



Skype for Business[™]HD IP Phones Auto Provisioning Guide

Version 8.50 Oct. 2016

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Summary of Changes

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

Changes for Release 8, Guide Version 8.50

The following section is new:

Auto Provisioning via Activation Code on page 29

Major update has occurred to the following sections:

- DHCP Options on page 21
- Configuring an HTTP Server on page 44

Changes for Release 8, Guide Version 8.21

This version is updated to incorporate T46G/T42G/T41P/T40P Skype for Business phones. And Skype for Business phones are removed from version 8.

The following section is new:

• Provisioning Yealink Skype for Business Phones on page 5

Major update has occurred to the following sections:

- Editing Common CFG File on page 11
- Editing MAC-Oriented CFG File on page 12
- Customizing Resource Files on page 14

The following section is removed to

Yealink_Skype_for_Business_Edition_HD_IP_Phones_Description_of_Configuration_Parameters_in _CFG_Files.

• Description of Configuration Parameters in CFG file

Introduction

Yealink IP phones with Skype for Business firmware enable a new era in unified communications. It is designed to work with $Microsoft^{(R)}$ Skype for Business Server.

Yealink Skype for Business 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 configure Yealink Skype for Business phones with the minimum settings required. Yealink Skype for Business phones support FTP, TFTP, HTTP, and HTTPS protocols for auto provisioning and are configured to use the TFTP protocol by default.

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

- Yealink T48G
- Yealink T46G
- Yealink T42G
- Yealink T41P
- Yealink T40P

The auto provisioning process outlined in this guide applies to Yealink T48G/T46G/T42G/T41P/T40P Skype for Business phones running firmware version 8 or later. We recommend that Skype for Business 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.

Getting Started

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 Skype for Business phones phone tries to download these CFG files from the server during auto provisioning.

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://www.yealink.com/solution_info.aspx?ProductsCateID=1248&cateid=1248&BaseInfoCateI d=1328&Cate_Id=1248&parentcateid=1328.

To download Common CFG and MAC-Oriented files:

- 1. Go to Yealink Microsoft Skype for Business page.
- 2. Download and extract the combined configuration files to your local system.

* Firmware

```
SIP-T40P (54.8.0.34) Skype for Business Edition for OnPrem New
SIP-T41P/SIP-T42G (29.8.0.34) Skype for Business Edition for OnPrem New
SIP-T46G (28.8.0.34) Skype for Business Edition for OnPrem New
SIP-T40G (35.8.0.34) Skype for Business Edition for OnPrem New
SIP-T40P (54.8.0.14) Skype for Business Edition for OnPrem
SIP-T41P/SIP-T42G (29.8.0.14) Skype for Business Edition for OnPrem
SIP-T46G (28.8.0.14) Skype for Business Edition for OnPrem
SIP-T46G (35.8.0.14) Skype for Business Edition for OnPrem
SIP-T48G (35.8.0.14) Skype for Business Edition for OnPrem
SIP-T48G (35.7.0.50) UC Edition
SIP-T48G (35.7.0.50) UC Edition
SIP-T48G (Yealink_ver_35.7.0.50.cab) UC Edition
SIP-T48G (Yealink_ver_35.7.0.51.cab) UC Edition Chinese version
SIP-T48G (Yealink_ver_35.7.0.51.cab) UC Edition Chinese version
```

CFG Templates for X.80.0.34 New CFG Templates 3. Open the folder you extracted and identify the files you will edit.

Obtaining Phone Information

Before beginning provisioning, you also need the phone information. For example: MAC address and the hardware version of the Skype for Business phone.

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

Hardware version: The current hardware version of the Skype for Business phone. You can view it via phone user interface or web user interface.

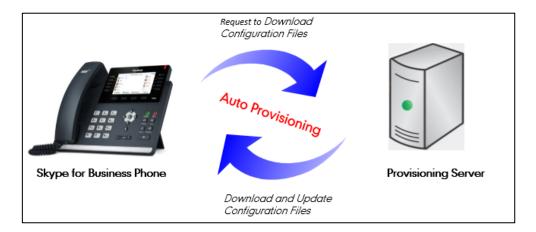
Provisioning Yealink Skype for Business Phones

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

Auto Provisioning Process

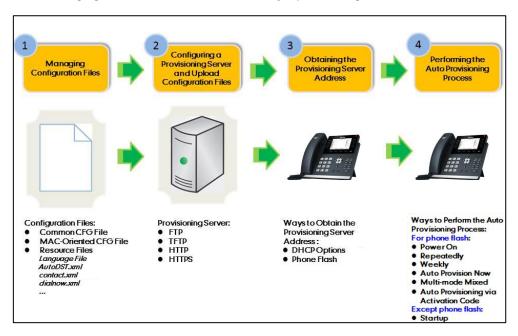
When Skype for Business phones are triggered to perform auto provisioning, it will request to download the configuration files from the provisioning server. During the auto provisioning process, the Skype for Business phone will download and update configuration files to the phone flash.

The following figure shows how the Skype for Business phone interoperates with the provisioning server:



Major Tasks for Auto Provisioning

You need to complete four major tasks to congifure Yealink Skype for Business 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 11.

For more information on how to configure a provisioning server, refer to Configuring a Provisioning Server on page 17.

For more information on how to obtain the provisioning server address, refer to Obtaining the Provisioning Server Address on page 21.

For more information on how to perform the auto provisioning process, refer to Triggering the Phone to Perform the Auto Provisioning on page 25.

If you are not familiar with auto provisioning process on Yealink Skype for Business 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., y00000000028.cfg) you want the Skype for Business phone to download. For more information on how to manage configuration files, refer to Managing Configuration Files on page 11.

- **2.** Configure the TFTP server.
 - **1)** Place configuration files to TFTP root directory (e.g., D:\TFTP Directory).

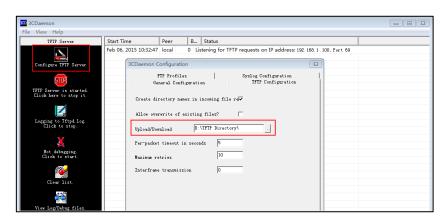
er D (D:) TFTP Directory	▼ 4, TFTP ₽
Share with 🔻 Burn New folder	ii 🔹 🗍 🔞
CFG file	

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

3CDaemon				
File View Help				
TFTP Server	Start Time	Peer	Bytes	Status
	Feb 05, 2015 17:37:25	local	0	Listening for TFTP requests on IP address: 192.188.1.100. Port 69
Configure TFTP Server TFTP Server is started. Click here to stop it.				
Logging to Tfipd log. Click to stop. Not debugging. Click to start.				The server URL where the Skype for Business phone downloads configuration files from is tftp://192.168.1.100/
Clear list. Đặc View Log/Debug files.				

3) Select **Configure TFTP Server**. Click the from your local system.

... utton to locate the TFTP root directory



For more information on how to configure a provisioning server, refer to Configuring a Provisioning Server on page 17.

- Log Out Yealink 1466 Settings Status Account Network Features Directory Security Auto Provision NOTE Preference PNP Active ● On ○ Off Auto Provision The auto provision parameters for administrator. Time & Date ● on ○ off DHCP Active 160,161 Upgrade Custom Option(128~254) 0 D You can click here to get MS-UC-Client DHCP Option Value 0 Auto Provision ore guid Server URL tftp://192.168.1.100/ Configuration User Name Dial Plan Password Enter the access URL of the Voice Common AES Key provisioning server in the MAC-Oriented AES Key Server URL field Tones Zero Active Disabled V Phone Lock Wait Time(0~100s) s 0 Location ● On © Off @ Power On EXP Module 🗢 On 🖲 Off 🕜 Repeatedly Interval(Minutes) 1440 BTOE 0 🗢 On 🖲 Off 🕜 Weekly Time 00 : 00 - 00 : 00 0 Sunday Monday Tuesday Day of Week Wednesday 🕜 Thursday Friday Autoprovision Now
- **3.** Configure the provisioning server address on the Skype for Business phone.

For more information on how to obtain the provisioning server address, refer to Obtaining the Provisioning Server Address on page 21.

4. Trigger the Skype for Business phone to perform the auto provisioning.

					Log C
ealink 1466	Status Account Network	(Features S	ettings	Directory	Security
Preference	Auto Provision				NOTE
	PNP Active	🖲 On 🔿 Off 🕜			
Time&Date	DHCP Active	🖲 On 🗇 Off 🕜			Auto Provision The auto provision parameter
Upgrade	Custom Option(128~254)	160,161			for administrator.
Auto Provision	DHCP Option Value	MS-UC-Client			You can click here to get more guides.
Configuration	Server URL	tftp://192.168.1.100/		0	more guides.
and the second	User Name			0	
Dial Plan	Password			0	
Voice	Common AES Key		0		
Tones	MAC-Oriented AES Key		0		
Phone Lock	Zero Active	Disabled	. 0		
	Wait Time(0~100s)	5	0		
Location	Power On	🖲 On 🗇 Off 🅜			
EXP Module	Repeatedly	🔍 On 🖲 Off 🕜			
BTOE	Interval(Minutes)	1440	0		
	Weekly	🗢 On 🚇 Off 🕜			
	Trne	00 : 00 - 00 : 00 Sunday Monday Tuesday	Click to pe	rform the o	
	Day of Week	Wednesday Thursday Friday Saturday Autoprovision Now		sioning pro ediately	

For more information on how to trigger the phone to perform the auto provisioning, refer to Triggering the Phone to Perform the Auto Provisioning on page 25.

Managing Configuration Files

Auto provisioning enables Yealink Skype for Business phones to update themselves automatically via downloading Common CFG and MAC-Oriented 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 more information on description of all configuration parameters in configuration files, refer to

Yealink_Skype_for_Business_Edition_HD_IP_Phones_Description_of_Configuration_Parameters_in _CFG_Files.

Editing Common CFG File

The Common CFG file is effectual for all phones of the same model. It uses a fixed name "y000000000XX.cfg" as the file name, where "XX" equals to the first two digits of the hardware version of the Skype for Business phone model.

Phone Model	Common CFG File
T48G	y0000000035.cfg
T46G	y0000000028.cfg
T42G	y0000000029.cfg
T41P	y0000000036.cfg
T40P	y0000000054.cfg

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

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.xslx≢
Hostname

network.dhcp_host_name =
PPPcE(Except T41P/T42G Models)
network.pppoe.user =
network.pppce.password =
necestry ppoer 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 =
network.bc_bort.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 1000Mbps (only applicable to SIP-T42G, SIP-T46G and SIP-T48G IP phones)
##The default value is 0.It takes effect after a reboot.
network.internet_port.speed_duplex =
##It configures the transmission mode and speed of the PC (LAN) port.
##0-Auto Negotiate
##1-Full Duplex 10Mbps

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 CFG files are only effectual for the specific phone. They use the 12-digit MAC address of the phone as the file name. For example, if the MAC address of the 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:

```
***********************************
                   Audio Codec
                                                        ±±
*******
                                                    *******
account.1.codec.1.enable =
account.1.codec.1.payload type =
account.1.codec.1.priority
account.1.codec.1.rtpmap =
   ****
                   Advanced
ŧŧ
                                                        ##
*****
account.1.auto answer =
account.1.missed calllog =
..........
                                                      *****
                   Alert info
##
            **********************
#####
                                                        ##
account.1.ringtone.ring type =
    ****
                                                        ###
                       Time
*********
##It configures the time zone.
##The default value is +8.
local_time.time_zone =
##It configures the time zone name.
##The default time zone name is China(Beijing).
local time.time zone name =
```

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.

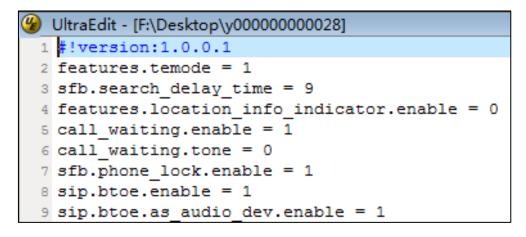
Creating a New CFG File

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 11 or Editing MAC-Oriented CFG File on page 12.

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



3. Save the changes and close the CFG file.

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: $0 \sim 9$, $A \sim Z$, $a \sim z$ 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 Skype for Business phones, such as personalized ring tone file and language package file. Yealink supplies the following resource file templates:

Templa	File Name		
	Common CFG file	Common.cfg	
Configuration Files	MAC-Oriented CFG file	MAC.cfg	
	AutoDST Template	AutoDST.xml	
		For example,	
Resource Files	Language Packs	000.GUI.English.lang	
		1.English.js	
	Keypad Input Method	ime.txt	

Templa	File Name	
	File	
	Dial-now Template	dialnow.xml
	Contact File	contact.xml

Ask the distributor or Yealink FAE for resource file templates. For more information on explanations of the configuration parameters, refer to

Yealink_Skype_for_Business_HD_IP_Phones_Administrator_Guide.

Configuring a Provisioning Server

Yealink Skype for Business 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 TFTPD32 as a TFTP server. 3CDaemon and TFTPD32 are free applications for Windows. You can download 3CDaemon online:

http://www.oldversion.com/3Com-Daemon.html and TFTPD32 online: http://tftpd32.jounin.net/.

For more information on how to configure FTP and HTTP servers, refer to Configuring an FTP Server on page 41 and Configuring an HTTP Server on page 44.

Preparing a Root Directory

To prepare a root directory:

- 1. Create a TFTP root directory on the local system (e.g., D:\TFTP Directory).
- 2. Place configuration files to this root directory.

er > D (D:) > TFTP Directory	▼ 4 ₂	TFTP 🔎
Share with 🔻 Burn New folder		
 ☑ 0015657ffb82.cfg ☑ y0000000028.cfg 		

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.

Administrators (VAN)		istrators)	^
2 Everyone			
🖸 Hill, James (jahill@m	vservername	.com]	
SYSTEM	,		~
<			>
		Add	Bemove
Permissions for Everyone		Allow	Deny
Full Control			
Modify			
Read & Execute		~	
List Folder Contents		~	
Read			
Write			
Consist Dormissions			
or special permissions or	for advanced	settings.	Advanced

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:

3CDaemon					
<u>File View H</u> elp					
TFTP Server	Start Time	Peer	Bytes	Status	
Configure TFTP Server	Feb 06, 2015 10:32:47	local	0	Listening for TFTP requests on IP address: 192. 168. 1 . 100, Port	t 69
TFTP Server is started. Click here to stop it.					
Logging to Tftpd log. Click to stop.					
Not debugging. Click to start.					
Clear list.					
View Log/Debug files.					

2. Select **Configure TFTP Server**. Click the your local system:

... utton to locate the TFTP root directory from

3CDaemon		X
File View Help		
TFTP Server	Start Time Peer B Status	
Configure TFTP Server	Feb 06, 2015 10:32:47 local 0 Listening for TFTP requests on IP address: 192, 168.1 .100, Port 69 3CDaemon Configuration	
STOP	FTP Profiles Syslog Configuration General Configuration TFTP Configuration	
TFTP Server is started. Click here to stop it.	Create directory names in incoming file re√	
	Allow overwrite of existing files?	
Logging to Tftpd log. Click to stop.	Upload/Download D:\TFTP Directory\	
Not debugging.	Per-packet timeout in seconds 5	
Click to start.	Maximum retries 10	
Clear list.	Interframe transmission 0	
View Log/Bebug files.		

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 Skype for Business phone downloads configuration files from.

Obtaining the Provisioning Server Address

Yealink Skype for Business phones support obtaining the provisioning server address in following ways:

- DHCP Options
- Phone Flash

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

The following sections detail the process of each way (take the T46G Skype for Business phone as an example).

DHCP Options

Yealink Skype for Business 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.

If DHCP option 66 and 43 are not available, you can configure the phone to obtain the provisioning server address via a custom DHCP option 160 or 161. 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 49.

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.

alink 1466	Status	Account	Network	Features	Settings	Directory	Security
Preference		Auto Provision			-		NOTE
	1	PNP Active		◎ On © Off	0		
Time&Date		DHCP Active		◉ On ◯ Off	0		Auto Provision The auto provision paramet
Jpgrade	4	Custom Option(128/	~254)	160,161	0		for administrator.
Auto Provision		DHCP Option Value		MS-UC-Client	0		You can click here to g more guides.
Configuration	:	Server URL				0	more guides.
	l.	User Name				0	
Dial Plan	1	Password		•••••		0	
/oice		Common AES Key		•••••	0		
ones	I	MAC-Oriented AES K	ley	•••••	0		
Phone Lock	:	Zero Active		Disabled	• 0		
	,	Wait Time(0~100s)		5	0		
ocation	1	Power On		🖲 On 🔘 Off 🛛	0		
EXP Module	l l	Repeatedly		◎ On	0		
ЗТОЕ	1	Interval(Minutes)		1440	0		
	1	Weekly		© On ◎ Off (0		
		Time		00 : 00 - 00	: 00 🕜		
				Sunday Monday			
		Dev of Month		Tuesday	~		
		Day of Week		Wednesday	0		
				Friday			

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

4. 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 Skype for Business 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_Skype_for_Business_HD_IP_Phones_Administrator_Guide. The following figure shows the example messages of obtaining the TFTP server address from a custom DHCP option:

DHCPserver-tftp.pcap [Wireshark 1.6		2017		
ile <u>E</u> dit <u>V</u> iew <u>Go</u> <u>C</u> apture <u>A</u> nalyze	a literature and a second s			
14 🖬 04 🕷 🕷 🖻 🛃 XX 😂	8 9 7 2		🗂 🍇 🗹 🥵 % 💢	
filter: sip bootp	•	Expression Clear Appl	y .	
o. Time Source	Destination Protocol	Length Info		
14 17.967476 0.0.0.0	255.255.255.255 DHCP	590 DHCP Discover	- Transaction ID 0x88e96872	
15 18.137781 10.2.8.105	10.2.8.106 DHCP		- Transaction ID 0x88e96872	
16 18.177701 0.0.0.0	255.255.255.255 DHCP		- Transaction ID 0x88e96872	
17 18.178902 10.2.8.105	10.2.8.106 DHCP	342 DHCP ACK	- Transaction ID 0x88e96872	
<pre>Internet Protocol version 4, User Datagram Protocol, Src Bootstrap Protocol Message type: Boot Reply (Hardware type: Ethernet Hardware stype: Ethernet Hardware address length: 6 Hops: 0 Transaction ID: 0x88e9687 Seconds elapsed: 100 Bootp flags: 0x0000 (Unicz Client IP address: 0.0.0.0 Your (Client) IP address: Next server IP address: 0. Client MAC address: Xiamer Client MAC address: Xiamer Client MaC address: xiamer Client hardware address ps Server host name: mid0171- Boot file name not given Magic cookie: DHCP B option: (t=51,1=1) DHCP Me Doption: (t=53,1=1) DHCP Me Option: (t=53,1=1) PAddr Doption: (t=51,1=4) Reneval Option: (t=51,1=4) Reneval Doption: (t=51,1=4) DOCSIS ful Value: 746674703a2f2f311</pre>	Port: bootps (67), Dst Po (2) (2) (3) (3) (4) (5) (5) (5) (5) (5) (5) (6) (6) (6) (6) (7) (7) (7) (7) (7) (7) (7) (7	<pre>>rt: bootpc (68) :28:d8) 15 minutes > [Topo]</pre>	6 (10.2.8.106)	

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/.

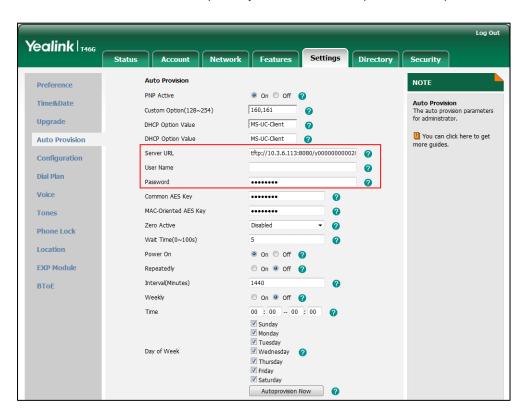
Phone Flash

Yealink Skype for Business phones support obtaining the provisioning server address from the phone flash. To obtain the 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 **Settings->Auto Provision**.

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



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

After the above configuration is completed, the 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 and Multi-mode Mixed. For more information on these methods, refer to Triggering the Phone to Perform the Auto Provisioning on Page 25.

Note

You can also enter "M7:configuration parameter" (for example: **M7:local_time.manual_time_enable = 1**) in the **Server URL** field, and then trigger the phone to perform the auto provisioning directly.

Triggering the Phone to Perform the Auto Provisioning

This chapter introduces the following methods to trigger the Skype for Business phone to perform the auto provisioning process:

- Power On
- Repeatedly
- Weekly
- Auto Provision Now
- Multi-mode Mixed
- Auto Provisioning via Activation Code

When there is an active call on the 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 Skype for Business phone performs the auto provisioning process when the phone is powered on.

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

1. Click on Settings->Auto Provision.

	Status Account Networ	k Features Set	ttings Director	y Security
Preference	Auto Provision			ΝΟΤΕ
Time&Date	PNP Active DHCP Active	ම On ◯ Off 🕜 ම On ◯ Off 🕜		Auto Provision
Upgrade	Custom Option(128~254)	160,161		The auto provision parameter for administrator.
Auto Provision	DHCP Option Value	MS-UC-Client		You can click here to get more guides.
Configuration	Server URL	tftp://10.3.6.113:8080/y0	0000000021 🕜	more guides.
Dial Plan	User Name		0	
Voice	Password Common AES Key	•••••	0	
Tones	MAC-Oriented AES Key	•••••		
	Zero Active	Disabled	• 0	
Phone Lock	Wait Time(0~100s)	5	0	
Location	Power On	🖲 On 🔘 Off 🕜		
EXP Module	Repeatedly	🖱 On 🖲 Off 🕜		
ВТОЕ	Interval(Minutes)	1440	0	
	Weekly	© On ◉ Off 🕜		
	Time	00 : 00 00 : 00	0	
		Monday Tuesday		
	Day of Week	🗹 Wednesday 🛛 🕜 🗹 Thursday		

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

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

Repeatedly

The Skype for Business 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 desired interval time (in minutes) in the Interval(Minutes) field.

	Status	Account	Network	Features	Setti	ings	Directory	Security
	Δ	uto Provision						NOTE
Preference	P	NP Active		On Off	0			
Time&Date	D	HCP Active		On Off	0			Auto Provision The auto provision parameters for administrator.
Upgrade	с	ustom Option(128~	254)	160,161	0			
Auto Provision	D	HCP Option Value		MS-UC-Client	0			You can click here to get more guides.
	S	erver URL		http://10.2.5.2	29/y000000	00028.cfg	0	
Configuration	U	ser Name					0	
Dial Plan	р	assword					0	
Voice	с	ommon AES Key				0		
Tones	м	IAC-Oriented AES K	ey			0		
Phone Lock	Z	ero Active		Disabled	-	0		
Phone Lock	v	Vait Time(0~100s)		5		0		
Location	р	ower On		On Off	0			
EXP Module	R	epeatedly		🖲 On 🔘 Off	0			
BTOE	Ir	nterval(Minutes)		1440		0		
	v	Veekly		🔍 On 🖲 Off	0			
	т	ïme		00 : 00	00 . 00	0		

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

Weekly

The Skype for Business 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 Skype for Business phone to perform the auto provisioning process. For example, you can configure the Skype for Business 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.

	Status	Account	Network	Features	Settings	Directory	Security
Preference	,	Auto Provision					NOTE
Time&Date	P	NP Active		🖲 On 🔘 Off	0		Auto Provision
	0	OHCP Active		🖲 On 🔘 Off	0		The auto provision parameter for administrator.
Upgrade	c	Custom Option(128~	254)	160,161	0		
Auto Provision	D	HCP Option Value		MS-UC-Client	0		You can click here to get more guides.
Configuration	9	Server URL		tftp://10.3.6.113:	8080/y00000000	1021 🕜	5
	U	Jser Name				0	
Dial Plan	P	assword		•••••		0	
Voice	C	Common AES Key		•••••	0		
Tones	N	AC-Oriented AES K	ey	•••••	0		
Phone Lock	Z	Zero Active		Disabled	- 0		
Phone Lock	V	Vait Time(0~100s)		5	0		
Location	P	ower On		🖲 On 🔘 Off	0		
EXP Module	F	Repeatedly		🔘 On 🖲 Off	0		
BTOF	I	nterval(Minutes)		1440	0		
	v	Veekly		🖲 On 🔘 Off	0		
	1	Time		00 : 00 - 00	: 00 🕜		
				Sunday			
				Monday Tuesday			
	0	Day of Week			0		
				Thursday			
				Friday Saturday			

4. Check 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 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.

	Status Account Network	Features Settings	Directory	Security
Preference	Auto Provision			NOTE
Time&Date	PNP Active DHCP Active	● On ○ Off 🕜 ● On ○ Off 🕜		Auto Provision The auto provision parameter
Upgrade	Custom Option(128~254)	160,161		for administrator.
Auto Provision	DHCP Option Value	MS-UC-Client		You can click here to get more guides.
Configuration	Server URL	tftp://10.3.6.113:8080/y000000	000021 🕜	more guides.
Dial Plan	User Name		0	
	Password	•••••	0	
Voice	Common AES Key	••••••		
Tones	MAC-Oriented AES Key	•••••••		
Phone Lock	Zero Active	Disabled 🗸		
	Wait Time(0~100s)	5		
Location	Power On	🖲 On 🔘 Off 🕜		
EXP Module	Repeatedly	🔍 On 🖲 Off 🕜		
ВТоЕ	Interval(Minutes)	1440 (?		
	Weekly	🛇 On 🖲 Off 🕜		
	Time	00 : 00 - 00 : 00 🕜		
	Day of Week	 ✓ Sunday ✓ Monday ✓ Tuesday ✓ Wednesday ✓ Thursday ✓ Friday 		

2. Click Autoprovision Now.

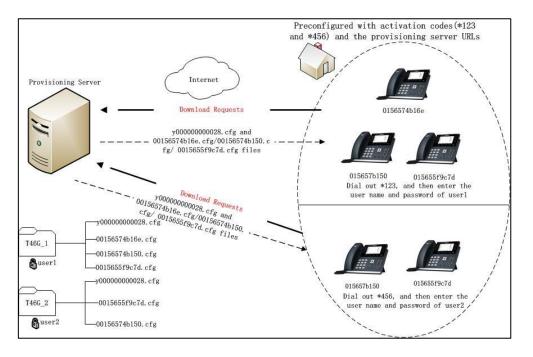
The Skype for Business phone will perform the auto provisioning process immediately.

Multi-mode Mixed

You can activate more than one method for auto provisioning. For example, you can activate the "Power On" and "Repeatedly" modes simultaneously. The Skype for Business phone will perform the auto provisioning process when it is powered on and at a specified interval.

Auto Provisioning via Activation Code

In addition to the updating modes introduced above, users can trigger Skype for Business 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 Skype for Business phones. This method is normally used for Skype for Business phones distributed by retail sales. It has the advantage that the Skype for Business 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., T46G_1 and T46G_2) on the provisioning server.
- Store a common CFG file and multiple <MAC>.cfg files to each directory on the provisioning server.
- 3. (Optional) 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 phones. To access the specified directory, you need to provide the correct user name and password configured for the directory. For more information on how to configure a user name and password using HTTP server, refer to Configuring an HTTP Server on page 45.

4. Configure unique activation codes and the provisioning server URLs on Skype for Business 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 Skype for Business phones:

autoprovision.1.code = *123

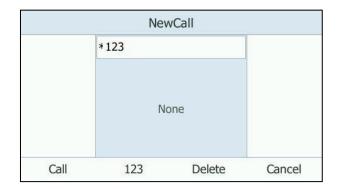
autoprovision.1.url = http://192.168.1.30/T46G_1/

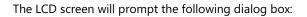
autoprovision.2.code = *456

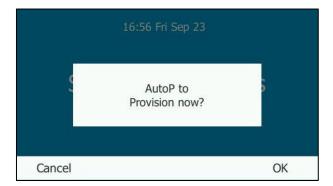
autoprovision.2.url =http://192.168.1.30/T46G_2/

5. Send the specified activation code, associated user name and password to each end-user.

6. The user can set up the Skype for Business phone, and then input the activation code after the phone startup (make sure no one has signed in).







7. Press the **OK** soft key to trigger the Skype for Business phone to perform auto provisioning.

AutoP Authority						
1. User Name:						
2. Password:						
Cancel	2aB	Delete	ОК			

The LCD screen will prompt the following input box:

8. Enter the user name and password in the User Name and Password fields respectively. The entered user name and password must correspond to the directory where the configuration files of the 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 Skype for Business 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 Skype for Business phones 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 Skype for Business phones.

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 auto 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 Skype for Business 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 phone will reboot to make the configurations effective after the auto provisioning process is completed.

The Skype for Business 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 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 phone will update configurations.

The latest values applied to the phones are the values that take effect.

The phone will reboot when there is at least a specific configuration requiring a reboot after auto provisioning.

For more information on the specific configuration which require a reboot during auto provisioning, refer to Yealink_Skype_for_Business_Edition_HD_IP_Phones_Description_of_Configuration_Parameters_in_

Yealink_Skype_for_Business_Edition_HD_IP_Phones_Description_of_Configuration_Parameters_in_ CFG_Files.

If configuration files have been AES encrypted, the phone will uses 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 phone decrypts configuration files, refer to *Yealink Configuration Encryption Tool User Guide*.

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.

Example1: Yealink T46G Skype for Business phone downloads configuration files from the TFTP server.

_								
2 1	8.8.254.13	31_17_21	_51.pcap [Wiresh	ark 1.12.4 (v1.12.4-0-gb4861da	da from master-1.12)]			
Eile	Edit Vi	ew <u>G</u> o	Capture Analyze	Statistics Telephony Tools	s Internals Help			
		M (M)	🖻 🛃 🗶 🈂	음 🍳 🗢 🔹 🗿 👍 🛓	호 🗐 🗐 ! 이, 이, 이, 🗹 👹 🖄 🥵 🕌 🧱			
Filter:	tftp				Expression Clear Apply			
No.	Time		Source	Destination	Protocol Length Info			
	10 3.74 11 3.76		10.3.20.9 10.3.6.110	10.3.6.110 10.3.20.9	TFTP 81 Read Request, File: y00000000028.cfg, Transfer type: octet, blksize\000=1432\000 TFTP 60 Option Acknowledgement, blksize\000=1432\000			
	12 3.76 13 3.76	8823	10.3.20.9 10.3.6.110	10.3.6.110 10.3.20.9	TFTP 46 Acknowledgement, Block: 0 TFTP 210 Data Packet, Block: 1 (last)			
	14 3.76 49 5.83		10.3.20.9 10.3.20.9	10.3.6.110 10.3.6.110	TFTP 46 Acknowledgement, Block: 1 TFTP 80 Read Request, File: 00156574b16e.cfg, Transfer type: octet, blksize\000=1432\000			
	50 5.85		10.3.6.110	10.3.20.9 10.3.6.110	TFTP 60 Option Acknowledgement, blksize\000=1432\000 TFTP 46 Acknowledgement, Block: 0			
	52 5.85		10.3.6.110	10.3.20.9 10.3.6.110	TFTP 210 Data Packet, Block: 1 (last) TFTP 46 Acknowledgement, Block: 1			
🗉 Fra	ame 110	: 81 b	oytes on wire ((648 bits), 81 bytes ca	aptured (648 bits)			
⊞ Int	B thernet II, src: Xiamenve_74:bite (00:15:65:74:bite6), pst: 24:b6:57:1e:47:54 (24:b6:57:1e:47:54) = Internet Protocol Version 4, src: 10.3:20.9 (10.3:20.9), pst: 10.3:6.110 (10.3:6.110) = User Datagram Protocol, src Port: 20901 (20901), DSt Port: tftp (69) = Trivial File Transfer Protocol							
0000 0010 0020 0030 0040 0050	00 43 06 6e 30 30 74 65	00 00 51 a5 30 30	40 00 40 11 00 45 00 2f 30 30 30 34	65 74 b1 6e 08 00 45 00 0c 2e 0a 03 14 09 0a 0 bd e3 00 01 79 30 30 3 34 2e 63 66 67 00 6f 6 69 7a 65 00 31 34 33 32)3 .C@.@ 30 .nqE./y000 33 .00000004 4.cfg.oc			

Example 2: Yealink T46G Skype for Business phone downloads configuration files from the FTP server.

28.8.2	28.8.254.131_17_21_51.pcap [Wireshark 1.12.4 (v1.12.4-0-gb4861da from master-1.12)]						
Elle Ed	t <u>V</u> iew <u>G</u> o	Capture Analyze	Statistics Telephony Tools	Internals He	lp		
		🖹 🔀 🗶 🍠	占 🔍 🗢 🔿 🐴 :		· · · · · · · · · · · · · · · · · · ·		
Filter: f	tp			Expression	n Clear Apply		
No.	Time	Source	Destination	Protocol	Length Info		
		10.3.6.110	10.3.20.9	FTP	108 Response: 220 3Com 3CDaemon FTP Server Version 2.0		
		10.3.20.9	10.3.6.110	FTP	82 Request: USER anonymous		
		10.3.6.110	10.3.20.9	FTP	99 Response: 331 User name ok, need password		
		10.3.20.9	10.3.6.110	FTP	72 Request: PASS		
		10.3.6.110	10.3.20.9	FTP	101 Response: 230-The response '' is not valid.		
		10.3.6.110	10.3.20.9	FTP	145 Response: 230-Next time, please use your email address as password.		
		10.3.20.9	10.3.6.110	FTP	74 Request: TYPE I		
		10.3.6.110	10.3.20.9	FTP	86 Response: 200 Type set to I.		
		10.3.20.9	10.3.6.110	FTP	72 Request: PASV		
		10.3.6.110	10.3.20.9 10.3.6.110	FTP	114 Response: 227 Entering passive mode (10,3,6,110,255,104) 90 Request: SIZE v00000000028.cfg		
		10.3.6.110	10.3.20.9		74 Response: 213 96		
		10.3.20.9	10.3.6.110	FTP	90 Request: RETR y00000000028.cfg		
		10.3.6.110	10.3.20.9	FTP	102 Response: 125 Using existing data connection		
		10.3.6.110	10.3.20.9	FTP	122 Response: 226 Closing data connection; File transfer successful.		
		10.3.6.110	10.3.20.9	FTP	108 Response: 220 Closing data connection, File charster successful.		
		10.3.20.9	10.3.6.110	FTP	82 Request: USER anonymous		
		10.3.6.110	10.3.20.9	FTP	99 Response: 331 User name ok. need password		
		10.3.20.9	10.3.6.110	FTP	72 Request: PASS		
		10.3.6.110	10.3.20.9	FTP	101 Response: 230-The response '' is not valid.		
		10.3.6.110	10.3.20.9	FTP	145 Response: 230-Next time, please use your email address as password.		
		10.3.20.9	10.3.6.110	FTP	74 Request: TYPE I		
		10.3.6.110	10.3.20.9	FTP	86 Response: 200 Type set to I.		
		10.3.20.9	10.3.6.110	FTP	72 Request: PASV		
		10.3.6.110	10.3.20.9	FTP	114 Response: 227 Entering passive mode (10,3,6,110,255,105)		
		10.3.20.9	10.3.6.110	FTP	89 Request: SIZE 00156574b16e.cfg		
158	3.213747	10.3.6.110	10.3.20.9	FTP	75 Response: 213 164		
159	3.214340	10.3.20.9	10.3.6.110	FTP	89 Request: RETR 00156574b16e.cfg		
160	3.215550	10.3.6.110	10.3.20.9	FTP	102 Response: 125 Using existing data connection		
	457 00 1						
			712 bits), 89 bytes c		2 bits) 24:b6:57:1e:47:54 (24:b6:57:1e:47:54)		
					24:06:5/:10:4/:54 (24:06:5/:10:4/:54) 10.3.6.110 (10.3.6.110)		
			65 74 b1 6e 08 00 45 0		. et.nE.		
			c7 c2 0a 03 14 09 0a (0a 55 84 10 6c 6d 80 1		8 U]m		
			08 0a 00 00 4e 5c 00 4		N\.B		
0040 b	04 93 53 49	5a 45 20 30	30 31 35 36 35 37 34 6	52SIZE	0 0156574b		

Example 3: Yealink T46G Skype for Business phone downloads configuration files from the HTTP server.

4	28.8.254.131_17_21_5	i1.pcap [Wiresha	rk 1.12.4 (v1.12.4-0-gb4861da	from master-	1.12)]
Eile	<u>E</u> dit <u>V</u> iew <u>G</u> o	Capture Analyze	Statistics Telephony Tools	Internals He	lp
					Q, Q, Q, [1]] ₩ ⊠ 🥵 ※ 🗒
-					
Filt	er: http			 Expression 	n Clear Apply
No.		Source	Destination		Length Info
		10.3.20.9	10.3.6.110	HTTP	232 HTTP/1.1 302 Found
		10.3.6.110	10.3.20.9	HTTP	542 GET /servlet?p=settings-config&q=load HTTP/1.1
		10.3.20.9	10.3.6.110	HTTP	125 HTTP/1.1 200 OK
		10.3.6.110	10.3.20.9	HTTP	515 GET /servlet?p=settings-autop&q=load HTTP/1.1
		10.3.20.9	10.3.6.110	HTTP	982 HTTP/1.1 200 OK
	87 10.797870		10.3.20.9	HTTP	86 POST /servlet?p=settings-autop&q=write&now=false HTTP/1.1 (application/x
	89 10.959182		10.3.6.110	HTTP	231 HTTP/1.1 302 Found
	90 11.030754		10.3.20.9	HTTP	540 GET /servlet?p=settings-autop&q=load HTTP/1.1
	126 11.098802		10.3.6.110	HTTP	991 HTTP/1.1 200 OK
	134 13.523038		10.3.20.9	HTTP	84 POST /servlet?p=settings-autop&q=write&now=true HTTP/1.1 (application/x-
	161 13.727710		10.3.6.110	HTTP	206 НТТР/1.1 200 ОК
	166 13.755635		10.3.6.110	HTTP	218 GET /y00000000028.cfg HTTP/1.1
	169 13.796582		10.3.20.9	HTTP	205 HTTP/1.1 200 OK (application/octet-stream)
	178 13.809749		10.3.6.110	HTTP	208 GET /ime.txt HTTP/1.1
	185 13.836439		10.3.20.9	HTTP	1032 HTTP/1.1 200 OK (text/plain)
	194 13.846276		10.3.6.110	HTTP	216 GET /Russian_ime.txt HTTP/1.1
	201 13.883670		10.3.20.9	HTTP	1272 HTTP/1.1 200 OK (text/plain)
	210 13.894060		10.3.6.110	HTTP	223 GET /00156574b16e-local.cfg HTTP/1.1
	219 13.898442		10.3.20.9	HTTP	66 HTTP/1.1 404 Not Found (text/html)
	224 18.779475		10.3.20.9	HTTP	493 GET /servlet?p=settings-autop&q=result&random=0.04913059249520302 HTTP/1.
	228 18.988420		10.3.6.110	HTTP	59 HTTP/1.1 200 ок [Malformed Packet]
	231 19.996891		10.3.20.9	HTTP	524 GET /servlet?p=settings-autop&q=load HTTP/1.1
	267 20.063444		10.3.6.110	HTTP	991 НТТР/1.1 200 ОК
	270 23.138206		10.3.20.9	HTTP	516 GET /servlet?p=settings-upgrade&q=load HTTP/1.1
	300 23.195348		10.3.6.110	HTTP	853 НТТР/1.1 200 ОК
	302 23.278964		10.3.20.9	нттр	522 GET /servlet?p=common-page&q=iframe-upload HTTP/1.1
	305 23.298530		10.3.6.110	HTTP	1490 HTTP/1.1 200 OK
	308 24.965106		10.3.20.9	HTTP	517 GET /servlet?p=settings-config&q=load HTTP/1.1
	343 25.023340		10.3.6.110	HTTP	125 НТТР/1.1 200 ОК
	346 26.271142	10.3.6.110	10.3.20.9	HTTP	644 POST /servlet?p=settings-config&q=stopcapture HTTP/1.1

Troubleshooting

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 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 phone are correct.
- Ensure that configuration files exist on the provisioning server.

Why does the 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 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 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.
- 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 can't the phone obtain an IP address from the DHCP server?

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

Why can't the 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 not larger than that the phone supports.
- Ensure that the properties of the ring tone for the 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 can't the phone update configurations?

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

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 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 (e.g., D:\FTP Directory)..
- 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:

General Sharing Security Customize		
Group or user names:		
🚮 Administrators (VANSTD80\Admin	istrators)	^
CREATOR OWNER		
👧 Everyone		
🛐 Hill, James (jahill@myservername	.com]	
SYSTEM		~
<		>
	A <u>d</u> d	<u>R</u> emove
Permissions for Everyone	Allow	Deny
Full Control		
Modify		
Read & Execute		
List Folder Contents	~	
Read		
Write	Image: A start of the start	
Coopiel Permissions		n 🔟
For special permissions or for advanced click Advanced.	settings,	Advanced
ОК	Cancel	

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:

How to Register	-X -
In an effort to reduce the number of emails I get that ask me "How do I register?", I'd just like to note that you can find this information by opening the "Help" menu, and selecting the option "Registering".	OK
So that you don't think this is a nag, I've given you the option to disable this dialog below, but please only do that if you feel you can remember how to register.	
\square Okay, I understand that - don't show me this dialog again.	

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:

E:\desktop\1.FTP - WFTPD		
File Edit View Logging	Messages Security Help	
# -001] 2015/3/20 17:39:16 # -001] 2015/3/20 17:39:16	Welcome to WFTPD - we are listening to all unused IP adding the first address assigned to your system is 127.0.0.1 But you might be reached at a number of other addresses Check with your network administrators for the address the WFTPD is listening on port 21, standard ftp Program will be killed by WM_ENDSESSION message Unregistered version - for instructions on registering,	
# -001] 2015/3/20 17:39:16	select the "Registering" option from the "Help" menu.	
(# -001) 2015/3/20 17:39:16	select the "Registering" option from the "Heip" menu.	,

4. Click Security->Users/rights.

File Edit View Logging Messages	Security Help		
(# -001) 2015/3/20 17:39:16 Welcome # -001) 2015/3/20 17:39:16 The first a (# -001] 2015/3/20 17:39:16 But you m # -001] 2015/3/20 17:39:16 Check wit # -001] 2015/3/20 17:39:16 Program wi # -001] 2015/3/20 17:39:16 Program wi	Users/rights ystem er of ot Host/net ors for Insteming on port 21, standard ftp ill be killed by WM_ENDSESSIOI	N message	s. achable from the Inter
(# -001) 2015/3/20 17:39:16 Unregister (# -001) 2015/3/20 17:39:16 select the '			

5. Click New User.

User / Rights Se	curity Dialog	×
User Name: User default	default Done]
New User	Delete Change Pass Restrict to home directory and below	
Home [Browse]
Help	Rig	hts >>

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

User / Rigi	nts Securit	y Dialog					8
User Name User defau		default r	•	-	Done		
New Us	User Name	: test1		0 Car He	ncel	1	
He	elp				F	Rights :	>>>

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

User / Rigł	hts Security Dialog	23
User Name ⊢User test1	Change Password	
New Us	New Password: Cancel	
Home		
He	elp	Rights >>

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

User / Rights S	Security Dialog			x
User Name: User test1	test1	•	Done	
New User	Delete Restrict to home of	Change Pass directory and below		
Home	E:\DESKTOP\CONF	IGURATION FILE	Browse	
Help			Rights	»>

9. Click **Rights**>> and assign the desired permission for the user (e.g., test1) created above.

10. 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.

User / Rights	Security Dialog		×
User Name: User test1 ——	test1	•	Done
New User		Change Pass ome directory and below]
Home	E:\DESKTOP\C	CONFIGURATION FILE	Browse
Help Rights for user t	est1		Rights<<
Directory: ×		▼ Browse	e Remove
- Rights f	or directory *		
🔽 Re	ad	✓ Create Files/Dirs	
▼ Lis	t Directories	🔽 Overwrite/Delete	3

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 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 (e.g., D:\HTTP Directory).
- 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:

Administrators (VANS CREATOR OWNER	TD80\Admini	strators)		^
Everyone				
🖸 Hill, James (jahill@my	yservername	.com]		-
SYSTEM				~
<			>	
		\ <u>d</u> d	Bemove	9
Permissions for Everyone		Allow	Deny	
Full Control				^
Modify				
Read & Execute		~		
List Folder Contents				
Read				
Write		~		
Consist Dormissions				~
For special permissions or I click Advanced.	for advanced	settings,	Advance	d

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:

HFS ~ HTTP File Server 2.2f	Build 155	- 0 X
📕 Menu 🛛 🖗 Port: 8080 🛛 🎎 You are in Expert mode	W	
Open in browser http://10.2.11.101:8080/		
	Top sp	ed: 0.0 KB/s
Virtual File System	Log	
	17:23:24 Check update: no new version	
🧊 IP 🗌 Filename	Status Speed Time left	%
Connections: 0 Out: 0.0 KB/s In: 0.0 KB/s Total Out: 0 B Tot	al In: 0 B VFS: 0 items	

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

HFS ~ HTTP File Server 2.2f	Build 155
🔄 Menu 🖑 Port: 8080 🕵 You	u are in Expert mode
+ Self Test Edit HTML template Other options > Upload >	E000/ Top speed 0.0 KB/s
Start/Exit Virtual File System Limits Flash taskbutton Fingerprints Tray icons	stem Log 17:23:24 Check update: no new version
IP address Accept connections on Dynamic DNS updater URL encoding Updates Opdates Opdate!	This IP address is used only for URL building 192.168.147.1 192.168.172.1 10.2.11.101 Custom
 ➢ Load file system Ctrl+O Gave file system Ctrl+S X Clear file system 	Don't include port in URL Find external address Constantly search for better address
Save options	
Uninstall HFS W About	Filename 🔱 Status Speed Time left %
Switch OFF F4	
Connections: 0 Out: 0.0 KB/s In	: 0.0 KB/s Total Out: 0 B Total In: 0 B VFS: 0 items

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

🙀 HFS ~ HTTP File Server 2.2f	Build 155 🗆 🗉 🔀
📓 Menu 🖑 Port: 8080 🎎 You are in Expert mode	
Open in browser http://10.2.11.101:8080/	
	Top speed: 0.0 KB/s
Virtual File System	Log
Port Specify a port to accept connection, or leave empty to decide automatically. S088 OK Cancel	17:23:24 Check update: no new version
😏 IP 🗖 Filename 🤇	Status Speed Time left %
Connections: 0 Out: 0.0 KB/s In: 0.0 KB/s Total Out: 0 B Tot	tal In: 0 B VFS: 0 items

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

₩ HFS ~ HTTP File Server 2.2f	Build 155	
🖺 Menu 🛛 📅 Port: 8088 🛛 🥵 You are in Expert mode		
Open in browser http://10.2.11.101:8088/		
	τ	op speed: 0.0 KB/s
Virtual File System Log		
Add files Add files Add folder from disk New empty folder Ins New link Advanced Copy URL address Ctrl+C Comment		
Bind root to real-folder Set user/pass Restrict access Customized realm ✓ Browsable ✓ Archivable Upload Why is upload disabled? Hide tree		
Auto-hide empty folders Hide file extention in listing	Speed Time left	%
Connections: 0 Out: 0.0 KB/s In: 0.0 KB/s Total Out: 0 B Total In: 0 B VFS: 5	51 items - not savec	

4. (Optional) Right-click on the directory to select **Set user/pass...** to configure a user name and password for the directory.

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

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

🙀 HFS ~ HTTP File Server 2.3 beta	Build 275	
🗟 Menu 🛛 🖗 Port: 80 🛛 🕵 You are in Easy mode		
Open in browser http://10.2.11.101:8088/Provisioning	ngDir/	
Virtual File System		.og
Provisicensential Add files Add folder from disk New empty folder Ins X Remove Del Rename F2 Copy URL address Ctrl+C Stet User/pass Properties Alt+Enter		

 Enter a user name (e.g., test1) and password in the User Name, New Password and Verify Password fields respectively.

Insert the reques	ted user/pass	×
Username	test1	
Password	×××	
Re-type password	***	
	Ok Re	eset

6. Click Ok.

7. Locate the root directory from your local system.

🚔 HFS ~ HTTP File Server 2.3 beta		Build 275		_	
🛓 Menu 🖑 Port: 80 🌱 👥 You are in	n Easy mode				
Open in browser http://10.2.11.101:8	088/ProvisioningDir/			Already	n clipboard
Virtual File System		Log			
A / L B □ ProvisioningDir B □ Pro					
🗊 IP address	🔲 File	Status	Speed	Time	Progress
Out: 0.0 KB/s In: 0.0 KB/s at					

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

Yealink Skype for Business 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.

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

and DHCP Turbo on localhost	
<u>File Edit View B</u> indings Iools <u>H</u> elp	
■ 🛊 オ 🐃 🗟 🛠 🤭 🍽 🌮 🕅	
Servers Servers Server Server Description Platform DECF Turbo Version Har bindings Features Build Server Build Server S	
Ready.	///

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

Image: Servers Image: Servers Image: Servers Image: Server	DHCP Turbo on localhost (mo e <u>E</u> dit <u>V</u> iew <u>B</u> indings <u>T</u> ool
Clobal Image: Scopes Scopes Scopes Image: Scopes	Program

6. 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**.

Sa DHCP Turbo on localho	st (modified)					X
<u>File Edit View Bindings</u>	<u>T</u> ools <u>H</u> elp					
		🔊 🔿 🚱	k ?			
		-) (- 3-	Z :			
Servers V	Filter Standard Opt	ions		•		
	, .	1		_		
	Tag \	Option Magic cookie				<u>~</u> _
+- Named Policies		Home directory				
Doption Types		Hardware address type	N		L.	
- Scopes		Hardware address lengt	h 🚾	New Option Type	Ctrl+V	
DHCPServer		Boot file	5	<u>U</u> ndo	Ctrl+Z	
		Pad Subnet mask	0	Redo	Ctrl+Y	
		Time offset	~	-		
		Gateways	*	Cu <u>t</u>	Ctrl+X	
		Time servers	D	<u>C</u> opy	Ctrl+C	
		IEN116 name servers Domain name servers		Paste	Ctrl+V	
	-427	Log servers		Delete	Del	
		Cookie/Quote servers	_		Dei	
		LPR servers		Select <u>A</u> ll	Ctrl+A	
		Impress servers RLP servers	Q.*	Find	Ctrl+F	
		ALF servers Hostname	h- •			
		Boot file size	*	Properties	Ctrl+P	
	🖅 14	Merit dump file				
		Domain name				
		Swap servers				
		Root path Extensions path				
		IP forwarding				
		Non-local source routi	ng			_
		D.1:				•
	Description					
	Specifies a device's	hardware address type.				
	1					

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 c g ge.

🔏 DHCP Turbo on loc	alhost	. 🗆 🗙
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>B</u> indings	Tools Melp	
	≥ ■ ■ % ∽ ~ § k?	
Servers Icalhost Scopes Sopes Same Policies WW Exclusions Database	Filter Conduct Order Te Option Properties ? X Tag 128 Name IFFFServer Type Bbit Si 8bit 16bit Descri 32bit ipaddress string time bool hardware_address subencoded dhs_name QK Cancel Description Specifies a device's hardware address type.	

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

ng DHCP Turbo on localhost (modified)					
<u>File Edit View Bindings Tools H</u> elp					
	x 🕫	♥ ♥			
Servers Comparison of the set o	New Option.	- Ctrl+V Ctrl+Z Ctrl+Y Ctrl+X Ctrl+C Ctrl+C Ctrl+V Del Ctrl+A Ctrl+F Ctrl+P	Value		
Add a new option to this policy				10	

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

BHCP Turbo on localhost (modi <u>File Edit View Bindings Tools</u>							
		10 C	\$	N ?			
Servers Declaost Declaost Declasse Maed Policies Colobal Col		Name tor Standard O Hane Name X Window S X Window S DHCF reade DHCF reade DHCF rebin HIS's domin HIS's domin HIS's domin SHT serve F073 serve F073 serve F075 server Strettalk User class Strettalk User class SLP Server	ystem for ystem dis ss lease al time ding time a rs rs rs s vers s servers DA serve Cliel Co	iplay managers time :	Value		
۲					QK	Cancel	

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

11. Click the **OK** button to finish setting a custom option.

🖓 DHCP Turbo on localhost (modified)		X
<u>Eile Edit View B</u> indings <u>T</u> ools <u>H</u> elp		
4 🕴 🧚 🐚 🗎 😒	<u>% እን የ 😵 አ</u> ?	
Servers V Tag V	Name Value	
🕂 🔛 Named Policies		
	TFTPServer	
Scopes	tftp://192.168.1.100/	
	Expression Build	
	,	
	QK Cancel Advanced >>	

12. Click **are the change**.

You can add the option 66 via DHCP Turbo. 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**.

State 2 DHCP Turbo on localhos			5	
<u>File Edit View Bindings</u>			0	> \9
			G	
	Tag 🗸	Name		Value
Iocdhost Database Obtive Statese Off Exclusions Obtive Statese Obtive Statese		Image: TFTPServer Image: Memory of the server Image: Memory of the s	Ctr Ctr Ctr Ctr	Ctrl+Z Ctrl+Y Ctrl+X Ctrl+C
		Paste		Ctrl+V
		<u>D</u> elete		Del
		Select <u>A</u> ll		Ctrl+A
		🥰 Eind		Ctrl+F
		🛠 Properties	Ctr	Ctrl+P
۲				
Add a new option to this p	olicy			

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

3. Scroll down and double click MS option 66.

State DHCP Turbo on localhost			23
<u>File Edit View B</u> indings]	[ools <u>H</u> elp		
4 🗶 🖈	■ ■ ※ ♡ ♡ § №		
	ag 🗸 Name Value		
	128 🛃 Option Selector		
	Filter TFTP Options		
	Tag ∇ Hame		
- Doption Types			
DHCPServer	-Æ-15 MS option 66		
	-AE-14 Next server 		
	Description		
	The host name of a TFTP server the device should use durying the second stage of		
	its boot process. Unless you know your device requires this option, you should use option -14 (as IP address) or option -20 (as host name) to define the TFTF server.		
• • • • •	<u>QK</u> <u>Cancel</u>	_	
			11

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

Su DHCP Turbo on localhos		
<u>File Edit View Bindings</u>	<u>I</u> ools <u>H</u> elp	
4 🖌 🖌	■ ■ % ♡ < % k?	
Servers / Dealhost Dealhost Difference Dealhost Dea	Tag Name Value #128 IFIPServer tftp://192.168. # MS option 66 ?************************************	1.100/
		li.

- 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.

n DHCP Turbo on localhost		– – X
<u>File E</u> dit <u>V</u> iew <u>B</u> indings <u>T</u>	iools. Help	
4 🖉 🤾 א	🖺 🗶 🕫 ભ⊂ 🚱 k?	
Servers V	ag V Name Value	
Ilocalhost	1 Option Selector	
- Database		
-WHW Exclusions	Filter Standard Options	
- Named Policies	Filter Standard Options	
- Clobal	Tag 🗸 Name	
-Option Types	24 Path MTU aging timeout	
Scopes		
DHCPServer	All subnets are local	
Bosterserver	-4228 Broadcast address	
	All 38 TCP keepalive interval	
	-4339 TCP keepalive interval	
	41 MIS servers	
	45 NBT datagram distribution servers	
	Description 😽	
	Used by devices and servers to exchange vendor-specific information.	
	osed by devices and servers to exchange vehior specific information.	
4 F	<u>OK</u> <u>C</u> ancel	

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

Su DHCP Turbo on localhost <u>F</u> ile <u>E</u> dit <u>V</u> iew <u>B</u> indings ∶		
	■ ■ ☆ ♡ ♡ § №?	
Servers / Servers / Scopes	Tag Name Value #128 TFTFServer tftp://19 #15 MS option 66 192.168.1 # Vendor specific info P [http://192.168.1.100/ Puild QK Cancel	
		hi

- 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.