

Yealink T21P E2 Multicasting with Algo 8180 SIP Audio Alerter and 8301 Paging Adapter & Scheduler Application Note

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Introduction

Algo IP speakers and paging adapters support Yealink through RTP Multicast (Real Time Transport Protocol) for seamless integration with Yealink telephones for voice paging, emergency notification and bell scheduling applications required for public address (PA) announcements / alerts. Simultaneously page Yealink phones, Algo IP speakers, and legacy paging systems in this example for education.



Algo products are compliant with 3rd party SIP endpoints. The products are feature rich, supporting central provisioning and network supervision. Multicast support permits Algo endpoints to be scaled over any size building, campus or enterprise in education, healthcare, commercial office, manufacturing, utility / plant, transportation, distribution / warehouse, and retail sectors, to name a few.

Algo paging adapters support Yealink Multicast Paging and SIP registration to broadcast audio from voice paging, emergency notification alerting, and scheduled announcements / bells. Using a Line Level Audio Output, Algo paging adapters easily integrate most traditional analog amplifiers and speakers into a VoIP environment. Combined with the multicast capability, Algo paging adapters make it possible for audio to be simultaneously broadcast over legacy analog infrastructure, Yealink telephones and Algo IP speakers. There is no limitation to creating a hybrid paging system to achieve complete integration of analog and IP endpoints. Regardless of how future needs may change for any organization, business or enterprise, the Algo IP endpoints are flexible to accommodate most application requirements.

Before You Begin

This guide covers the steps for using the Algo 8180 SIP Audio Alerter and 8301 Paging Adapter & Scheduler for Multicast with Yealink T21P E2.

Firmware used during testing:

- Yealink T21P E2 52.81.0.25
- Algo 8301 1.5.6
- Algo 8180 2.7.6

Get Help

For more information about installing, configuring, and administering Yealink products, refer to Documents and Downloads at Yealink Support (*http://support.yealink.com/?language=en*). For technical questions about the Algo products, please contact Algo support: at 604-454-3792 or <u>support@algosolutions.com</u>.

Setting up Multicast from Algo 8301 to 8180 and Yealink T21P E2 for Paging and Loud Ringing

Note: The Algo 8301 endpoint will be considered the Master, as sending the multicast. The Yealink phone and Algo 8180 will be Slaves, in receiving (i.e., listening) the multicast. A similar configuration can be applied to all Yealink phone models except Yealink DECT phones, such as Yealink T23G, T46S, T58V.

The Yealink phone also can be configured as Master, as sending the multicast.

Configuring Yealink Phone as Slave

 To view the phone's IP address, press the Menu button on the phone, then Status

To configure the phone, open an empty web browser, enter the **device's IP address** in the address field, and press **Confirm** to enter

Yealink T21 E2 Phone X		<u>2</u> - 7 ×
← → ④ D 10.30.16.36		
	Login Enterprise IP Phone SIP-721P_E2	
	Username	
	Password	
	Confirm Cancel	

- 2) In the web interface enter the username and password to log in (default is **admin/admin**)
- Click on Account tab. Enter the desired values in Register Name, User Name, Password and SIP Server fields. Contact your system administrator for more information. Click confirm at the bottom of the page to save the changes

Vealink man				English(English) 🔻
	Status Account	Network Dsskey	Features Settings	Directory Security
Register	Account	Account1	T	NOTE
Basic	Register Status	Registered		Account Pagistration
Dasic	Line Active	Enabled	¥	Registers account(s) for the IP
Codec	Label			Server Redundancy
Advanced	Display Name			It is often required in VoIP deployments to ensure continuity
	Register Name	2050		of phone service, for events where the server needs to be
	User Name	2050		taken offline for maintenance, the server fails, or the
	Password			connection between the IP phone and the server fails.
	SIP Server 1			NAT Traversal
	Server Host	10.0.0.100	Port 5060	that establish and maintain IP
	Transport	UDP	Y	gateways. STUN is one of the
	Server Expires	3600		The traversal techniques.
	Server Retry Counts	3		You can configure NAT traversal for this account.
	SIP Server 2			Vou can click here to get
	Server Host		Port 5060	more guides.
	Transport	UDP	T	
	Server Expires	3600		
	Server Retry Counts	3		
	Fachle Outbaund Press Or	Displied		
	Enable Outbound Proxy Se	erver Disabled		
	Outbound Proxy Server 1		Port SUBU	
	Outbound Proxy Server 2	2500	Port 5060	
	Proxy Fallback Interval	3600		
	NAT	Disabled	•	
	Confirm		Cancel	

4) Navigate to the **Directory** tab and click on **Multicast IP** in the sidebar. Assign a listening IP address, port number, and label under **Multicast Listening**. The Algo devices Multicast setting must be configured with the same address and port number. Click confirm

	Status	ccount Network	Dsskey	Features	Settings	Directory Security
ory	Multicast Listenii	ng				NOTE
	Pag	ing Barge	31	T		Multicast Paging
	Pag	ing Priority Active	Enabled	•		Multicast paging allows IP phones to send/receive Real-tim
	IP Address	Listening Address	Label	Channel	Priority	Transport Protocol (RTP) stream to/from the pre-configured
	1 IP Address	224.0.2.10:50002	Zone 6		1	multicast address(es) without involving SIP signaling. Up to 10 listening multicast addresses car
-	2 IP Address			0 🔻	2	be specified on the IP phone.
1	3 IP Address			0 🔻	3	You can click here to get
	4 IP Address			0 🔻	4	more guides.
	5 IP Address			0 🔻	5	
	6 IP Address			0 🔻	6	
	7 IP Address			0 🔻	7	
	8 IP Address			0 🔻	8	
	9 IP Address			0 •	9	
	10 IP Address			0 🔻	10 🗸	
	10 IP Address Paging List Index	Paning Address	Label	0 V	10 -	
	10 IP Address Paging List Index	Paging Address	Label	0 V Channel	10 -	
	10 IP Address Paging List Index 1 2	Paging Address	Label	Channel	10 -	
	10 IP Address Paging List Index 1 2 3	Paging Address	Label	Channel	10	
	10 IP Address Paging List Index 1 2 3 4	Paging Address	Label	Channel Channel 0 Channel 0 0 0 0 0 0 0 0 0	10	
	10 IP Address Paging List Index 1 2 3 4 5	Paging Address	Label	Channel 0 Channel 0 0 0 0 0 0 0 0 0 0	10	
	10 IP Address Paging List Index 1 2 3 4 5 6	Paging Address	Label	Channel 0 • 0 • 0 • 0 • 0 •	10	
	10 IP Address Paging List Index 1 2 3 4 5 6 7	Paging Address	Label	Channel 0 • 0 • 0 • 0 • 0 • 0 • 0 •	10	
	10 IP Address Paging List Index 1 1 2 3 4 5 6 7 8	Paging Address	Label Label	Channel Channel O V O V O V O V O V O V O V O V O V O	10	
	10 IP Address Paging List Index 1 1 2 3 4 5 6 7 8 9	Paging Address	Label Label Label	Channel Channel Channel O	10	

Configuring Yealink Phone as Master

- 1) To view the phone's IP address, press the **Menu** button on the phone, then **Status**
- 2) To configure the phone, open an empty web browser, enter the **device's IP address** in the address field, and press Enter

talink T21 52 Phone X		(2) - 6
D 10.30.16.36		
	Login Enterprise JP Phone SIP-T21P_E2	
	Usemane	
	Password	
	Confirm Cancel	

- 3) In the web interface enter the username and password to log in (default is **admin/admin**)
- Click on Account tab. Enter the desired values in Register Name, User Name, Password and SIP Server fields. Contact your system administrator for more information. Click confirm at the bottom of the page to save the changes

Yealink min	\sim				English(English) 🔻
	Status Account	letwork Dsskey	Features S	ettings Directory	Security
Register	Account	Account1	۲	NOTE	
Basic	Register Status Line Active	Registered Enabled	¥	Account Registers ac	egistration count(s) for the IP
Codec	Label			Server Rec	lundancy
Advanced	Display Name			It is often re deployment	equired in VoIP
	Register Name	2050		of phone se where the s	rvice, for events erver needs to be
	User Name	2050		taken offline the server f	e for maintenance, ails, or the
	Password			phone and t	the server fails.
	SIP Server 1			NAT Trave	rsal
	Server Host	10.0.0.100	Port 5060	that establis	sh and maintain IP
	Transport	UDP	•	gateways. S NAT travers	TUN is one of the al techniques.
	Server Expires	3600			
	Server Retry Counts	3		You can con for this acco	nfigure NAT traversal ount.
	SIP Server 2			🖪 You can	click here to get
	Server Host		Port 5060	more guide	enere here to get
	Transport	UDP	¥		
	Server Expires	3600			
	Server Retry Counts	3			
	Enable Outbound Proxy Serve	Pr Disabled	•		
	Outbound Proxy Server 1		Port 5060		
	Outbound Proxy Server 2		Port 5060		
	Proxy Fallback Interval	3600			
	NAT	Disabled	▼		
		Disablea			
	Confirm		Cancel		

5) Navigate to the **Directory** tab and click on **Multicast IP** in the sidebar. Assign an IP address, port number, and label under **Paging List**. The Algo devices Multicast

setting must be configured with the same address and port number. Click confirm.

Yealink						Log Out English(English) ▼
10 001111111400	Status Acco	ount Network	Dsskey	Features	Settings	Directory Security
Local Directory	Multicast Listening					NOTE
Romoto Dhono	Paging	Barge	31	• 0		Multicast Paging
Book	Ignore	DND	Disabled	• 0		Multicast paging allows IP
Phone Call Info	Paging	Priority Active	Enabled	• 0		time Transport Protocol (RTP) streams to/from the
IDAP	IP Address	Listening Address	Label	Chan	nel Priority	pre-configured multicast address(es) without involving
LUAP	1 IP Address			0	1	SIP signaling. Up to 10
Multicast IP	2 IP Address			0	2	can be specified on the IP
Setting	3 IP Address			0	3	
	4 IP Address			0	4	You can click here to get more guides.
	5 IP Address			0	5	
	6 IP Address			0	6	
	7 IP Address			0	7	
	8 IP Address		<u>]</u>	0	8	
	9 IP Address			0	9	
	10 IP Address	1		0	10	2
	Paging List					
	Index	Paging Address	Label	Chan	nel	
	1 🤇	224.0.2.10:500002	zone6		-	
	2			0	•	
	3			0	•	
	4			0	-	

Note: you can modify 31 paging address in Paging List.

6) Navigate to **Dsskey** tab, select one **Line Key** and choose Type as **Paging List**. You can fill any name for this key in table option, then confirm. After modify, press this key in Yealink phone then choose which paging address you want to call out.

Yealink							Log Out English(English) ▼
	Status	Account	Network	Dsskey	Features	Settings	Directory Security
Line Key1-9	Enable Page	e Tips Disabled	T	Label Length Def	ault 🔻		NOTE
11-11-10-10	Key	Туре	Value	Label	Line	Extension	Line Keur
Line Key10-18	Line Key1	Line 🔻	Default	▼	Line 1 🔹		Line keys allow you to
Line Key19-27	Line Key2	Line •	Default	▼	Line 2 🔻]	quickly access features such as recall and voice mail.
Programable Key	Line Key3	Line •	Default	T	Line 3 🔻		
Fach Mary	Line Key4	Line 🔻	Default	T	Line 4 🔻		You can click here to get mere guides
EXLKEY	Line Key5	Line •	Default	•	Line 5 🔻		more guides.
	Line Key6	Paging List 🔻]	Paging List	N/A 🔻		
	Line Key7	Line 🔻	Default	T	Line 7 🔹]	
	Line Key8	Line 🔻	Default	T	Line 8 🔻		
	Line Key9	Line 🔻	Default	•	Line 9 🔻		
		Cor	ıfirm	C	Cancel		

7) Yealink phone also support modify a line key to trigger one multicast paging address directly.

Under **Dsskey** table, select one **Line Key**, choose type as **Paging**, and fill IP address, port as Value.

Fill any name as Label. After modify, press this key in Yealink phone. The phone will trigger multicast paging to modified IP address and port as Master immediately.

/ealink							Log Out English(English) ▼
	Status	Account	Network	Dsskey	Features	Settings	Directory Security
Line Key1-9	Enable Page	Tips Disabled	•	Label Length D	efault 🔹		NOTE
Line Key10 10	Key	Туре	Value	Label	Line	Extension	Line Kove
Line Key10-18	Line Key1	Line 🔻	Default	•	Line 1 🔻		Line keys allow you to
Line Key19-27	Line Key2	Line 🔻	Default	•	Line 2 🔻		as recall and voice mail.
Programable Key	Line Key3	Line 🔻	Default	•	Line 3 🔻		
	Line Key4	Line 🔻	Default	T	Line 4 🔻		You can click here to get
Ext Key	Line Key5	Line •	Default	•	Line 5 🔻		more guides.
	Line Key6	Paging 🔻	224.0.2.10:50000	2 Zone 6	N/A 🔻	0]
	Line Key7	Line 🔻	Default	•	Line 7 🔻		
	Line Key8	Line 🔻	Default	T	Line 8 🔻		
	Line Key9	Line 🔻	Default	•	Line 9 🔻		·
		Con	firm		Cancel		

Connecting the 8301 Paging Adapter

Front Panel: Connecting to the Network

Connect the 8301 to the network via an Ethernet cable at the front of the device. Ensure that a PoE port is used to provide power and that the 8301 is connected to the same subnet and VLAN as the Yealink phone.



Back Panel: Connecting an Amplifier to 8301

The Line Out options on the back of 8301 (XLR and terminal block pins 3 & 4) is isolated and balanced and can be connected to a traditional amplifier's audio or page input.



Optional Accessories



1202





2504 Output XLR-Mini Female to XLR Male 2505 Input XLR-Mini Male to XLR Female Other cables available on request

Configuring Algo 8301 Paging Adapter & Scheduler as Master

Note: The same SIP registration and multicast configuration steps apply to any of the other Algo IP speakers and paging adapters. Any of these devices can be configured as a multicast Master to send audio via the network to other Algo IP endpoints and Yealink phones configured to listen as a multicast Slave. These include: Algo 8180, 8188, 8189, 8186, 8373, 8128.

- 1) To configure the 8301, open an empty web browser, enter the **device's IP** address in the address field, and press Enter
- 2) To find the device's IP address, please refer to the user guide available at: http://www.algosolutions.com/8301/guide



- 3) In the web interface, enter the password to log in (default password is **algo**)
- 4) Click on **Basic Settings** tab and then **SIP** tab. Enter the SIP server name or IP address in the **SIP Domain** (Proxy Server) field. Enter a unique Page and **Ring Extension**, Authentication ID and Authentication Password to register the 8301 with the SIP Server. At the bottom of the screen click **Save**. Note: If Page only is required, then the Ring Extension fields can be left blank. On the Page Extension, the device will auto-answer. On the Ring Extension, the device will play a WAV file of your choice.

status Basic Settings Additional Features Advanced	Settings System Logout
SIP Features Multicas	
IP Settings	
 SIP This section allows the SIP server information & account creates to confirm successful registration. 	dentials to be entered. This information should be obtained from your telephone system administrator or hosted account provider. After saving these settings, see the Status
SIP Domain (Proxy Server)	10.0.0.100
Ring/Alert Mode	Monitor "Ring" event on registered SIP extension None None
Ring Extension	2003
Authentication ID	2003
Authentication Password	
The device will detect inbound ring events on this extens	ion and play the alerting tone (and multicast if configured) until the inbound call stops ringing. It will not answer the call on this extension.
Page Extension	2002
Authentication ID	2002
Authentication Password	····
() The device will auto-answer any inbound call received or	this extension and provide a voice paging path (and multicast if configured).
	🖌 Sav

5) Navigate to Basic Settings tab, then Multicast tab. On Multicast Mode, select Master/Sender. Under Master Single Zone, pick the desired zone to multicast to. Ensure the slave devices are configures to listen to this zone. Save the changes

ulticast Settings	
Multicast Mode	
Multicast Mode	◎ Non ([®] Master/Sender) Slave/Receiver ④ Multicast zon: 9 - Nons can be found in "Advanced Settings > <u>Advanced Multicast</u> ".
Number of Zones	Basic Zones Only Basic and Expanded Zones
Polycom Group Paging/Push-to-Talk	
Multicast Type	Requiar (RTP) Polycom Group Page Polycom Push-to-Talk Requiar RTP + Polycom Group Page Requiar RTP + Polycom Push-to-Talk Requiar RTP + Polycom Push-to-Talk Requiar mode uses RTP audio packets compatible with all Algo SIP endpoints, and most multicest-enabled phones.
Master/Sender Zone Settings	
Zone Selection Mode	ODTMF Selectable Zone ® Single Zone @ For additional capabilities allowing unique SIP extensions per zone, see "Additional Features > <u>More Page Extensions</u> ".
Master Single Zone	Zone 6 Sin-Order State State State State with this single zone setting will not apply to Paging (since the zone can now be dynamically selected per call using DTMP), but it will sill paply to the Ring Extension and Relay triggered events, including the analog audio input.
Speaker Playback Zones	Priority Call Call Call Music Zone 1 Zone 2 Zone 3 Zone 4 Zone 6 Zone 6 Ø Allows master device to play audio for selected zones only. This is useful if using DTMF Selectable Zone mode (or <u>More Page Extensions</u> per zone) and winking to make the Master unit a member of only certain zones.

6) Click on **Advanced Settings** tab and then **Advanced Multicast**. Assign a listening address and port number to the Master Single Zone setup on the previous step. Make sure the IP and port number matches with the Multicast address configured on the Yealink phone. Save the changes

Status Basic Settings Additional Features Advanced	Settings System Logout		
Network Admin Time Provisioning Tones Adva	Advanced Multicast		
dvanced Multicast Settings			
Current multicast mode: Master			
Master Settings			
Master Output Codec	G.711 ulaw	¥	
Master Output Packetization Time (milliseconds)	20	T	
Basic Zone Definition			
Zone	IP Address and Port Page Tone		
Priority Call (DTMF:9)	224.0.2.60:50000	ne> T	
All Call (DTMF:0)	224.0.2.60:50001 <use default="" li="" page="" ton<=""> </use>	ne> Y	
Zone 1 (DTMF:1)	224.0.2.60:50002 	ne> T	
Zone 2 (DTMF:2)	224.0.2.60:50003 <a>Vse Default Page Tor	ne> T	
Zone 3 (DTMF:3)	224.0.2.60:50004 <use default="" page="" td="" ton<=""><th>ne> T</th><td></td></use>	ne> T	
Zone 4 (DTMF:4)	224.0.2.60:50005 <a> <a><!--</td--><th>ne> T</th><td></td>	ne> T	
Zone 5 (DTMF:5)	224.0.2.60:50006 <a>Use Default Page Ton	ne> T	
Zone 6 (DTMF:6)	224.0.2.10:50002 ID Use Default Page Ton	ne> T	
Music (DTMF:7)	224.0.2.60:50008 Use Default Page Tor 	ne> T	
			✓ S

Configuring Algo 8180 SIP Audio Alerter as Slave

Note: Any Algo IP speaker and paging adapter can be configured in a similar way as a Slave to receive a multicast. These include: Algo 8188, 8189, 8186, 8301, 8373, 8128.

- To configure the 8180, open an empty web browser, enter the **device's IP** address in the address field, and press Enter
- To find the device's IP address, please refer to the user guide available at: <u>http://www.algosolutions.com/8180/guide</u>
- 3) In the web interface, enter the password to log in (default password is **algo**)
- 4) Slave devices do not need to a separate SIP server registration, unless there is a need to ring/page them independently and in multicast. Leave the SIP Domain, Extension, Authentication ID and Authentication Password blank
- 5) Navigate to Basic Settings, Multicast tab. On Multicast Mode, select Slave/Receiver. Under Master Single Zone, pick the desired zone to multicast to. It should be the same zone configured in the master device. Click Save

ISIP Ring Page Multicast		
Aulticast Mode		
Multicast Mode	None Master/Sende Slave/Receiver Multicast Zone Definitions can be a set of the set of	
Number of Zones	Basic Zones Only Basic and Expanded Zones Basic and Expanded Zones Basic and Zones are only available in Stave mode. The Algo 8301 Paging Adapter can be used as a Master (source) device for Expanded Zones. Zones.	
Slave/Receiver Zone Settings		
Slave Zones	Prohrby Call Mal Call Music Come 1 Long 2 Long 3 Zone 4 Zone 5 Mizone 6	
Polycom Group Paging/Push-to-Talk		
Multicast Type	Regular (RTP)	

6) Click on **Advanced Settings** tab and then **Advanced Multicast**. Assign a listening address and port number to the Master Single Zone setup on the previous step. Make sure the IP and port number matches with the Multicast address configured on the Yealink phone. **Save** the changes

Status Basic Settings Advanced Settings System Lopout		
Network Admin Time Provisioning Tones Advanced Ring/Alert	Input/Output Advanced SIP Advanced Multicast	
Advanced Multicast Settings		
Multicast mode can be set in "Basic Settings > Multicast"		
Basic Zone Definition		
Priority Call (DTMF:9)	224.0.2.60:50000	
All Call (DTMF:0)	224.0.2.60:50001	
Zone 1 (DTMF:1)	224.0.2.60:50002	
Zone 2 (DTMF:2)	224.0.2.60:50003	
Zone 3 (DTMF:3)	224.0.2.60:50004	
Zone 4 (DTMF:4)	224.0.2.60:50005	
Zone 5 (DTMF:5)	224.0.2.60:50006	
Zone 6 (DTMF:6)	224.0.2.10:50002	
Music (DTMF:N/A)	224.0.2.60:50008	
	√ Sa	

Troubleshoot Issues

Use the following list as a guide to resolving issues, problems, or common difficulties you may encounter while deploying this solution.

The speakers are not receiving a page.

Double check that the Multicast settings in the web configurations are the same for the phone as well as the speakers.

Ensure speaker and Yealink phones connected to the same subnet and VLAN. In some network environment, paging audio packets can't transmit via different subnet and VLAN.

The 8301 does not power on.

When connecting the Ethernet cable, make sure that a PoE port is used to provide power.



About Yealink

Yealink (Stock Code: 300628) is a global leading unified communication (UC) terminal solution provider that primarily offers video conferencing systems and voice communication solutions. Founded in 2001, Yealink leverages its independent research and development and innovation to pursue its core mission: "Easy collaboration, high productivity." The company's high-quality UC terminal solutions enhance the work efficiency and competitive advantages of its customers in over 100 countries. Yealink is the world's second-largest SIP phone provider and is number one in the China market.

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