

DRAFT

# PAIPER

## WIRELESS IP LINUX PHONE

- ▶ GRAPHICAL LCD DISPLAY
- ▶ MENUS IN MULTIPLE LANGUAGES
- ▶ COMPREHENSIVE JITTER BUFFER
- ▶ PRESENCE AND INSTANT MESSAGING
- ▶ SUPPORTS THE IEEE 802.11B STANDARD
- ▶ SUPPORTS ALL STANDARD PBX FUNCTIONS
- ▶ 8 HOUR TALK TIME AND 12 HOUR STANDBY TIME
- ▶ SPEECH ENCRYPTION FOR SECURE CONVERSATIONS
- ▶ VIBRATOR CAN DISCRETELY ANNOUNCE INCOMING CALLS
- ▶ TWO CALL APPEARANCES SUPPORT TWO SIMULTANEOUS CALLS
- ▶ BASED ON HIGHLY STABLE EMBEDDED LINUX OPERATING SYSTEM
- ▶ MENU, BROWSER, AND TFTP SUPPORT FOR CONFIGURATION AND UPDATES
- ▶ USES SIP TO OPERATE WITH STANDARD IP PHONE SYSTEMS AND NETWORKS
- ▶ ACOUSTIC ECHO CANCELLATION AND NOISE REDUCTION FOR HIGH QUALITY AUDIO



The Paiper Linux Phone is a Wi-Fi phone designed for businesses and enterprises that need a user to be mobile within the office or campus but still remain in contact with the corporate PBX or network and other colleagues. With its excellent audio quality, built-in speaker phone, and support for a full set of PBX features, the Linux Phone alleviates the need for an additional desktop phone.

The phone is battery powered and provides up to 8 hours of talk time and 12 hours of standby time. This allows a user to have the phone all day without having to recharge it or swap batteries. When placed in its charging cradle, the Linux Phone takes up very little space on the desktop and can be used while charging. The Linux Phone supports standard PBX features such as hold and transfer, as well as having two simultaneous call appearances that support conferencing on the phone.

With its support of presence and instant messaging, the phone further enhances productivity within the office. A backlit graphical display and intuitive menus make the Linux Phone very easy to use. The Linux Phone is based on open standards. It runs on real time Linux and uses SIP for call control, making it compatible with IP phone systems using the SIP standards.

The phone supports IEEE 802.11b, ensuring that it is compatible with most networks. The phone is easy to configure using standard methods. All important settings are protected by a password so that changes to these settings from the phone menu can be controlled by an administrator.



### Speech Quality

The phone is designed for high fidelity for the handset and speaker phone. These audio components are fine tuned to provide the best possible sound quality. The speaker phone has full duplex acoustic echo cancellation (AEC) so that the phone is fully functional as a speaker phone.

The phone incorporates patented jitter buffer. This ensures that speech quality is optimal, even when the network has varying delays and lost packets. This technology proves itself in a Wi-Fi environment. Competitive phones without this feature will have poor quality audio under identical network conditions.

The phone indicates the quality of service as a sequence of bars on the display. This lets the user know when there are network issues that may affect speech quality.

### Hands Free Operation

You can configure the device to behave as an intercom so that all internal or external calls are automatically answered by the speakerphone after one ring. In addition, the phone can silently disconnect at the end of a call. This permits the user to answer a call and conduct a conversation without touching the phone.

When used with an MX30 or MX250 system the Linux Phone supports zone paging through the speaker. The Linux Phone can be set up to page a specific zone with a single button press to allow for quick communication between a group of people, similar to push to talk systems on cellular phones.

### Physical Convenience

The Linux Phone has the appearance of a wireless business telephone set. There are 18 buttons and keys for convenient access to features such as hold, transfer, conference, do not disturb (DND), call forward, and mute.

The Linux Phone has a graphical backlit display so a user can quickly identify the status of the phone, calls, or the phone system. There is a separate indication for new voice mails, new instant messages, new incoming calls, calls on hold, conference calls, mute, forwarding, encryption, and do not disturb.

The charging cradle has four rubber feet that help to keep it in place on the desk. On sides of the phone are two guides that allow for a belt clip to be used. The Linux Phone has selectable ring tones to indicate internal calls and external calls. These can be downloaded to the phone. The phone has selectable tones to indicate a second incoming call and that a call is on hold. The phone has a vibrator to indicate incoming calls without the need to ring.

### Dialling

When using the key pad, users can dial a destination by phone number, SIP address, or IP address. Letters and special characters on the key pad operate similarly to that of the mobile phone. A SIP address can be abbreviated, for example to "sales." The phone supports hot key dialling so that users can enter a number, IP address, or name, and review and edit the destination address prior to calling.

The Linux Phone provides a phone book for storing the contact information of 100 individuals. Each entry contains a name and destination address (phone number, IP address, or SIP address). The phone remembers the last 32 numbers dialled and the last 32 incoming numbers.

### Encryption

The Linux Phone supports Wired Equivalent Privacy (WEP) encryption for securing the wireless link between the phone and the access point. In addition the Linux Phone can encrypt the voice stream to another Linux Phone or other equipment that supports Advanced Encryption Standard (AES) encryption.

Users can activate this function before or during a call. Alternatively, the administrator can enforce encryption so that it is not possible to establish a call without encryption. Encryption prevents the conversation from being decoded on the network. A conference call can be entirely encrypted when all parties use phones that are capable of encryption. The encryption code is displayed so parties at both ends can ensure that the call has not been intercepted. The additional bandwidth required to support an encrypted call is minimal, requiring only 2% more than an unencrypted call and the speech quality is unaltered.

### Conference

The Linux Phone supports three way conferencing. The conference is easily set up with inbound or outbound calls. Individual members can join or leave the conference at any time. The conference can be put on hold, allowing the other parties to continue to talk without the host.

### QoS Support

At the IP layer the Linux Phone supports the ability to mark the lower six bits of the IP QoS byte with the various differentiated services code point (DSCP) markings. This allows for up to 64 codepoints to be defined which map to various per-hop behaviors (PHBs).

### Preferences and Settings

All phone settings are accessible either from the phone or from a browser page located at the IP address assigned to the phone. There are many parameters on the phone that allow it to operate in the network. The phone automatically downloads these parameters at power on from a configuration file that is generated by the system administrator. These settings are protected by a password that can be restricted to the administrator to prevent the user from accidentally disrupting the network settings. With the menu on the phone, the user can customize personal preferences like volume level, contrast, language, format, and regional options without the password. The phone uses SNTP to automatically obtain the date and time from the network. However, the date and time can be set manually in the absence of an SNTP server. The phone displays the date and time, the start time, and the duration of each call.

### Technology

The Linux Phone has a powerful internal computer that runs a highly reliable real time embedded Linux operating system. The phone externally looks and behaves like wireless business phone. The Linux Phone uses SIP for communication. This protocol is now widely recognized as the standard for IP telephony. The Linux Phone performs all of the functions of a user agent client and a user agent server. It can be used with standard SIP servers, making it a truly open Wi-Fi IP phone. The phone incorporates self tests and diagnostic capabilities. These allow for rapid isolation and resolution of problems associated with deployment.

### Physical and Environmental

Operating temperature: 10° C to 40° C  
 Storage temperature: 0° C to 50° C  
 Weight: 0.3 kg. Shipping weight 1.0 kg  
 Size: 50 mm (W) x 42 mm (D) x 153 mm (H)  
 Power: 2.0 W

Immunity: EN55024  
 Emissions: FCC part 15A, EN55022 class A  
 Safety: IEC60950, UL60950, CAN/CSA- C22.2 No. 60950

