

# [AN037]



**ADVANCED**  
NETWORK DEVICES

## Using Polycom Phones with AND Devices

Version 2.0

9/5/2017

© 2017 ADVANCED NETWORK DEVICES

3820 NORTH VENTURA DR.

ARLINGTON HEIGHTS, IL 60004

U.S.A

ALL RIGHTS RESERVED

## PROPRIETARY NOTICE AND LIABILITY DISCLAIMER

The information disclosed in this document, including all designs and related materials, is the valuable property of Digital Advanced Network Devices and/or its licensors. Advanced Network Devices and/or its licensors, as appropriate, reserve all patent, copyright and other proprietary rights to this document, including all design, manufacturing, reproduction, use, and sales rights thereto, except to the extent said rights are expressly granted to others.

The Advanced Network Devices product(s) discussed in this document are warranted in accordance with the terms of the Warranty Statement accompanying each product. However, actual performance of each product is dependent upon factors such as system configuration, customer data, and operator control. Since implementation by customers of each product may vary, the suitability of specific product configurations and applications must be determined by the customer and is not warranted by Advanced Network Devices.

To allow for design and specification improvements, the information in this document is subject to change at any time, without notice. Reproduction of this document or portions thereof without prior written approval of Advanced Network Devices is prohibited.

### Static Electric Warning



## TROUBLESHOOTING AND ADDITIONAL RESOURCES

Complete Support Site with User Guides & Help: <http://www.anetdsupport.com/>  
Additional App Notes: <http://www.anetdsupport.com/AppNotes>  
Customer Feedback Survey: <http://www.anetdsupport.com/survey>  
AND Legal Disclaimer: <http://www.anetd.com/legal>

## OVERVIEW

Polycom phones can communicate with AND devices directly peer-to-peer, via a SIP server, and/or with the use of Polycom's Push-To-Talk (PTT) Channels and Paging Groups. This functionality can help when integrating AND products into an environment already using Polycom IP Phones. This document details how to configure the AND device, setup Polycom phones, and control communication between the two.

These features require AND device firmware 1.5 or greater. Find the latest firmware on our support site: <http://www.anetdsupport.com/firmware-versions>

## AND DEVICE SETUP

You can configure AND devices either via Device Settings in the web page interface of a single endpoint, or via a configuration file (applied to one or more endpoints).

To configure an AND device via its web interface, enter the IP address of the device into a web browser. Select **Device Settings** → **Streams**. Refer to Figure 1 for the Polycom settings sections of the *Streams* page. Make changes as detailed below, then click the *Save Streams Changes* button.

- *PTT and Paging Network Setting*

Factory settings include the default IP address and port number of the Polycom Multicast stream (224.0.1.116:5001). Change this to match the IP and port of the multicast stream of the Polycom phones if necessary.

- *Polycom PTT and Paging Group Configuration*

Various settings apply to each of the different types of channels. Normal corresponds to the default channel used by the Polycom phone along with any other subscribed channels. The Polycom software defines the Priority and Emergency channels, to which the AND settings assign a higher priority by default. Note that priority determines which action takes precedence on the endpoint at any one time, ranging from 1 (highest) to 100 (lowest). Set volume, starting tones, and ending tones as desired.

- *Polycom PTT Channel Subscriptions*

IPClockWise makes 25 channels available to use for Push-To-Talk functionality. Place a check in the box for the channels to which you want the AND device to subscribe. When a given PTT channel sends out audio, all AND devices and Polycom phones subscribed to that channel will hear it. (Priority) and (Emergency) designates the respective channels selected in the configuration section above. By default, AND devices do not subscribe to any PTT channels.

- Polycom Paging Group Subscriptions

IPClockWise makes 25 channels available to use for Group Paging functionality. Place a check in the box for the groups in this section to which you want the AND device to subscribe.

When a given page group sends out audio, all AND devices and Polycom phones subscribed to that group will hear it. (Priority) and (Emergency) designates the respective channels selected in the configuration section above. By default, AND devices do not subscribe to any Paging Groups.

**Polycom PTT and Paging Network Setting** [help](#)

Parameter	Stored value	New Value
Polycom Stream (IP:port)	224.0.1.116:5001	<input type="text" value="224.0.1.116:5001"/>

  

**Polycom PTT and Paging Group Configuration** [help](#)

Channels/Groups	Priority	Volume	Starting Tone	Ending Tone	PTT Channel	Paging Group
Normal	70 (low) ▼	4 ▼	None ▼	None ▼		
Priority	30 (high) ▼	4 ▼	None ▼	None ▼	24 ▼ default: 24	24 ▼ default: 24
Emergency	1 (highest) ▼	4 ▼	None ▼	None ▼	25 ▼ default: 25	25 ▼ default: 25

  

**Polycom PTT Channel Subscriptions** [help](#)

<input type="checkbox"/> Channel 1	<input type="checkbox"/> Channel 2	<input type="checkbox"/> Channel 3	<input type="checkbox"/> Channel 4	<input type="checkbox"/> Channel 5
<input type="checkbox"/> Channel 6	<input type="checkbox"/> Channel 7	<input type="checkbox"/> Channel 8	<input type="checkbox"/> Channel 9	<input type="checkbox"/> Channel 10
<input type="checkbox"/> Channel 11	<input type="checkbox"/> Channel 12	<input type="checkbox"/> Channel 13	<input type="checkbox"/> Channel 14	<input type="checkbox"/> Channel 15
<input type="checkbox"/> Channel 16	<input type="checkbox"/> Channel 17	<input type="checkbox"/> Channel 18	<input type="checkbox"/> Channel 19	<input type="checkbox"/> Channel 20
<input type="checkbox"/> Channel 21	<input type="checkbox"/> Channel 22	<input type="checkbox"/> Channel 23	<input type="checkbox"/> Channel 24 (Priority)	<input type="checkbox"/> Channel 25 (Emergency)

  

**Polycom Paging Group Subscriptions** [help](#)

<input type="checkbox"/> Group 1	<input type="checkbox"/> Group 2	<input type="checkbox"/> Group 3	<input type="checkbox"/> Group 4	<input type="checkbox"/> Group 5
<input type="checkbox"/> Group 6	<input type="checkbox"/> Group 7	<input type="checkbox"/> Group 8	<input type="checkbox"/> Group 9	<input type="checkbox"/> Group 10
<input type="checkbox"/> Group 11	<input type="checkbox"/> Group 12	<input type="checkbox"/> Group 13	<input type="checkbox"/> Group 14	<input type="checkbox"/> Group 15
<input type="checkbox"/> Group 16	<input type="checkbox"/> Group 17	<input type="checkbox"/> Group 18	<input type="checkbox"/> Group 19	<input type="checkbox"/> Group 20
<input type="checkbox"/> Group 21	<input type="checkbox"/> Group 22	<input type="checkbox"/> Group 23	<input type="checkbox"/> Group 24 (Priority)	<input type="checkbox"/> Group 25 (Emergency)

**Figure 1 - Device Settings → Streams Page**

## Polycom Phone to Device Peer-to-Peer Call Setup

Peer-to-peer (P2P) allows a Polycom phone to call a single AND device. For this feature to work, go to Device Settings → SIP for the device to enable *Promiscuous Mode* (see Figure 2). Click the *Save SIP Changes* button.

SIP General Settings		
Parameter	Stored value	New Value
SIP Mode	Paging	Paging ▼
Promiscuous Mode	Yes	Yes ▼

**Figure 2 – AND Device Settings → SIP Page**

## Device to Polycom Phone/Paging Group/PPT Channel Setup

You can configure an AND device to initiate pages or calls to Polycom Paging Groups, PPT Channels, or individual phones. For this feature to work, the general purpose input (GPIO) on the AND device must have the capability for activation, such as via an AND call button (such as the [AND-BTN-KIT-1](#)).

Go to **Device Settings** → **SIP** to the *SIP General Settings* section to enable *Promiscuous Mode*, and set the *Extension* to any value, numeric or alphabetic (see Figure 3).

SIP General Settings		
Parameter	Stored value	New Value
SIP Mode	Paging	Paging ▼
Promiscuous Mode	Yes	Yes ▼
Extension	283	283

**Figure 3 – AND Device Settings → SIP Page**

In the *SIP GPIO Input Action Settings* section, enter one of the following values into the Push-to-Talk 1 and/or Push-to-Talk 2, depending on which GPIO input (0 or 1) the action will trigger (see Figure 4).

- Polycom PTT Channel as "polycom\_ptt:#" (where # indicates the PPT channel subscription number)
- Polycom Paging Group as "polycom\_paging:#" (where # indicates the Paging group subscription number)
- IP Address of a Polycom Phone for a peer-to-peer call (e.g., 10.10.7.150)  
We recommend including the AND device and Polycom phone on the same VLAN.

SIP GPIO Input Action Settings <a href="#">help</a>		
Parameter	Stored value	New Value
Push-to-Talk 1 (GPIO 0 Outgoing)		<input type="text"/>
Push-to-Talk 1 Alternate (Hold)		<input type="text"/>
Push-to-Talk 1 Alternate Hold Time (ms)	0	<input type="text" value="0"/>
Push-to-Talk 1 Trigger Only	No	<input type="text" value="No"/>
Push-to-Talk 2 (GPIO 1 Outgoing)		<input type="text"/>
Push-to-Talk 2 Alternate (Hold)		<input type="text"/>
Push-to-Talk 2 Alternate Hold Time (ms)	0	<input type="text" value="0"/>
Push-to-Talk 2 Trigger Only	No	<input type="text" value="No"/>
GPIO Control of Non-GPIO Calls	No	<input type="text" value="No"/>

**Figure 4 - Device Settings → SIP, GPIO Input Action Settings**

If using a configuration file, choose from the same options described in the web interface above. The following shows a sample configuration file section, with corresponding definitions as comments:

```
<Polycom
  main_prio="80" <!--Normal channel/group priority: 1-100-->
  prio_prio="40" <!--Priority channel/group priority: 1-100-->
  emg_prio="1" <!--Emergency channel/group priority: 1-100-->
  main_vol="4.000" <!--Normal volume: 1-13-->
  prio_vol="5.000" <!--Priority volume: 1-13-->
  emg_vol="6.000" <!--Emergency volume: 1-13-->
  main_st_tone="" <!--Normal Starting Tone-->
  prio_st_tone="Default" <!--Priority Starting Tone-->
  emg_st_tone="buzz" <!--Emergency Starting Tone-->
  main_end_tone="" <!--Normal Ending Tone-->
  prio_end_tone="Default" <!--Priority Ending Tone-->
  emg_end_tone="buzz" <!--Emergency Ending Tone-->
  ptt_prio_channel="24" <!--Priority Push-To-Talk Channel: 1-25-->
  ptt_emg_channel="25" <!--Emergency Push-To-Talk Channel: 1-25-->
  pag_prio_channel="24" <!--Priority Paging Group: 1-25-->
  pag_emg_channel="25" <!--Emergency Paging Group: 1-25-->
  channels_ptt="1,2,24,25" <!-- PTT Channel Subscriptions: 1-25, comma separated-->
  channels_paging="1,2,24,25" <!-- Paging Group Subscriptions: 1-25, comma sep-->
  ip_port="224.0.1.116:5001" <!--Polycom multicast IP address and port number-->
/>
<SIPConfig
  promiscuous_mode="1" <!--Promiscuous Mode: 1 for Yes, 0 for No-->
  id="283" <!--Extension number or name-->
  push_to_talk_ip1="10.10.6.112" <!--AND GPIO 0 Input action; call Polycom phone-->
  push_to_talk_ip2="polycom_ptt:5" <!--AND GPIO 1 Input action; call PTT group-->
  <!--file may contain additional SIP settings here-->
/>
```

Reboot the AND device to apply the new settings anytime making changes to the web page interface or configuration file.



## POLYCOM PHONE SETUP

As an example, this document refers to a Polycom SoundPoint IP450 running UC Software Version 4.0.7.2514. However, AND devices can interact with most current Polycom phone models.

First, access the web interface of the Polycom phone by entering the IP address of the phone into a web browser. Note: to look up the IP address on the Polycom phone, go to **Menu → Status → Network → TCP/IP Parameters**. Log in as Admin and enter the password, which defaults to "456". Navigate to **Settings → Paging/PTT Configuration** to bring up the page shown with default options in Figure 5 below.

**Paging/PTT Configuration**

---

**Settings**

Multicast IP Address:

Port:

Emergency Volume (db):

Call Waiting:  Enable  Disable

Compatibility:  Enable  Disable

---

**Group Paging Configuration**

Group Paging:  Enable  Disable

Group Type	Group No.	Available	Send	Subscribe	Label
Default Group	<input type="text" value="Group 1"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text"/>
Priority Group	<input type="text" value="Group 24"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text"/>
Emergency Group	<input type="text" value="Group 25"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text"/>

Accept While Busy:  Enable  Disable

Sender ID:

Payload Size (ms):

Codec:

Added Timeout (s):

Continuation Timeout (s):

---

**PTT Mode Configuration**

PTT Mode:  Enable  Disable

Channel Type	Channel No.	Available	Send	Subscribe	Label
Default Channel	<input type="text" value="Channel 1"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text"/>
Priority Channel	<input type="text" value="Channel 24"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text"/>
Emergency Channel	<input type="text" value="Channel 25"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text" value="Yes"/>	<input type="text"/>

Accept While Busy:  Enable  Disable

Sender ID:

Payload Size (ms):

Codec:

---

**Figure 5 - Polycom Phone Paging/PTT Configuration**

- Settings

The *Multicast IP Address* and *Port* should match those used during AND Device Setup. For Push-To-Talk (PTT) to function with AND devices, disable the *Compatibility* option.

- Group Paging Configuration

If Group Paging is desired, enable this section which allows all the fields to be edited. Change Default, Priority and Emergency Group numbers if necessary. To ensure compatibility with AND devices, change Codec to *G.711Mu*. Set other options as needed, and save page settings when complete.

- PTT Mode Configuration

For Push-To-Talk (PTT), enable this section, which allows editing for all the fields. Change Default, Priority and Emergency Channel numbers if necessary. To ensure compatibility with AND devices, change Codec to *G.711Mu*. Set other options as needed, and save page settings when complete.

Both Group Paging and PTT Mode configurations include an option to configure additional channel subscriptions for this phone to send and receive. If communicating with AND devices via any non-default channel(s), set the *Subscribe* to "Yes" on the corresponding channel(s), and save (see Figure 6).

1	Yes ▾	Yes ▾	Yes ▾	<input type="text"/>
2	Yes ▾	Yes ▾	No ▾	<input type="text"/>
3	Yes ▾	Yes ▾	No ▾	<input type="text"/>
4	Yes ▾	Yes ▾	No ▾	<input type="text"/>
5	Yes ▾	Yes ▾	No ▾	<input type="text"/>
6	Yes ▾	Yes ▾	No ▾	<input type="text"/>
7	Yes ▾	Yes ▾	No ▾	<input type="text"/>
8	Yes ▾	Yes ▾	No ▾	<input type="text"/>
9	Yes ▾	Yes ▾	No ▾	<input type="text"/>
10	Yes ▾	Yes ▾	No ▾	<input type="text"/>
11	Yes ▾	Yes ▾	No ▾	<input type="text"/>
12	Yes ▾	Yes ▾	Yes ▾	<input type="text"/>

Cancel Save

**Figure 6 - Configure Polycom Subscriptions**

Make sure to *Save* and confirm all changes to update the phone interface. No need to reboot.



## AND DEVICE AND POLYCOM PHONE INTERACTION

After configuring the AND devices and Polycom phones, you can easily confirm functionality by following the steps below for each enabled feature.

### **Push-To-Talk Feature**

On the Polycom phone, hold down the button for Talk (available only if the Polycom phone software has enabled PTT Mode). Any starting tones should broadcast from AND devices subscribed to the default channel. Speaking to ensure your voice broadcasts to those devices. Release the Talk button to complete the stream, and any ending tones should broadcast.

If using a non-default, priority, or emergency PTT channel, briefly touch the Talk button instead to bring up a list of available channels. Use the arrow buttons to highlight the desired PTT channel, and hold down the Talk button to begin. Release the button to end.

### **Paging Feature**

On the Polycom phone, hold down the button for Paging (available only if the Polycom phone software has enabled Paging Mode). Any starting tones should broadcast from AND devices subscribed to the default group. Speak to ensure your voice broadcasts to those devices. Press the End Page button to complete the stream, and any ending tones should broadcast.

If using a non-default, priority, or emergency Paging group, briefly touch the Paging button instead to bring up a list of available groups. Use the arrow buttons to highlight the desired Paging group, and press the Page button again to begin. Press End Page to stop.

### **Polycom to Device Peer-To-Peer Call Feature**

On the Polycom phone, either pick up the handset, or press the New Call button. Once you hear the dial tone, press the URL button, and enter the IP address of an AND device. Use the \* key to input a decimal. Press Send to begin the call, and ensure you can hear audio from the device. Press End Call, or hang up the handset to stop.

To simplify the calling process, create a contact in the Polycom phone directory with a contact URL that matches the IP address of the AND device, using the format `sip:10.10.7.150`. (Note that you must set the contact field to URL for this to work.) Now you can call the AND device with one button press from the phone directory. If using this method, make sure to use DHCP reservation to associate each AND device's MAC address with a fixed IP address, so that the IP address associated with each AND device does not change over time. On most networks, you can avoid the use of DHCP reservation by specifying the device hostname as `sip:ipspeaker2046f9030123`, where 2046f9030123 is the MAC address of the device. Using this method, the IP address of the AND device can change, but the phone directory contact will still work.

## Device to Polycom Phone / Paging Group / PPT Channel Feature

When triggering the corresponding GPIO Input, the AND device will start the appropriate stream, and all subscribed devices will receive the audio for paging and PTT modes, or the individual Polycom phone will receive a call.