



Linksys PAP2T ATA Guide

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Corporate Headquarters

Linksys
121 Theory Drive
Irvine, CA 92617
USA
<http://www.linksys.com>
Tel: 949 823-1200
800 546-5797
Fax: 949 823-1100



PAP2T

The PAP2T provides two FXS ports (see [Figure 2-1](#)).

Figure 2-1 PAP2T



The following tables describe the LEDs on the front panel and the ports on the back panel of the device.

Table 2-1 PAP2T Front Panel

LED	Function
Phone 1/2	Steady green indicates active or registered connection to the ITSP through the Phone port. Flashing indicates device is in use or off hook.
Ethernet	Steady green indicates active connection. Flashing indicates traffic.
Power	Steady green indicates power on and Internet connection. Flashing indicates not connected to the Internet, booting or firmware upgrade.

Table 2-2 PAP2T Back Panel

LED	Function
Phone 1/2	Connect to an analog telephone or fax machine with an RJ-11 cable.
Ethernet	Connect to a router or broadband (cable/DSL) modem.
Power	Connect to the 5-volt DC power adapter.

User Guidelines

This appendix provides documentation for the use of the SPA products. It includes the following sections:

- [Basic Services, page C-1](#)
- [Enhanced Services, page C-2](#)

The SPA can be configured to the custom requirements of the service provider, so that from the subscriber point of view, the service behaves exactly as the service provider wishes, with varying degrees of control left with the end user. This means that a service provider can leverage the programmability of the SPA to offer sometimes subtle yet continually valuable and differentiated services optimized for the network environment or target markets.

This chapter describes how some of the supported basic, enhanced, and supplementary services can be implemented. The implementations described below are not the only way to achieve the desired service behavior.

Basic Services

Originating a Phone Call

Service description	Placing telephone a call to another telephone or telephony system (IVR, conference bridge, and so on). This is the most basic service.
User action required to activate or use	When the user picks up the handset, the SPA provides dial tone and is ready to collect dialing information via DTMF digits from the telephone touchtone key pad.
Expected call and network behavior	Although it is possible to support overlapped dialing within the context of SIP, the SPA collects a complete phone number and sends the full number in a SIP INVITE message to the proxy server for further call processing. To minimize dialing delay, the SPA maintains a dial plan and matches it against the cumulative number entered by the user. The SPA also detects invalid phone numbers not compatible with the dial plan and alerts the user via a configurable tone (Reorder) or announcement.
User action required to deactivate or end	Hang up the telephone.

Receiving a Phone Call

Service description	The SPA can receive calls from the PSTN or other IP Telephony subscribers
User action required to activate or use	When the telephone rings, pick up the handset and begin talking.
Expected call and network behavior	Each subscriber is assigned an E.164 ID (phone number) so that they may be reached from wired or wireless callers on the PSTN or IP network. The SPA supplies ring voltage to the attached telephone set to alert the user of incoming calls.
User action required to deactivate or end	Hang up the telephone.

Enhanced Services

Caller ID

Service description	If available, the SPA supports the generation and pass through of Caller ID information.
User action required to activate or use	No user action required. The user telephone equipment must support Caller ID to display the caller name and/or number.
Expected call and network behavior	In between ringing bursts, the SPA can generate a Caller-ID signal to the attached phone when the phone is on-hook. As part of the INVITE message, the SPA sends the caller name and number as it is configured in the profile.
User action required to deactivate or end	No user action required. See CLIP and CLIR.

Calling Line Identification Presentation (CLIP)

Service description	Some users choose to block their Caller ID information for all outgoing calls. However, there may be circumstances where sending Caller ID information for a call is desired; that is, trying to reach a party that does not accept Caller ID blocked calls.
User action required to activate or use	<ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *82 4. Listen for dial tone 5. Dial the telephone number you are calling

Expected call and network behavior	Caller ID is sent to the distant party for this call only. Users must repeat this process at the start of each call.
User action required to deactivate or end	No action required. This service is only in effect for the duration of the current call.

Calling Line Identification Restriction (CLIR)—Caller ID Blocking

Service description	This feature allows the user to block the delivery of their Caller ID to the number they are calling. This feature must be activated before dialing each call and is only in effect for the duration of each call.
User action required to activate or use	<ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *81 4. Listen for dial tone 5. Dial the telephone number you are calling <p>You must repeat this process at the start of each call.</p>
Expected call and network behavior	The user activates this service to hide their Caller ID when making an outgoing call.
User action required to deactivate or end	No action required. This service is only in effect for the duration of the current call.

Call Waiting

Service description	The user can accept a call from a third party while engaging in an active call. The SPA alerts the subscriber of the second incoming call by playing a call waiting tone.
User action required to activate or use	<p>If you choose to answer the second call, do one of the following:</p> <ul style="list-style-type: none"> • Press and release your phone switch hook (the button you release when you take your phone off the hook) • Press the flash button (if your phone has one) <p>This puts your first call on hold and automatically connects you to your second call.</p> <p>To put your second caller back on hold and return to your first caller, press the switch hook or flash button again. (You can alternate between calls as often as you like.)</p>
Expected call and network behavior	If the user is on a call when another call comes in, they hear a series of beeps/tones alerting them to the second call. The person calling hears normal ringing.
User action required to deactivate or end	See Cancel Call Waiting.

Disable or Cancel Call Waiting

Service description	The SPA supports disabling of call waiting permanently or on a per-call basis.
User action required to activate or use	<p>To temporarily disable Call Waiting (for the length of one call) do the following before placing a call:</p> <ol style="list-style-type: none"> 1. Lift Receiver 2. Press *70 3. Listen for dial tone, then dial the number you want to call. <p>Call Waiting is now disabled for the duration of this call only.</p> <p>To deactivate Call Waiting while on a call:</p> <ol style="list-style-type: none"> 1. Press the switch hook or flash button briefly. This puts the first call on hold. 2. Listen for three short tones and then a dial tone. 3. Press *70 4. Listen for dial tone then return to your call by pressing the switch hook or flash button. <p>Call Waiting is now disabled for the duration of this call.</p> <p>To deactivate Call Waiting while on a permanent basis (until cancelled):</p> <ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *57 <p>You will hear a confirmation tone signaling your request to cancel Call Waiting has been accepted.</p>
Expected call and network behavior	Callers who dial your number receive a busy signal, or the caller is forwarded to voice mail or another predetermined forwarding number, if available.
User action required to deactivate or end	<p>If you have cancelled Call Waiting temporarily, no user action is required.</p> <p>If you deactivated call waiting and wish to reinstate the service, do the following:</p> <ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *57 <p>You will hear a confirmation tone signaling your request to cancel Call Waiting has been accepted.</p>


Call-Waiting with Caller ID

Service description	When the user is on the phone and has Call Waiting active, the new caller Caller ID information is displayed on the user phone display screen at the same time the user is hearing the Call Waiting beeps/tones.
User action required to activate or use	The telephone equipment connected to the SPA must support Call-Waiting with Caller ID.
Expected call and network behavior	In between call waiting tone bursts, the SPA can generate a Caller-ID signal to the attached phone when it is off hook.
User action required to deactivate or end	Not applicable.

Voice Mail

Service description	Service providers may provide voice mail service to their subscribers. Users have the ability to retrieve voice mail via the telephone connected to the SPA.
User action required to activate or use	<p>The SPA indicates that a message is waiting by playing stuttered dial tone when the user picks up the handset.</p> <p>To retrieve messages:</p> <ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Dial the phone number assigned to the SPA <p>You will be connected to the voice mail server and prompted by a voice response system with instructions to listen to your messages.</p>
Expected call and network behavior	When voice mail is available for a subscriber, a notification message is sent from the voice mail server to the SPA. When the user dials their own phone number, the SPA connects the subscriber to their voice mail system, which can then connect them to their individual voice mail box.
User action required to deactivate or end	Follow instructions of the voice mail system or simply hang up the telephone.

Attendant Call Transfer

Service description	Attendant Call Transfer lets a customer use their touchtone phone to send a call to any other phone, inside or outside their business, including a wireless phones.
User action required to activate or use	<p>While in a call with the party to be transferred:</p> <ol style="list-style-type: none"> 1. Press the switch hook or flash button on the phone to place the party on hold 2. Listen for three short tones followed by dial tone 3. Dial the number to which you will transfer the caller 4. Stay on the line until the called number answers 5. Announce the call 6. Press the switch hook or flash button adding the held party to the call 7. Hang up to connect the two parties and transfer the call <div>  <p>Note You can hook flash while the third party is ringing to start an early conference, and then hang up to complete the transfer without waiting for the third party to answer first.</p> </div>
Expected call and network behavior	When the user presses the switch hook or flash button, the transferee is placed on hold. When the user successfully dials the transfer number and the party answers, the transferee can be added to the call by pressing the switch hook or flash button, creating a three-way conference. When the user hangs up the phone, the transferee and the called party remain in a call.
User action required to deactivate or end	Not applicable.

Unattended or “Blind” Call Transfer

Service description	Unattended or “Blind” Call Transfer lets a customer use their touchtone phone to send a call to any other phone, inside or outside their business, including a wireless phones.
User action required to activate or use	<p>While in a call with the party to be transferred:</p> <ol style="list-style-type: none"> 1. Press the switch hook or flash button on the phone to place the party on hold 2. Enter *98 3. Dial the number to which you will transfer the caller <p>The call is transferred when a complete number is entered. You will hear a short confirmation tone, followed by regular dial tone</p>

Expected call and network behavior	When the user presses the switch hook or flash button, the transferee is placed on hold. When the user successfully dials the transfer number, the transferee automatically calls the dialed number.
User action required to deactivate or end	Not applicable.

Call Hold

Service description	Call Hold lets you put a caller on hold for an unlimited period of time. It is especially useful on phones without the hold button. Unlike a hold button, this feature provides access to a dial tone while the call is being held.
User action required to activate or use	<p>Press the switch hook or flash button on the phone to place the first party on hold. You will hear a dial tone.</p> <p>To make another call, enter the new number.</p> <p>To return to call on hold, hang up, and the phone set rings with the first call on the line (or hook flash again)</p>
Expected call and network behavior	
User action required to deactivate or end	Hang up the telephone.

Three-Way Calling

Service description	The user can originate a call to a third party while engaging in an active call.
User action required to activate or use	<ol style="list-style-type: none"> 1. Press the switch hook or flash button on the phone to place the first party on hold 2. Listen for three short tones followed by dial tone 3. Dial the number of the third party. 4. When the third party answers you may have a conversation with them while the other party is on hold. <p>To hold a conference with the party on hold and the third party, simply press the switch hook or flash button.</p>
Expected call and network behavior	The SPA supports up to two calls per line. The SPA can conference two calls by bridging the second and third parties.
User action required to deactivate or end	Hang up the telephone.

Three-Way Ad-Hoc Conference Calling

Service description	This feature allows the user to conference up to two other numbers on the same line to create a three-way call.
User action required to activate or use	<p>If you are already on a call and wish to add a third party:</p> <ol style="list-style-type: none"> 1. Press the switch hook or flash button 2. Listen for dial tone 3. Dial the third party normally 4. When the third party number starts to ring press the switch hook or flash button again <p>You now have the original caller and the third party together with you on the same call.</p> <p>If you want to initiate a new three-way call:</p> <ol style="list-style-type: none"> 1. Call the first party in the normal manner 2. Follow the directions for adding a third party (see instructions above)
Expected call and network behavior	<p>The SPA can host a three-way conference and perform three-way audio mixing (without the need of an external conference bridge device or service).</p> <p>If you also have Call Transfer, you can also hang up at any time to transfer the original caller to the third party</p>
User action required to deactivate or end	

Call Return

Service description	The SPA supports a service that allows the SPA to automatically dial the last caller's number.
User action required to activate or use	<ol style="list-style-type: none"> 1. Pick up the receiver 2. Listen for dial tone 3. Press *69 to dial back the last caller that tried to reach you.
Expected call and network behavior	This service gives the user the convenience of recalling the last incoming call to their number automatically.
User action required to deactivate or end	No user action required.

Automatic Call Back

Service description	This feature allows the user to place a call to the last number they tried to reach whether the call was answered, unanswered, or busy, by dialing an activation code.
User action required to activate or use	<ol style="list-style-type: none"> 1. Pick up the receiver 2. Listen for dial tone 3. Press *07
Expected call and network behavior	<p>If the number called is idle, the call rings through and completes normally. If the called number is busy, the user hears a special announcement and the feature monitors the called number for up to 30 minutes. When both lines are idle, the user hears a special ring.</p> <p>During the monitoring process, the user can continue to originate and receive calls without affecting the Call Return on Busy request. Call Return on Busy requests can be canceled by dialing the deactivation code.</p>
User action required to deactivate or end	<ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *__

Call FWD—Unconditional


Service description	All calls are immediately forwarded to the designated forwarding number. The SPA does not ring or provide call waiting when Call FWD—Unconditional is activated.
User action required to activate or use	<ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *72 4. Listen for dial tone and enter the telephone number you are forwarding your call to. <p>Activation is confirmed with three short bursts of tone and your forwarding is activated.</p> <p>Alternatively, the user can activate this feature from a web browser interface.</p>

Expected call and network behavior	This feature allows a user the option to divert (forward) all calls to their telephone number to any number using the touchtone keypad of their telephone or web browser interface. This service is activated or deactivated from the phone being forwarded or the web browser interface.
User action required to deactivate or end	<ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *73 <p>You will hear a confirmation tone signaling your change has been accepted.</p> <p>Alternatively, the user can deactivate this feature from a web browser interface.</p>

Call FWD – Busy

Service description	Calls are forwarded to the designated forwarding number if the subscriber line is busy because of the following: primary line already in a call, primary and secondary line in a call or conference.
User action required to activate or use	<ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *90 4. Listen for dial tone and enter the telephone number you are forwarding your call to. <p>Activation is confirmed with three short bursts of tone and your forwarding is activated.</p> <p>Alternatively, the user can activate this feature from a web browser interface.</p>
Expected call and network behavior	This feature allows a user the option to divert (forward) calls to their telephone number to any number when their phone is busy or in conference by using the touchtone keypad of their telephone or web browser interface. This service is activated or deactivated from the phone being forwarded or the web browser interface.
User action required to deactivate or end	<ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *91 <p>You will hear a confirmation tone signaling your change has been accepted.</p> <p>Alternatively, the user can deactivate this feature from a web browser interface.</p>

Call FWD—No Answer

Service description	Calls are forwarded to the designated forwarding number after a configurable time period elapses while the SPA is ringing and does not answer.
User action required to activate or use	<ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *92 Listen for dial tone and enter the telephone number you are forwarding your call to. <p>Activation is confirmed with three short bursts of tone and your forwarding is activated.</p> <p>Alternatively, the user can activate this feature from a web browser interface.</p>  <p>Note The forward delay is entered from the web interface. Default is 20s.</p>
Expected call and network behavior	This feature allows a user the option to divert (forward) calls to their telephone number to any other dialable number when their phone is not answered by using the touchtone keypad of their telephone or web browser interface. This service is activated or deactivated from the phone being forwarded or the web browser interface.
User action required to deactivate or end	<ol style="list-style-type: none"> 1. Lift the receiver 2. Listen for dial tone 3. Press *93 <p>You will hear a confirmation tone signaling your change has been accepted.</p> <p>Alternatively, the user can deactivate this feature from a web browser interface.</p>


Anonymous Call Blocking

Service description	By setting the corresponding configuration parameter on the SPA, the subscriber has the option to block incoming calls that do not reveal the Caller ID of the caller.
User action required to activate or use	<ol style="list-style-type: none"> 1. Pick up the receiver 2. Listen for dial tone 3. To activate, press *77
Expected call and network behavior	When activated by the user, callers hear a busy tone.
User action required to deactivate or end	To de-activate, press *87

Distinctive/Priority Ringing and Call Waiting Tone

Service description	The SPA supports a number of ringing and call waiting tone patterns to be played when incoming calls arrive. The choice of alerting pattern to use is carried in the incoming SIP INVITE message inserted by the SIP proxy server (or other intermediate application server in the service provider domain).
User action required to activate or use	<ol style="list-style-type: none"> 1. Pick up the receiver 2. Listen for dial tone 3. Press *26
Expected call and network behavior	<p>With this service, incoming calls from multiple telephone numbers can be automatically identified by distinctive ringing. A distinctive ringing pattern (that is, short-long-short) accompanies incoming calls from the designated telephone numbers.</p> <p>If the user is engaged in conversation and a call from one of the designated numbers arrives, a distinctive call waiting tone (that is, short-long-short) accompanies the incoming call. Calls from other telephone numbers ring normally.</p>

Speed Calling—Up to Eight Numbers or IP Addresses

Service description	The SPA supports user programming of up to eight long distance, local, international, or emergency numbers and/or IP addresses for fast and easy access.
User action required to activate or use	<ol style="list-style-type: none"> 1. Pick up the receiver 2. Listen for dial tone 3. Press *74 4. Dial the single digit code under which the number is to be stored (2-9) 5. Dial the complete number to be stored just as if you were going to dial it yourself 6. Listen for Confirmation tone (two short beeps) 7. Hang up or repeat the sequence
	 <p>Note To enter IP addresses, a graphical user interface such as a web browser must be used.</p>

Expected call and network behavior	<ol style="list-style-type: none"> 1. Pick up the receiver 2. Listen for dial tone 3. Press single digit code assigned to the stored number (2-9) 4. Press # to signal dialing complete <p>The number is automatically dialed normally.</p>
User action required to deactivate or end	None

