

# **Broadworks Device Managemnet Interoperability**

## **Configuration Guide & Test Results**

### **Yealink SIP Phone - T2xP**

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## 1. Overview

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This document describes the configuration procedures required for a Yealink SIP T2XP Phone (i.e. , SIP T28 P/SIP T26P/ SIP T22P/ SIP T20P) to make full use of the capabilities of BroadWorks, exactly the Device Management capacities.

Yealink SIP Phones use the Session Initiation Protocol (SIP) to communicate with BroadWorks for call control. It also translates voice to audio packets for transmission across a packet network.

This guide describes the specific configuration items that are important for use with BroadWorks Device Management.

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## 2. Device Capabilities

This section describes the features supported by the Yealink SIP T28P, as well as BroadWorks interoperability issues and impact. The following table describes capabilities of Yealink T28P.

Here we use “X” to mark in the appropriate column for indicating.

Supported Capability	Yes	No	Comments/Description
Lines and Appearances	—	—	6 lines
Audio Codecs (list supported codecs)	—	—	G711u, G711a, G729, G722 G723, G726-
SIP proxy FQDN DNS Lookup Enabled	X		NAPTR, SRV, A
Outbound Proxy	X		
Outbound Proxy FQDN DNS Lookup Enabled	X		NAPTR, SRV, A
Message Waiting Indicator Subscribe Enabled	X		Audio
Call Control	X		Device-Controlled
Device Services (list services provided by device – for example, Call Forwarding, Do Not Disturb, Call Transfer, and so on)	X		Call-Forwarding, Do Not Disturb, Call Transfer, Anonymous Call,
BroadWorks Shared Call Appearance	X		Line mode (shared or private)
BroadWorks Advanced Call Control	X		
BroadWorks Device Feature Key Synchronization	X		
BroadWorks Busy Lamp Field (specify transport supported: fragmented UDP, TCP, or both)	X		both
Network-Based Conference	X		
Remote Restart via SIP Notify	X		
RFC 2833 DTMF	X		
DTMF Relay	X		
T.38 Fax		X	Not Applicable
Video (list video codecs supported)		X	Not Applicable
TCP	X		
TLS	X		

### 3. Template Files Configuration

Yealink SIP T28P can be configured via Web GUI Interface as well as via Configuration File through TFTP, FTP, HTTP or HTTPS.

When Yealink device boots up or reboots, it will issue request for a configuration file named “y000000000000x.cfg”, where “x” associated with the hardware version of Yealink Device, i.e., y000000000000.cfg for Yealink SIPT28P. And then it will issue a new request for a configuration file named “xxxxxxxxxxxxx.cfg”, where “xxxxxxxxxxxxx” is the MAC address of the device, i.e., “001565112233.cfg”.

The Yealink T28P should be configured to load the configuration file each time it resets or re-synchronizes. For detailed information on automated provisioning, please check the <http://www.yealink.com/en/download.asp?BigClassName=IP Phone&Smallclassname=User Manual>

The capabilities of the Yealink SIP T28P have been verified for use with BroadWorks based on the settings described in the following table.

#### Configuration Files

Files Provided	Level	Description
y000000000000.cfg	system configuration file	
%BWMACADDRESS%.cfg	device-specific configuration file	

#### Device Tags Created

Created Tag	Valid Parameter Setting	Description
%COUNTRY%	Country = %COUNTRY%	Standard Ringtones defined by country
%LANGUAGE%	WebLanguage = %LANGUAGE%	Default Language for web management
	ActiveWebLanguage = %LANGUAGE%	Default Language for Phone LCD

## 3.1. System Template File Configuration

This section describes system-wide configuration items that are generally required for each SIP T28P.

Step	Command	Description
<b>System Configuration Items</b>		
Step 1	<b>Network Settings</b> WANType = 0 ; LANTYPE = 1	WANType:0:DHCP,1:PPPoE,2:StaticIP LANtype: 0:Router, 1:Bridge
Step 2	<b>Time Settings</b> TimeZone = +8 TimeZoneName = China(Beijing) TimeServer1 = cn.pool.ntp.org TimeServer2 = cn.pool.ntp.org	Also the Summertime setting
Step 3	<b>Feature Settings</b>  BusyToneDelay = 3  LCD_Logo = 1  DND_Code = 480  Refuse_Code = 486  DND_On_Code = %BWFAC-DND-ACTIVATE-1% DND_Off_Code = %BWFAC-DND-DEACTIVATE-1%	
Step 4	<b>Upting Firmware Settings</b> server_type = http server_ip = 64.215.212.76 server_port = 80 login_name = yealink login_pswd = 123456 http_url = http://xsp1.iop1.broadworks.net/dms/Yealink-TxP_dm/ firmware_name = 2.43.0.12.rom	
Step 5	uptaing system files Settings i.e., ringtone server_address = http://xsp1.iop1.broadworks.net/dms/Yealink-TxP_dm/zhongguo.wav	
Step 6	<b>Autoprovision Settings</b> mode = 1 server_address = http://xsp1.iop1.broadworks.net:80/dms/Yealink-TxP_dm/ user = yealink password = 123456	#WANType: 0: disabled, 1: reboot

## 3.2. Device Specific Template File Configuration

This section identifies the device-specific parameters, including registration, authentication and also the definition of programmable keys. These settings must be unique across devices in order to be matched with the settings for a BroadWorks user.

The follow example shows how to configure elements for an account.

Step	Command	Description
<b>Device-specific Configuration Items</b>		
Step 1	<b>Account Registration Settings</b> Label = %BWCLID-1% DisplayName = %BWCLID-1% AuthName = %BWAUTHUSER-1% UserName = %BWLINEPORT-1% password = %BWAUTHPASSWORD-1% SIPServerHost = %BWHOST-1% UseOutboundProxy = 1 OutboundHost = 64.215.212.70	The register UserName must correspond with the line/port setting on BroadWorks.
Step 2	<b>Account Function Settings</b> ShareLine = %BWSHAREDLINE-1% conf-type = 2 conf-uri =%BWNETWORK-CONFERENCE-SIPURI-USERNAME-1% BLFList_URI = %BWBLF-USER-1%	
Step 3	Account feature Settings Always forward: Enable = %BWCFA-BINARY-1% On_Code = %BWFAC-CFA-ACTIVATE-1% Off_Code = %BWFAC-CFA-DEACTIVATE-1%	Also the feature busy forward and no answer forward settings.
Step 4	Programmable key Settings Line = 1 # Account [0-5] Value = %BWFAC-CALL-PARK-1% # Call Park Code DKtype = 10 # Call Park	#DKtype 0:N/A ,1:Conference ,2:Forward 3:Transfer, 4:Hold , 5:DND 6:Redial, 7:Call Return,8:SMS 9:Call Pickup ,10:Call Park, 11:DTMF,12:Voicemail 13:SpeedDial ,14:Intercom 15:Line,16:BLF, 17:URL, .....

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## 4. Enhanced IP Phone Configuration

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Enhanced IP Phone Configuration is a BroadWorks feature that enables automatic generation of device configuration files, given administrator-supplied templates.

More Requirements to enable Yealink SIP Phone for supporting Device Management, Firstly , you should Set the device auto provision type as power on and fill in the Device Management server address URL [http://xsp1.iop1.broadworks.net:80/dms/Yealink-TxP\\_dm/](http://xsp1.iop1.broadworks.net:80/dms/Yealink-TxP_dm/) via the Web GUI of Yealink SIP Phone .For detail please refer to Yealink SIP Phone User Manual Guide Documents.

The Enhanced IP Phone Configuration feature requires a system and a phone-specific file for each device. For Broadsoft Identity/Device Type of “Yealink-TxP\_dm“, they are “y00000000000x.cfg” and “%BWMACADDRESS%.cfg”. For sample template files you can refer to Appendix A.



## AppendixA. Sample Configuration Files

### System Template File Settings

Note: This is an simple example file and should be used for reference only

```
#####
#Time Settings
#####

[ WAN ]
path = /config/Network/Network.cfg
WANType = 0

[ LAN ]
path = /config/Network/Network.cfg
LANTYPE = 1
RouterIP =
LANSubnetMask =
EnableDHCP = 1
DHCPStartIP = 10.0.0.10
DHCPEndIP = 10.0.0.100

[ VLAN ]
path = /config/Network/Network.cfg
#ISVLAN,VID and USRPRIORITY are used for VLAN on LAN port
#PC_PORT_VLAN_ENABLE,PC_PORT_VID and PC_PORT_PRIORITY are used for PC port
ISVLAN = 0
VID =
USRPRIORITY =
PC_PORT_VLAN_ENABLE = 0
PC_PORT_VID = 0
PC_PORT_PRIORITY = 0

[ QOS ]
path = /config/Network/Network.cfg
SIGNALTOS = 40
RTPTOS = 40
```

```
#####
# Time Settings
#####
[ Time ]
path = /config/Setting/Setting.cfg
TimeZone = +8
TimeZoneName = China(Beijing)
TimeServer1 = cn.pool.ntp.org
TimeServer2 = cn.pool.ntp.org
Interval = 1000
SummerTime = 2
DSTTimeType = 0
TimeZoneInstead = 8
StartTime = 1/1/0
EndTime = 12/31/23
TimeFormat = 1
DateFormat = 0
OffSetTime = 60

#####
# Feature Settings
#####
[ Features ]
path = /config/Features/Phone.cfg
Call_Waiting = 1
Hotlinenumber =
BusyToneDelay = 3
LCD_Logo = 1
DND_Code = 480
Refuse_Code = 486
DND_On_Code = %BWFAC-DND-ACTIVATE-1%
DND_Off_Code = %BWFAC-DND-DEACTIVATE-1%
ButtonSoundOn = 1
CallCompletion = 0
AllowIntercom = 1
IntercomMute = 0
IntercomTone = 1
```

```

IntercomBarge = 1
Call_WaitingTone = 1
Hotlinedelay = 4
BroadsoftFeatureKeySync = 1

#####
# Updating firmware Settings
#####
[ firmware ]
path = /tmp/download.cfg
server_type = http
server_ip = 64.215.212.76
server_port = 80
login_name = yealink
login_pswd = 123456
http_url = http://xsp1.iop1.broadworks.net/dms/Yealink-TxP_dm/
firmware_name = 2.50.0.1.rom          ## Firmware Version for Yealink T28

#####
# Updating File Settings
#####
[ ringtone ]
path = /tmp/download.cfg
server_address = http://xsp1.iop1.broadworks.net/dms/Yealink-TxP_dm/zhongguo.wav

[ Lang ]
path = /tmp/download.cfg
server_address = http://xsp1.iop1.broadworks.net/dms/Yealink-TxP_dm/lang+English.txt

[ ContactList ]
path = /tmp/download.cfg
server_address = http://xsp1.iop1.broadworks.net/dms/Yealink-TxP_dm/contactData1.xml

```

```
#####
#Autoprovision Settings
#####
[ autoprovision ]
path = /config/Setting/autop.cfg
mode = 1
server_address = http://xsp1.iop1.broadworks.net:80/dms/Yealink-TxP_dm/
user = yealink
password = 123456

[ PNP ]
path = /config/Setting/autop.cfg
Pnp = 1

#####
#Other Settings
#####
[ Trans ]
path = /config/Features/Phone.cfg
IsOnHookTrans = 1

[ AutoRedial ]
path = /config/Features/Phone.cfg
EnableRedial = 0
RedialInterval = 10
RedialTimes = 10

[ PoundSend ]
path = /config/Features/Phone.cfg
Enable = 1          ##### “#” key as send: 1 , “*”key as send:2

[ ReplaceRule ]
path = /config/Setting/AdvSetting.cfg
ReplaceAll = 1
.....
```

## Device-Specific Template File Settings

**Note:** This is an example file and should be used for reference only

```
#####
# Account Registration Settings
#####
[ account ]
path = /config/voip/sipAccount0.cfg
Enable = %BWLIN-BINARY-1%
Label = %BWEXTENSION-1%
DisplayName = %BWCLID-1%
AuthName = %BWAUTHUSER-1%
UserName = %BWLINPORT-1%
password = %BWAUTHPASSWORD-1%
SIPServerHost = %BWHOST-1%
SIPServerPort = 5060
UseOutboundProxy = 1
OutboundHost = 64.215.212.70
OutboundPort = 5060
Transport = 0
AnonymousCall = 0
RejectAnonymousCall = 0
MissedCallLog = 1
AutoAnswer = 0

#####
# Account Function Settings
#####
[ account ]
path = /config/voip/sipAccount0.cfg
ShareLine = %BWSHAREDLIN-1%
conf-type = 2
conf-uri = %BWNETWORK-CONFERENCE-SIPURI-1%
[ blf ]
path = /config/voip/sipAccount0.cfg
SubscribePeriod = 1800
BLFList_URI = %BWBLF-USER-1%
```

#####

# ##Account Feature Settings

#####

## [ AlwaysFWD ]

path = /config/Features/Forward.cfg

Enable = %BWCFA-BINARY-1%

Target =

On\_Code = %BWFAC-CFA-ACTIVATE-1%

Off\_Code = %BWFAC-CFA-DEACTIVATE-1%

## [ BusyFWD ]

path = /config/Features/Forward.cfg

Enable =

Target =

On\_Code = %BWFAC-CFB-ACTIVATE-1%

Off\_Code = %BWFAC-CFB-DEACTIVATE-1%

## [ TimeoutFWD ]

path = /config/Features/Forward.cfg

Enable =

Target =

Timeout =

On\_Code = %BWFAC-CFNA-ACTIVATE-1%

Off\_Code = %BWFAC-CFNA-ACTIVATE-1%

#####

# ##Programmable Key Settings

#####

#DKtype defines the type of the key,ranging from 0 to 34

#DKtype 0:N/A 1:Conference 2:Forward 3:Transfer 4:Hold 5:DND 6:Redial

#7:Call Return 8:SMS 9:Call Pickup 0:Call Park 11:DTMF 12:Voicemail 13:SpeedDial

#14:Intercom 15:Line 16:BLF 17:URL 18:Group Listening 19:Public Hold 20:Private Hold

#21:Shared Line 22:XML PhoneBook 23:Group Pickup 24:Paging 25:Record 35: URL Record

#27:XMLbrowser 34:Hot Desking 39: BLF List

```
[ memory1 ]
path = /config/vpPhone/vpPhone.ini
Line = 0
Value = %BWEXTENSION-1%
PickupValue =
DKtype = 21
[ memory2 ]
path = /config/vpPhone/vpPhone.ini
Line = 0
Value =
PickupValue =
DKtype = 39
[ memory3 ]
path = /config/vpPhone/vpPhone.ini
Line = 0
Value =
PickupValue =
DKtype = 39
[ memory4 ]
path = /config/vpPhone/vpPhone.ini
Line = 0
Value =
PickupValue =
DKtype = 39
[ memory5 ]
path = /config/vpPhone/vpPhone.ini
Line = 1
Value = %BWFAC-CALL-PARK-1%
PickupValue =
DKtype = 10
[ memory6 ]
path = /config/vpPhone/vpPhone.ini
Line = 1
Value = %BWFAC-CALL-PARK-RETRIEVE-1%
PickupValue =
DKtype = 13
```

```
[ memory7 ]
path = /config/vpPhone/vpPhone.ini
#Set Memory key7
Line = 1
Value = %BWFAC-CALL-PICKUP-1%
PickupValue =
DKtype = 9

[ memory8 ]
path = /config/vpPhone/vpPhone.ini
#Set Memory key8
Line = 1
Value = %BWFAC-DIRECTED-CALL-PICKUP-1%
PickupValue =
DKtype = 9

[ memory9 ]
path = /config/vpPhone/vpPhone.ini
#Set Memory key9
Line = 1
Value = %BWFAC-CLEAR-MWI-1%
PickupValue =
DKtype = 13

[ memory10 ]
path = /config/vpPhone/vpPhone.ini
#Set Memory key10
Line = 1
Value =
PickupValue = %BWFAC-VOICE-PORTAL-ACCESS-1%
DKtype = 13

#Take Yealink SIP T28P as example, There is 10 DSS Key,6 Line Key and 14 Softkey you
#can defined just refer to the above settings.
```



```
#####
##Other Settings (I.E., User Language ,Communication Codecs user support and so on
#####
[ Lang ]
path = /config/Setting/Setting.cfg
#WebLanguage is the setting of language on web management
ActiveWebLanguage = %LANGUAGE%
WebLanguage = %LANGUAGE%

[ audio1 ]
path = /config/voip/sipAccount0.cfg
enable = 1
PayloadType = PCMA
priority = 2
rtpmap = 8

[ audio2 ]
path = /config/voip/sipAccount0.cfg
enable = 0
PayloadType = G723_53
priority = 0
rtpmap = 4

[ audio3 ]
path = /config/voip/sipAccount0.cfg
enable = 0
PayloadType = G723_63
priority = 0
rtpmap = 4
```

**Note:** Sample File s in Appendix A is just partial Settings of the Device Management Profile files for reference only, for more detail you should see to Yealink SIP T2xP with Broadworks Device Management interoperability Configuration files(y00000000000x.cfg and %BWMACADDRESS%.cfg) .

## AppendixB. Broadworks Validation Package Test Intems

BroadWorks Validation Package	Items Supported
Basic	Call Origination Call Termination Dial Plan DTMF
BroadWorks Services	Advanced Call Control Message Waiting Indicator Advanced Alerting Calling and Connected Line ID
DUT Services	Call Transfer Network-based Conference Registration and Authentication Remote Restart
Advanced Phone Services –	Busy Lamp Field Feature Key Synchronization Shared Call Appearance
Redundancy	DNS REGISTER Failover INVITE Failover BYE Failover
SBC/ALG	Registration Call Origination Call Termination
TCP	REGISTER Call Origination Call Termination