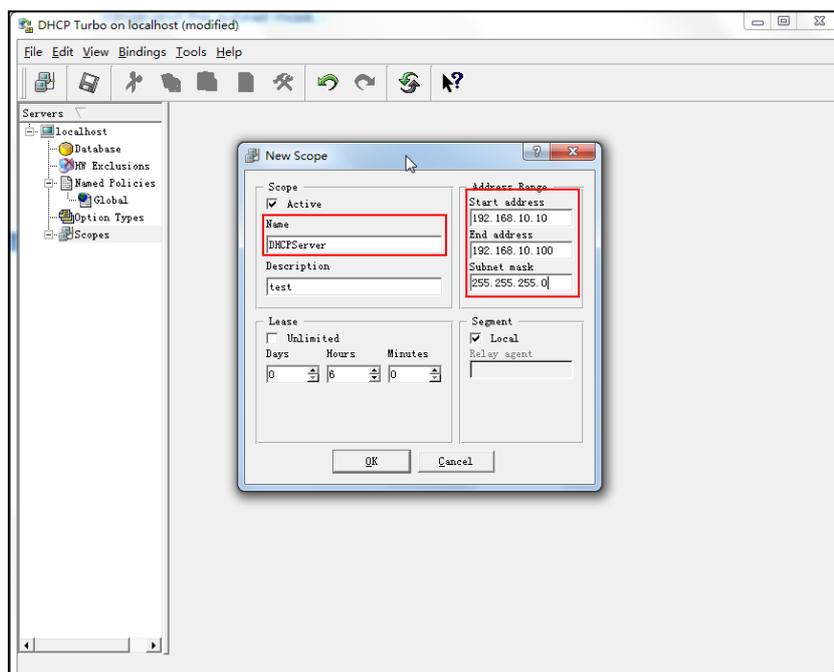
**To configure the DHCP Turbo:**

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

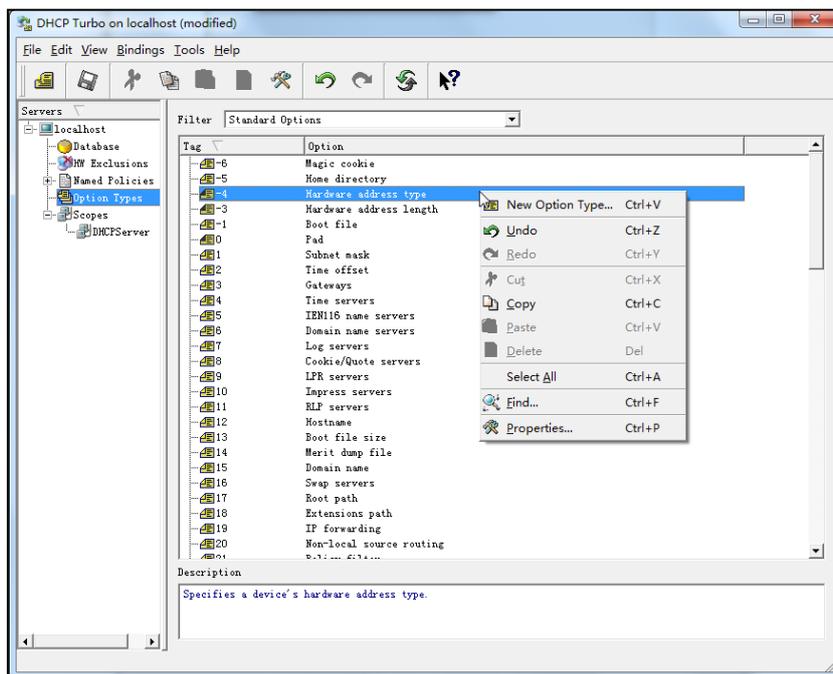
- Click the **Login** button (the login password is blank) to log in.



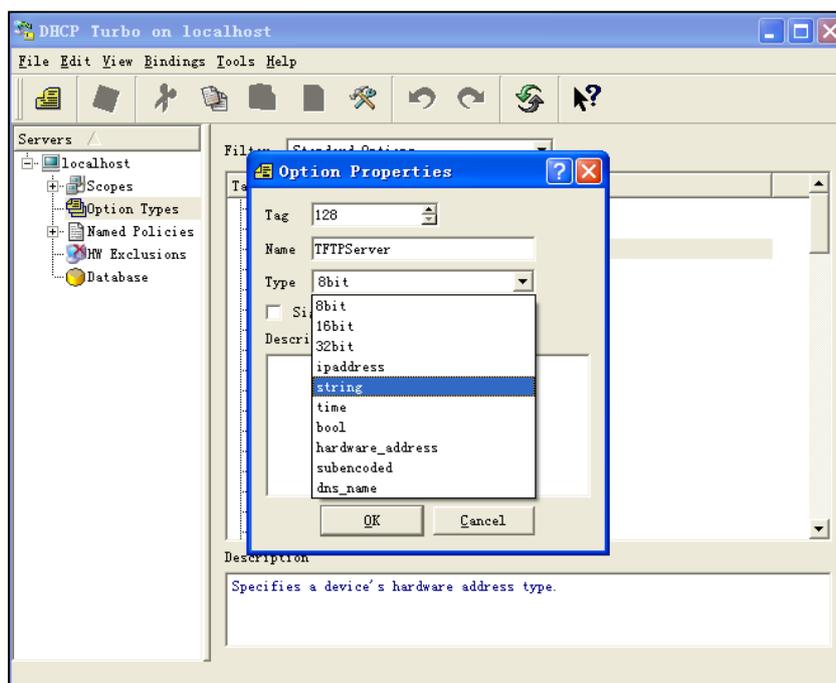
- Right click **Scopes** and select **New Scope**.
- Configure the DHCP server name, the DHCP IP range and the subnet mask.
- Click **OK** to accept the change.



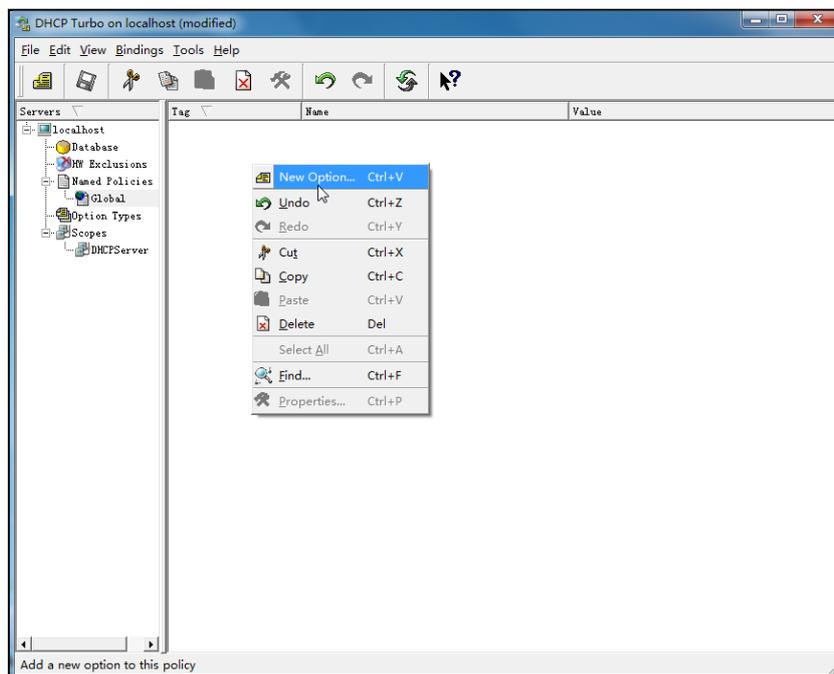
- You can add a custom option via DHCP Turbo. Select **Option Types**, right click one of the options on the right of the main page, and then select **New Option Type**.



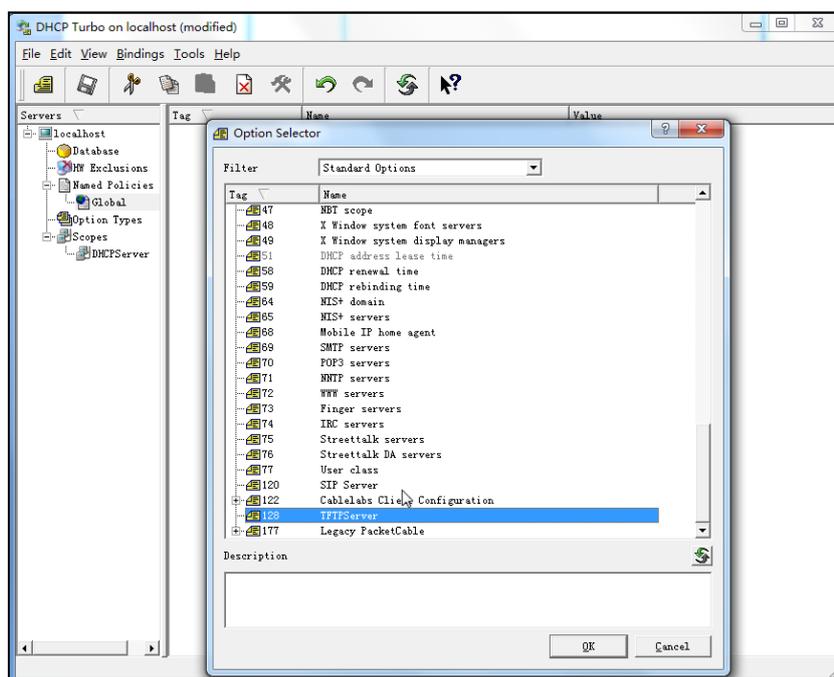
- Set the custom DHCP option (custom DHCP option tag number ranges from 128 to 254) and select the option type (Yealink supports **String** and **IP Address** option types only). Click the **OK** button to finish setting the option properties. Click  to save the change.



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

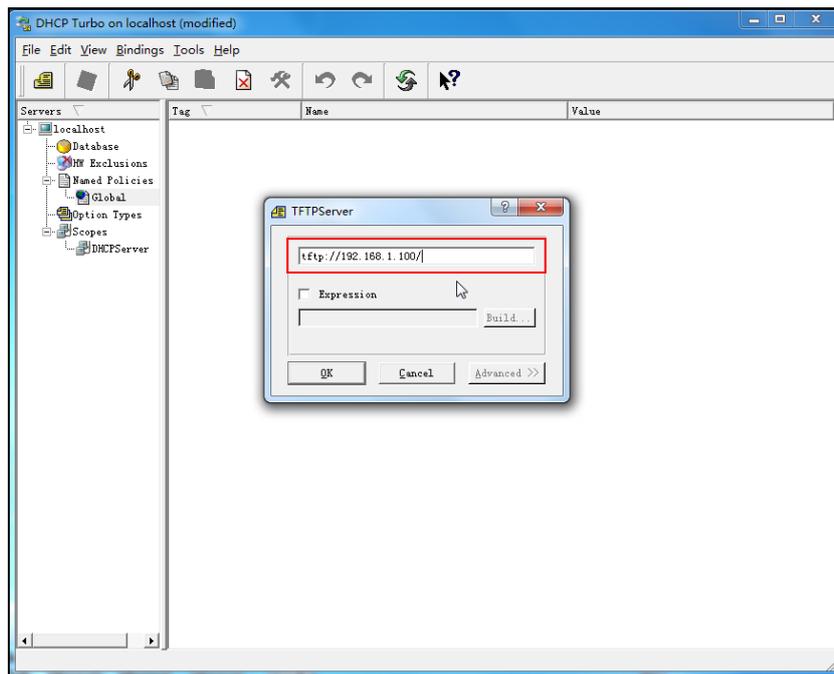


- Scroll down and double click the custom option 128.



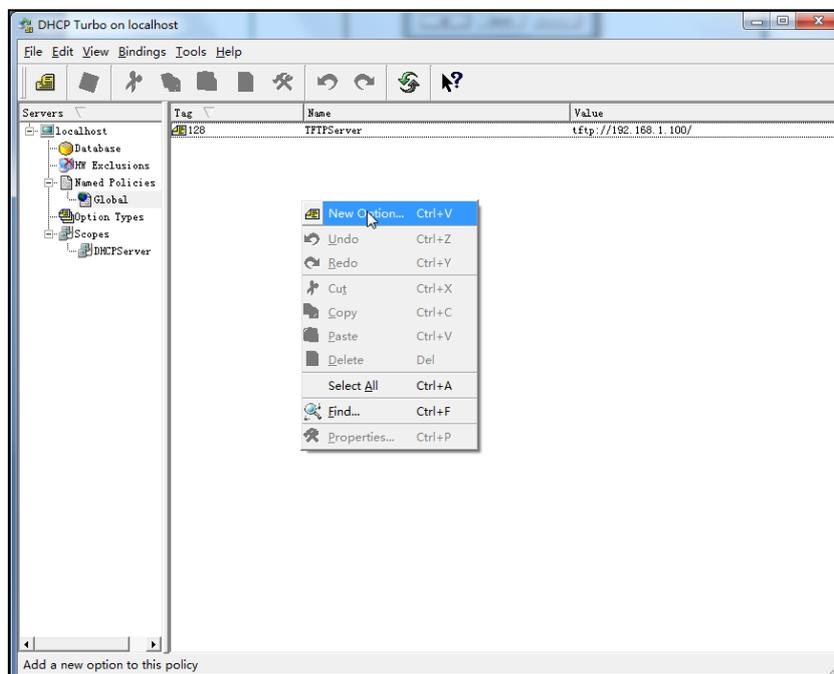
- Fill the provisioning server address in the input field.
- Click the **OK** button to finish setting a custom option.

- Click  to save the change.



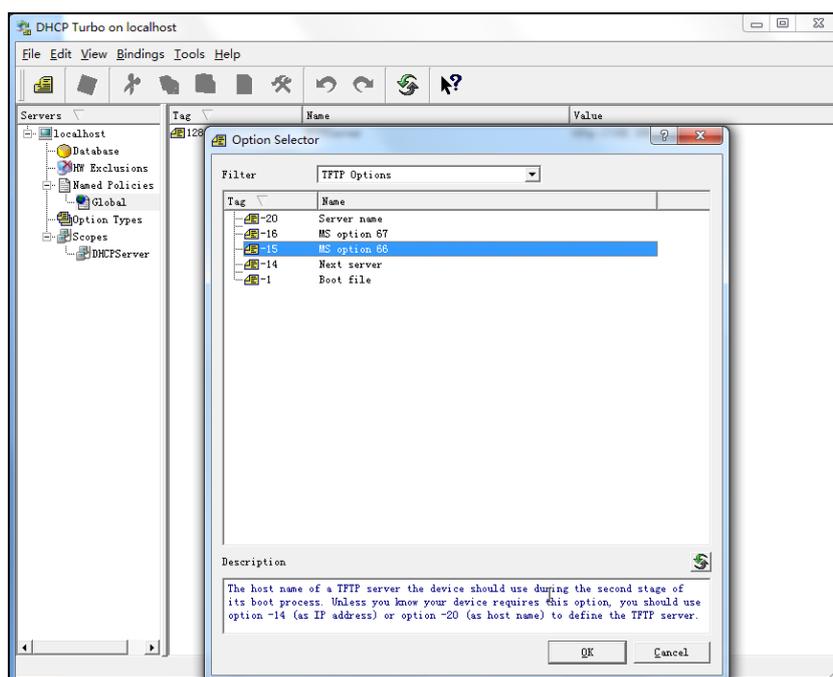
You can add the option 66 via DHCP Turbo. The following shows the detailed processes.

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

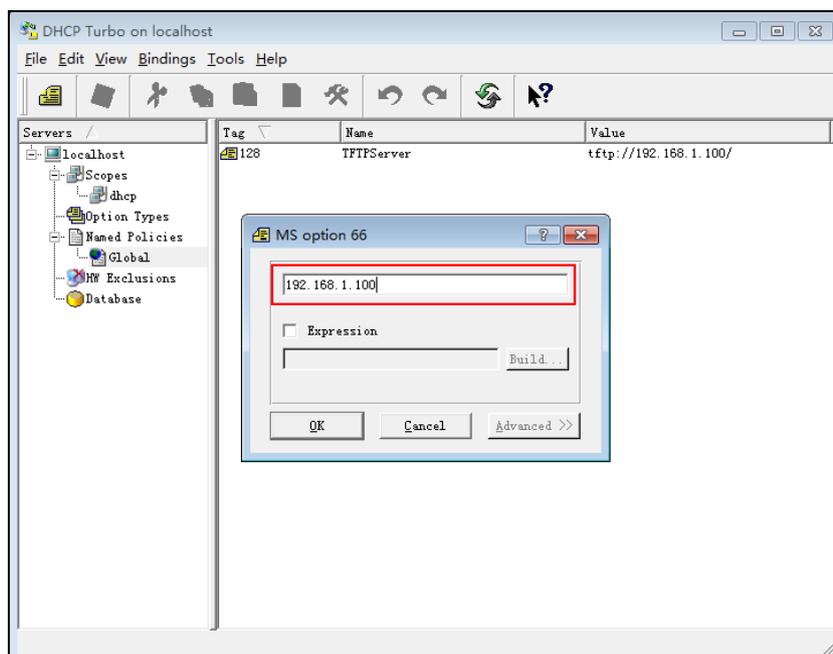


- Select **TFTP Options** from the pull-down list of **Filter**.

3. Scroll down and double click **MS option 66**.



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

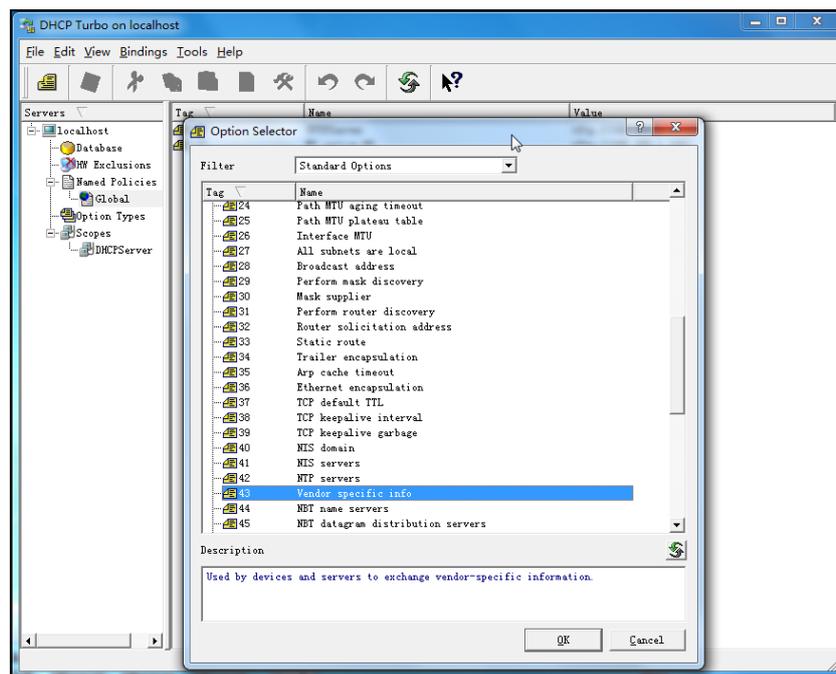


5. Click the **OK** button to finish setting a custom option.
6. Click  to save the change.

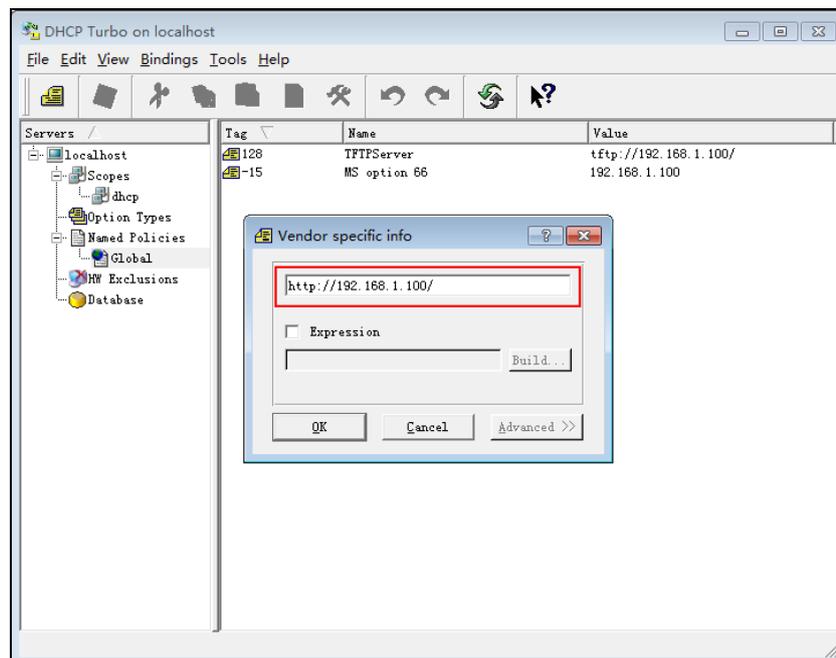
You can also add the option 43. The following shows the detailed processes.

1. Click **Named Policies**-->**Global**, right click the blank area on the right of the main page and then select **New Option**.
2. Select the **Standard Options** from the pull-down list of **Filter**.

3. Scroll down and double click 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.

## Customer Feedback

We are striving to improve our documentation quality and we appreciate your feedback. Email your opinions and comments to [DocsFeedback@yealink.com](mailto:DocsFeedback@yealink.com).