

iTalkie™

Users and Administrators Guide

Rev 1.82

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1. Introduction

TABLETmedia's iTalkie™ is a secure, cross-platform serverless paging communications solution for Microsoft Windows Mobile and WindowsCE based embedded devices as well as Microsoft Windows 2000/XP systems.

It is capable of:

- broadcasting voice pages (as in a walkie-talkie),
- calling (as in a phone call) other users using the dynamic presence of all users in the local network and
- sending messages from PC to mobile users.

iTalkie™:

- works over any suitable TCP/IP network (typically a WiFi wireless local area network)
- is tightly integrated with the capabilities of the mobile devices and
- it is expandable with loosely coupled function-specific accessory servers on the edge of the network.

It is intended to be a product for enterprise and vertical markets with zero-configuration and maintenance, easy deployment and most importantly it requires no servers.

iTalkie™ is the business solution for instant PTT and VoIP with presence. Just start the application and press the **PAGE** button to broadcast your first page!

NOTE (1): In this document we use the term “page” or “paging” to describe a half-duplex voice call broadcast to multiple users. Radio users instead may be more used to the term “group call”.

NOTE (2): The features and capabilities below are comprehensive of what is supported to date. Other features and capabilities may be planned for future releases.

NOTE (3): certain features described in this document may be subject to patents.

2. Main Features

The iTalkie™ solution supports the following capabilities:

2.1. Mobile client:

- P2P/serverless walkie-talkie (one to many and one-to-one half-duplex)
- P2P/serverless direct (VoIP) call (one to one full duplex)
- group and private text messaging
- programmable pre-defined (quicktext) messages
- dynamic presence
- secure communications with 128-bit encryption
- channel selection (up to 999 channels)
- emergency channel: override any inbound or outbound pages
- channel scan: listen to pages on multiple channels
- transmit only channel (taxi dispatcher usage scenario)
- definable channel range and names
- replay last page
- double click to call a user (VoIP)
- tap-n-hold for user channel selection, group/private call and text message
- partial or full background (silent) operation
- dual-level lockdown mode
- very high audio quality (wideband codec)
- mode-specific volume settings
- PTT calls: noise reduction, automatic gain control, jitter buffer and packet loss concealment. Optional echo canceling on Symbol devices.
- VoIP calls: echo canceling with noise reduction, automatic gain control, jitter buffer and packet loss concealment
- reliable multi-cast connections
- ActiveSync management
- power management
- network detection
- high-contrast UI
- Vibrator support (device dependent)
- today tray icon
- user-selectable page volume setting with overlaid indicator
- Microsoft Windows Mobile 2003 and 2003 Second Edition (2003SE), 5.0, 6.0 and 6.1 compliant (hi-dpi and orientation-aware) with support for QVGA, (240x320), VGA (480x640) and square (240x240) screens
- Microsoft WindowsCE.NET 4.x support with dynamic screen sizing
- Microsoft WindowsCE Embedded 5.0 with dynamic screen sizing
- thin client
- International languages ready

2.2. Personal computer clients:

- P2P/serverless walkie-talkie (one to many and one-to-one half-duplex)
- P2P/serverless direct (VoIP) call (one to one)
- group and private text messaging
- dynamic presence
- secure communications with 128-bit encryption
- channel selection (up to 999 channels)
- emergency channel: override any inbound or outbound pages
- channel scan: listen to pages on multiple channels
- definable channel range and names
- click-and-hold to call an individual user (PTT)
- double click to call an individual (VoIP)
- right-click for user channel selection, group/private call and text message
- partial or full background (silent) operation
- very high audio quality (wideband codec)
- mode-specific volume settings
- VoIP calls: echo canceling with noise reduction, automatic gain control jitter buffer and packet loss concealment
- reliable multi-cast connections
- network detection and interface selection
- audio device user selection
- high-contrast UI
- tray icon
- user-selectable page volume setting
- Microsoft Windows 2000/XP
- thin client
- International languages ready

2.3. PC-based systems:

- PA gateway server (play page through sound card to a PA system)
- Licensing server (for sites with no access to the public internet access required)
- Gateway to 2-way radios (page to/from iTalkie™ and walkie-talkies)

3. Installation

iTalkie™ can be installed in different ways:

- Though ActiveSync using the PC installer application.
- Manually copying its .cab file to the device via ActiveSync or SD card and installing it from the device.
- Downloading the .cab file directly from the internet.
- Though a remote device management system.

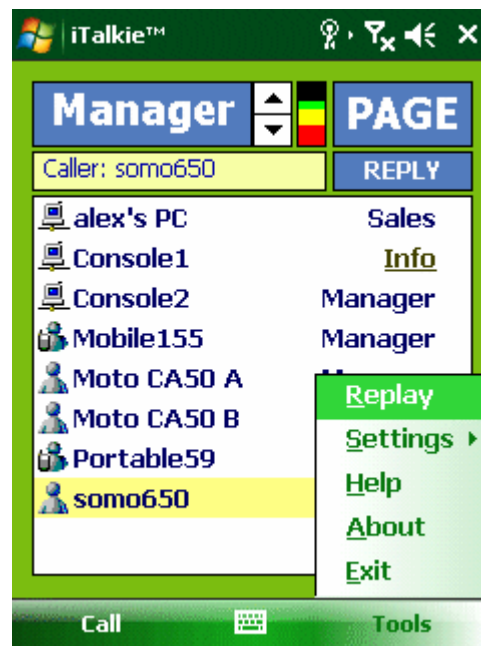
The first time it is run, it will prompt the user with two dialog boxes:

- License code: this code activates the license.
 - If you have a license code you must be connected to the public internet before clicking on “Apply”. Please note that each license is device specific based on the unique serial number of the device. This dialog box and the need to be connected to the internet will only occur once.
 - If you do not have the code, click on “Cancel”. iTalkie™ will continue to operate in trail mode.
- User name: this name must be unique for each device on the network. iTalkie™ while operating will constantly monitor for unique names and prompt the user if it finds a duplicate name.

At this point if the device is properly connected to the wireless network (WiFi) iTalkie will display the list of other users on the network:



3-D User Interface



“Flat” User Interface

NOTES:

- If two or more devices are running iTalkie™ and the applications is active as in the screen above but you do not see the other users, you have a network issue. Please refer to the FAQ for more information.
- If iTalkie™ is not active as in the picture below, your device is either:
 - Not fully connected to the wireless network: please re-check your network settings.
 - Cradled or otherwise connected to ActiveSync. Please undock your device.



4. Operation

iTalkie is completely auto-configuring and detecting of other users in the local network.

4.1. Paging 1:M (one to many half-duplex)

- **Sending pages:** press the PAGE button to start the page, select it again (END) to stop the page.
 - On some devices you can use the PTT button: the page will be send while the button remains pressed.
- **Receiving pages:** no pages can be sent while receiving one on the same channel.
- **Replay last page:** this powerful feature avoids users that miss a page to have to page back asking to repeat the page.
- **Channel selection:** select the appropriate channel. All other devices will be immediately notified of the selected channel.
 - iTalkie™ supports a maximum of 999 channels.
- **Channel names:**
 - The application directory contains the file tmWT.ini. This file can be changed to add/remove the available channels as well as define their names. For information on how to modify it please refer to the notes included in the file.
 - If the file is omitted, only the channel numbers will be displayed.
 - Note that the emergency channel is automatically added to the list of pre-defined channels.
 - One of the possible uses of the channel definition is to assign each user its own "channel" and then define generic channels for all users. In this way it is possible to have 1:1 half-duplex conversations by selecting particular users and paging their channel.
- **Emergency channel:** the emergency channel is channel 0.
 - Any page sent to the emergency channel will override any other pages.
 - If a user is tuned into a different channel, the emergency page will always be received even if the user is already receiving another page.
 - If a user is sending a page, the emergency page will still be received.
- **Channel scan:** is it possible to listen to multiple simultaneous channels. This is a user-selectable option and the tmWT.ini file contains the list of channels being scanned.
- **Replay last page:** this powerful feature avoids users that miss a page to have to page back asking to repeat the page.

4.2. Paging 1:1 (one to one half-duplex)

- **Call:** tap-n-hold on a user's name and then select Private page on the popup menu. Double-click on the name again or click on END or click on the physical PTT button to terminate the call.

4.3. Presence

- **Online status:** as soon as iTalkie™ is started the name of a user will be broadcast to all other devices. When closed the name is removed from their list. If a user goes out-of-range iTalkie™ will automatically remove the name from the list after a certain time.
- **User information:** the device type is identified by the icon (paging, talking, wired or wireless), the user name, and the channel number the user has currently selected.
- **Click to call:** by double clicking on a user name will place a direct call (VoIP) to the user.
- **Tap-and-hold:** selecting a user name and keeping it pressed, will display a menu indicating its current IP address, as well as a list of options. Clicking on Talk will place a direct (1:1) call to the user. Clicking on Page will automatically select the channel number of the user and send a page

4.4. Direct call (1:1 full duplex)

- **Call:** Double click on a user's name or use tap-n-hold and then select "Phone call" on the popup menu. In addition, on Windows Mobile 5.0 devices, scroll up and down with the UP/DOWN jog dial and press on "Call" (or assigned button) to place the call.

- **Answer:** click on “Yes” when receiving an incoming call notification, or “No” to reject it.
- **Hang-up:** click on END either to end an ongoing call or stop an incoming call request. On some devices, you can also press the PTT button to terminate the call.

4.5. Group text messages

iTalkie™ PC and mobile clients can exchange text messages.

- Group messages are sent to all users of a specific group (channel). It is also possible to send a message to all users on all channels.
- Messages are limited to only 138 characters.
- These messages can be plain text or can be HTML code. If the message is in the form of HTML code, it can contain not only formatting information, but also URL links.
- On the device side, messages will be displayed as a system notification (bubble) window, so that it does not interfere with other applications running in the foreground.
- If the message contains a link, clicking on it will open Internet Explorer to the specified URL. A supervisor from a PC can therefore send mobile users maps, pictures, or any other information available on public (internet) and/or private (intranet) web sites.
- iTalkie™ does not create a history of messages. The message can be either accepted and discarded or saved for future reference. Messages can be however recorded with the iTalkie™/Radio Gateway.

4.5.1. Entering group messages on a PC

- Right click on a user name and select “Group message” on the popup menu. Alternatively you can select “Action | Message to channel” to open the text input window.
- Enter the message, either in plain text or HTML code
- If the message needs to reach all users, select “Send to all channels”
- Click on SEND to broadcast the message



Broadcast Text Message

Enter text: (61 characters left)

`SPECIAL PROMOTION

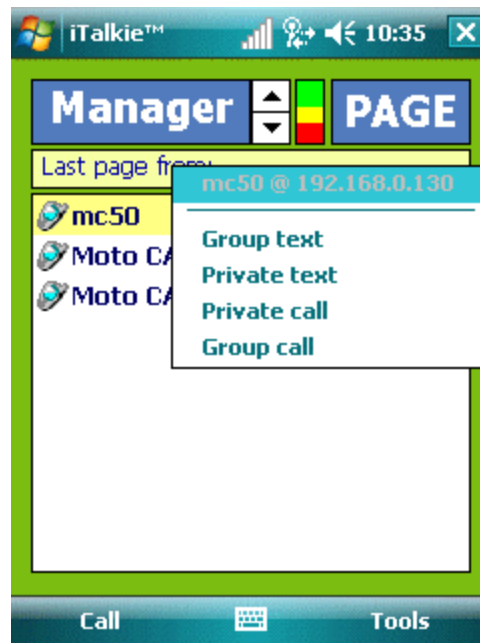
Go to iTalkie|`

Send to all channels ☐

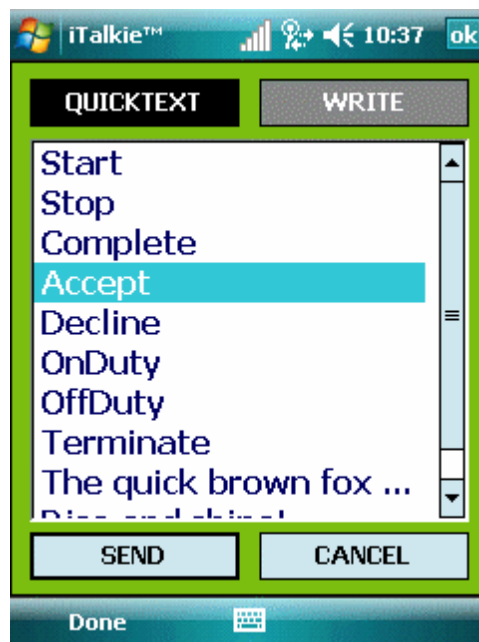
SEND **Cancel**

4.5.2. Entering group messages on a Windows Mobile device

To send messages from a WM device, click and hold on a name on the presence list to display the popup menu and select "Group text". NOTE: Group text messages will be sent to the group of the currently selected user.



At this point the user has the option to either send a pre-formatted quick text message or write a message:



Quicktext message window



Write text message window

The quicktext messages are entered in the tmWT.ini file resident in the same directory as iTalkie.

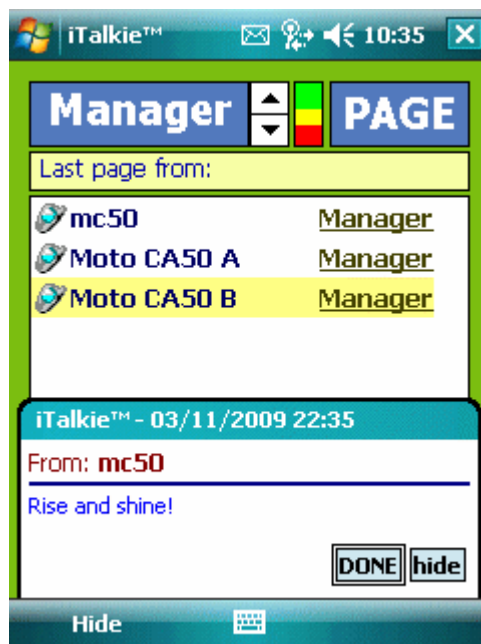
- Click on SEND (or DONE in the bottom menubar) to send the message or CANCEL to exit.

4.5.3. Receiving group text messages

Text messages received by iTalkie are displayed as alert notifications. This is so that iTalkie does not interfere with the primary applications running on the device and can remain silent in the background.

If the message is HTTP formatted and includes a hyperlink, clicking on the link automatically opens Internet Explorer at the specified URL, which can point to a web page on the public internet or on a private intranet.

NOTE: If WM hides the message, click on the bubble icon on the top taskbar of the screen to re-display it.



- Users have the options to dismiss (“DONE”) the message or just “hide” it to review it at a later moment.

4.6. Private text messages

Private messages are sent between devices and differ from group messages in that they can be replied to.

4.6.1. Entering private text messages

The procedure to enter a private text message is the same on Windows Mobile and Windows 2000 / XP/ Vista / 7:

- Windows Mobile: tap-and-hold on the name of the user to send the message to on the presence list, and select “Private message” as indicated in “4.5: Group text messages” on page 10.
- Windows 2000/XP/Vista/ 7: right-click on the name of the user on the presence list, and select “Private message” as indicated in “4.5: Group text messages” on page 10.

4.6.2. Receiving private text messages

Private text messages differ from group text messages as they allow the option to reply to the original sender.

The image below shows a private text message:



Message from iTalkie™ client



Message from email (via iTalkie/RG)

- The message appears as a system notification message
- Clicking on The REPLY button opens the window to enter the message (quicktext or write) as indicated in “4.5.2: Entering group messages on a Windows Mobile device” on page 11.
- Click on Done to accept the message and discard it, or on Hide to save for future reference
- If the message is HTTP formatted and includes a hyperlink, clicking on the link automatically opens Internet Explorer at the specified URL, which can point to a web page on the public internet or on a private intranet.
- NOTE: if WM hides the message, just click on the bubble icon on the top taskbar to re-display it.

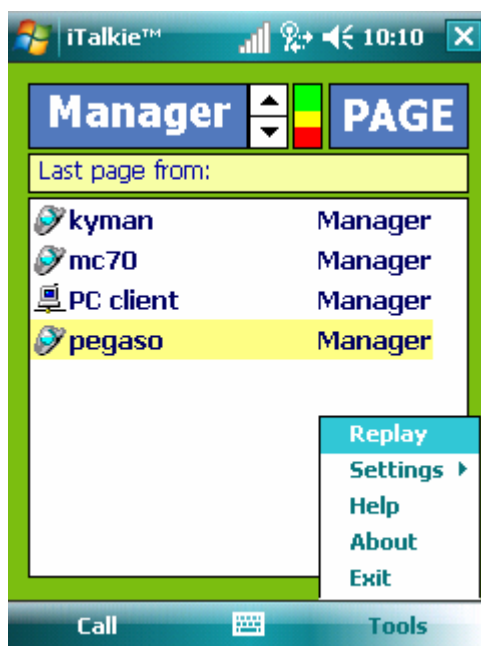
4.7. General

- **WLAN indicator:** the signal strength indicates the strength of the WLAN signal. If black the device is not associated with the access point.
- **Button indicator:** the Page button changes color to indicate it various modes of operation:
 - IDLE mode: white text, gray background
 - PAGE mode: yellow text, gray background
 - RECEIVE mode: white text, red background
 - PAGE/RECEIVE mode (hotline): yellow text, red background
 - BUSY/inactive mode: dark gray text, grey background
 - TALK mode: cyan text, gray background
- **Mode-specific volume:**
 - Incoming pages: are played with the user-selectable volume setting. If the volume changes during a page, it is saved for following pages.
 - Calls: the master speaker volume of the device is used during calls.
- **Audio routing:** on certain devices (e.g. Motorola MC50/MC55/MC70/MC65/MC3090, Intermec CK3) audio is routed through the back speaker during a page. During a direct call it is routed through the front speaker and echo canceling is enabled.
- **Background operation:** It is possible to "smart minimize" iTalkie™ and perform other tasks on your device.
 - **Today icon:** is displayed in the bottom right-hand corner of the today screen. Clicking on this icon will display iTalkie™. The color of the icon changes whether iTalkie™ is active or inactive.
 - When a page arrives or the PTT button is pressed, the application will be brought to the foreground if the "Silent UI" option is not selected.
 - Likewise, if the "Silent UI" is selected, the application will remain in the background even when sending pages. When receiving direct call, only the message to answer or reject the call will be displayed.
- **ActiveSync:** when the device is docked while in a call or receiving a page, iTalkie™ temporarily prevents ActiveSync from starting. On WM 5.0 devices, ActiveSync is automatically re-started at the end of the call or page.
- **Out-of-range detection:** When a user goes out of the range of the wireless network, iTalkie™ disables itself. When back in range it automatically initializes with the current network information (if it has changed) and re-broadcasts its presence to other devices.

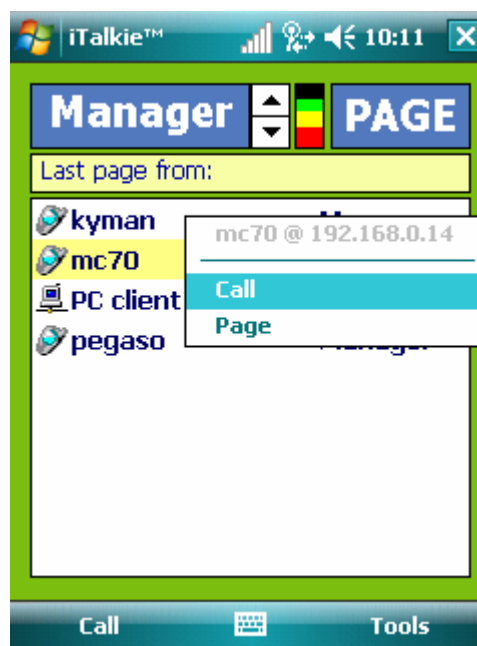
4.8. Buttons Shortcuts

- **PTT button:** iTalkie™ supports special buttons of some devices for "talk while the button is pressed" operation. While the PTT button can be set by the user, the default values are:
 - PTT button on Symbol MC50 and MC70, BenQ P50, imate JasJar.
 - Task button on the iPAQ h4155.
 - Record button on other Windows Mobile devices
 - F2 key on Windows CE devices
 - F4 key on MS Windows personal computers

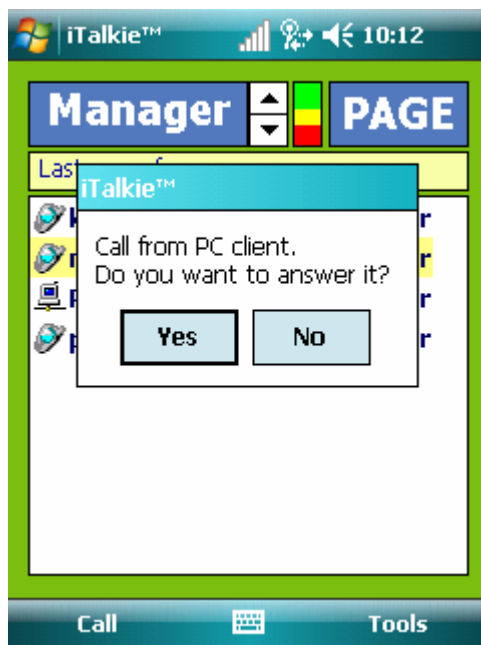
5. MS Windows Mobile Application Screenshots



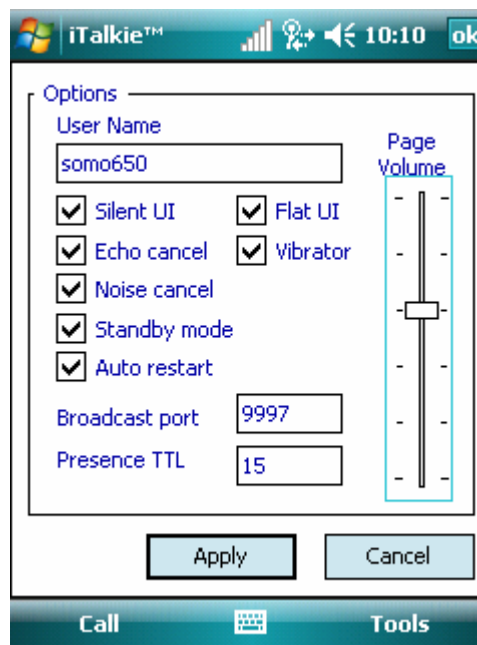
Main screen



Tap-n-hold on user name



Incoming direct call

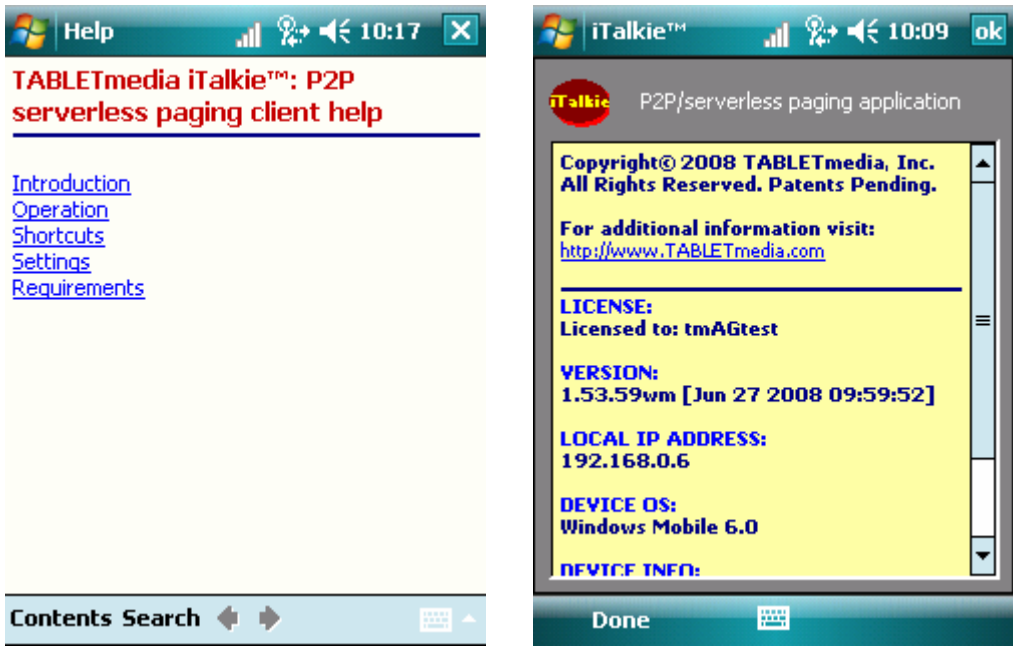


Settings screen



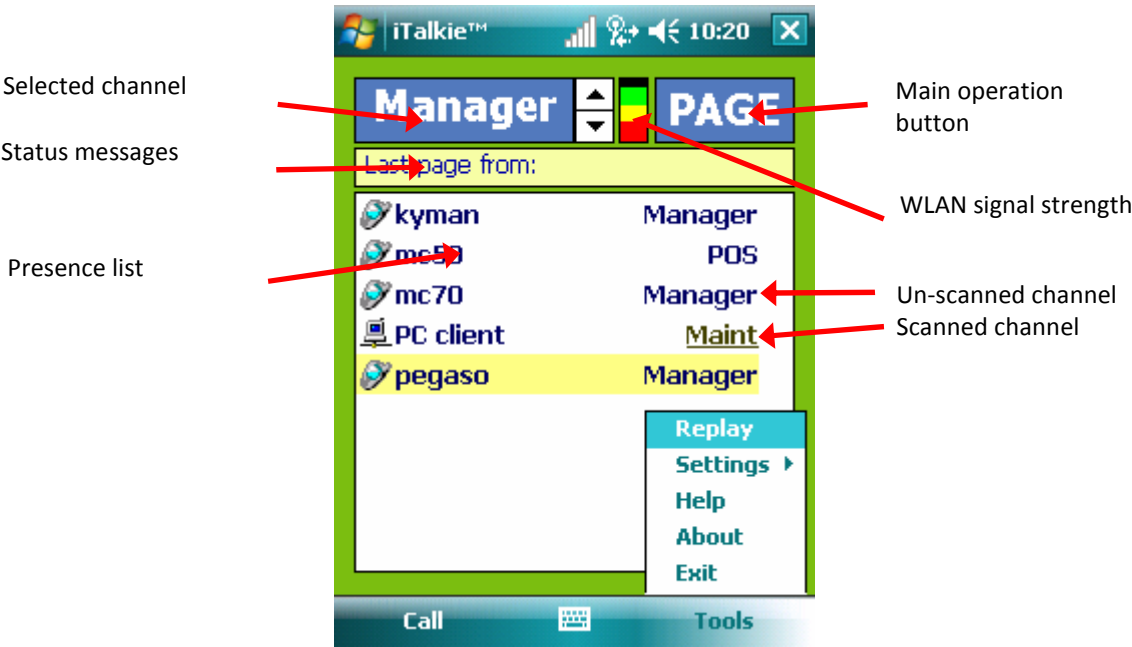
Overlaid page volume indicator

Overlaid call volume indicator



Help file

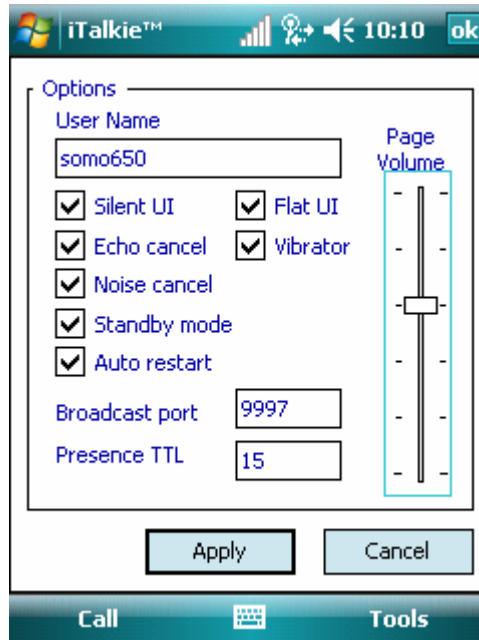
About iTalkie™



Main screen details

6. User Settings

6.1. General Settings

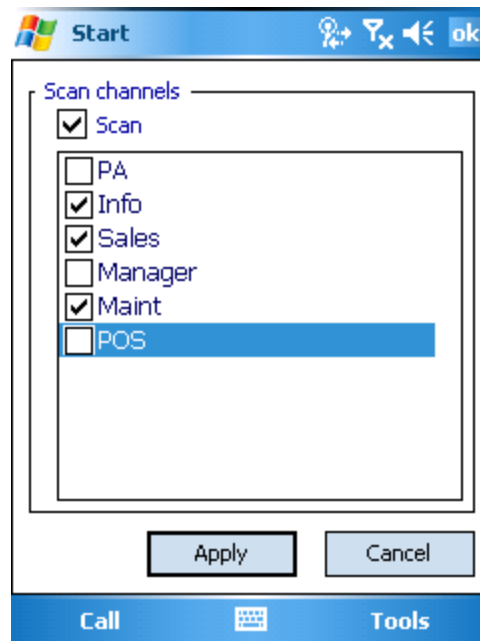


- User Name
 - This name uniquely identifies the user to all other devices.
- Echo cancel:
 - Enables echo canceling on direct (VoIP) calls. (Disabled on Motorola/Symbol devices).
- Noise cancel:
 - Enables noise canceling on calls and pages.
- Silent UI:
 - iTalkie™ remains in the background when sending/receiving pages or receiving incoming calls.
- Flat UI:
 - iTalkie™ displays a high-contrast user interface
- Standby mode:
 - Enables power management.
 - After one minute of inactivity, the LCD will go off but the device will continue to listen for incoming messages.
 - Standby mode has additional effects to minimize power consumption.
- Auto restart:
 - iTalkie™ will automatically restart on reset (or power on if it was closed).
- Broadcast port:
 - The port used for multicast IP.
 - This value can only be changed in the registry.
- Presence TTL:
 - the presence refresh time interval in seconds.
- Page volume:
 - The default volume used during a page.
- Vibrator:
 - If enabled, the device vibrates when receiving a call or a page.

Click on **Apply** to save the settings and **Cancel** to discard them.

6.2. Scan Settings

iTalkie™ can listen to pages on multiple channels.



- To enable multi-channel scanning, check **Scan**.
- Select each channel that needs to be monitored for incoming pages.
- Click on **Apply** to save the settings and **Cancel** to discard them.

6.3. Set PTT Button

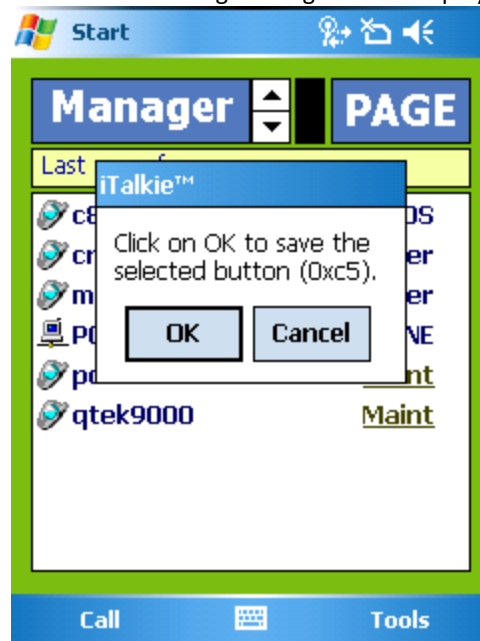
On Window Mobile devices, the PTT function is preprogrammed to certain physical buttons.

Users can however assign any button to act as the PTT button using the following procedure:

- On the menu select **Set PTT key**. A message will be displayed to start the training process.



- Click on **OK** to continue
- Press the desired physical button. The following message will be displayed



- Click on **OK** to accept the new setting.

NOTE: on WindowsCE devices, the default PTT key needs to be programmed through the registry.

7. Platform Specific Implementations

7.1. Introduction - MS Windows Mobile

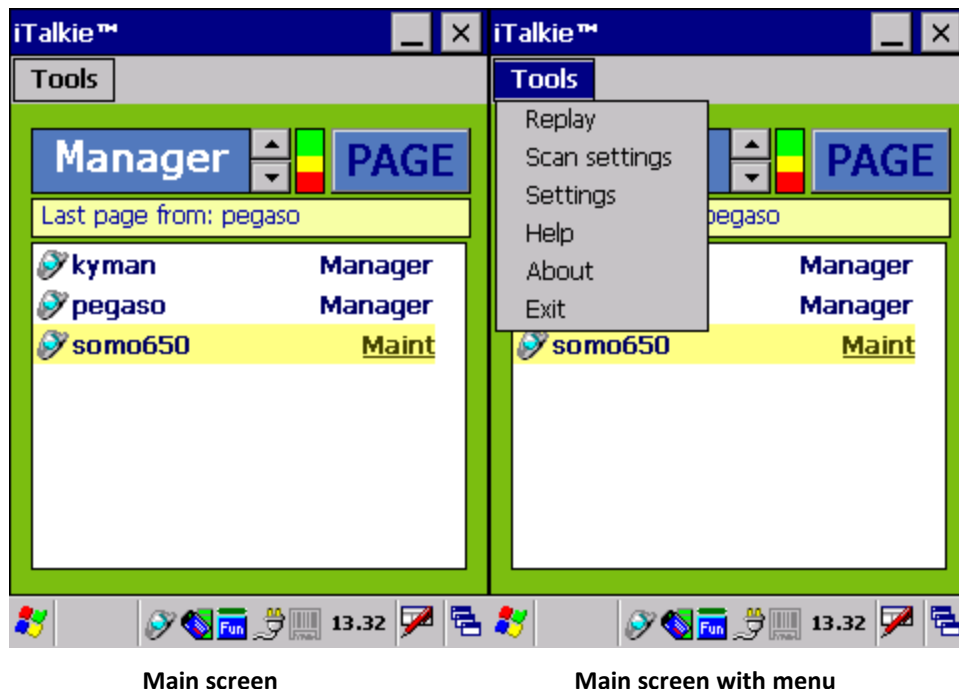
The information in this guide is based on the version of iTalkie™'s for MS Windows Mobile, which is the most complete and advanced. For simplicity, the platforms below indicate only the main changes from the MS WM version.

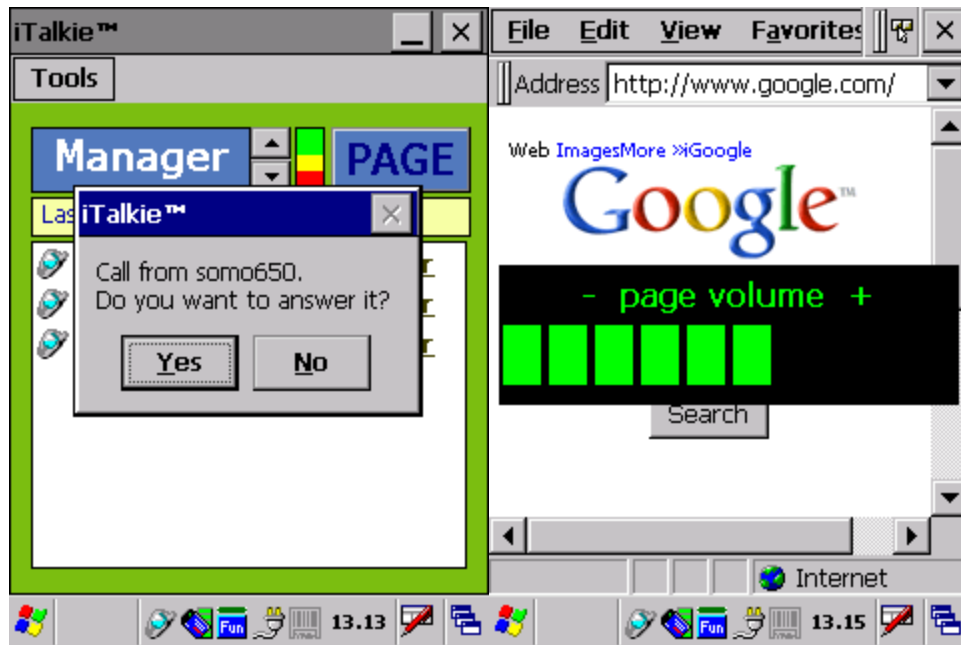
7.2. MS Windows CE (4.0 and up)

The versions of iTalkie™ for MS WindowsCE have all the same features and functionality as the MS Windows Mobile version, with the following exception:

- User Interface: this is the most noticeable difference from the WM version. On MS WindowsCE devices iTalkie™ adjust itself to the size of the screen by right aligning and extending to the full height of the display. In particular:
 - The width is fixed at 240 horizontal pixels even on larger screens (e.g. VGA or 800x600)
 - The height is the same as the display. For instance, on landscape 320x240 screens (e.g. Symbol WT4090), the height is 240 pixels, while on 800x600 screens (e.g. Symbol VC5090) it will be 600 pixels.
 - On screens wider than 240 pixels iTalkie™ is displayed aligned with the right part of the screen.
- PC to mobile alert text messaging: this capability is not supported at the present time under MS WindowsCE.
- Set PTT key: the user-selectable training is not available. It is however still possible to override the default setting by setting the key code value in the registry (dwDefPTTkey key).
- Vibrator: WinCE devices even the ones with built-in cellular radio do not typically have a built-in vibrator functionality. This setting has therefore no effect.
- Standby mode: note that on some devices the specific implementation of the OS lacks certain features used by iTalkie to provide the full extent of its power management, including blanking the screen.

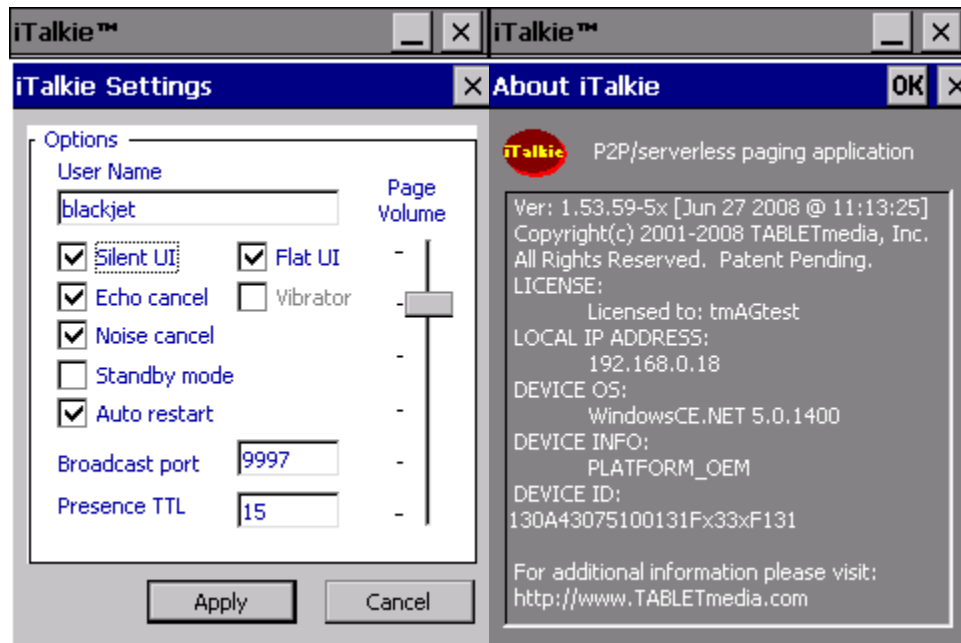
The following screenshots are specific to WindowsCE:





Incoming call

Overlaid page volume indicator



Settings screen

About iTalkie™

7.3. PC (Win32) – iTalkie™/PC

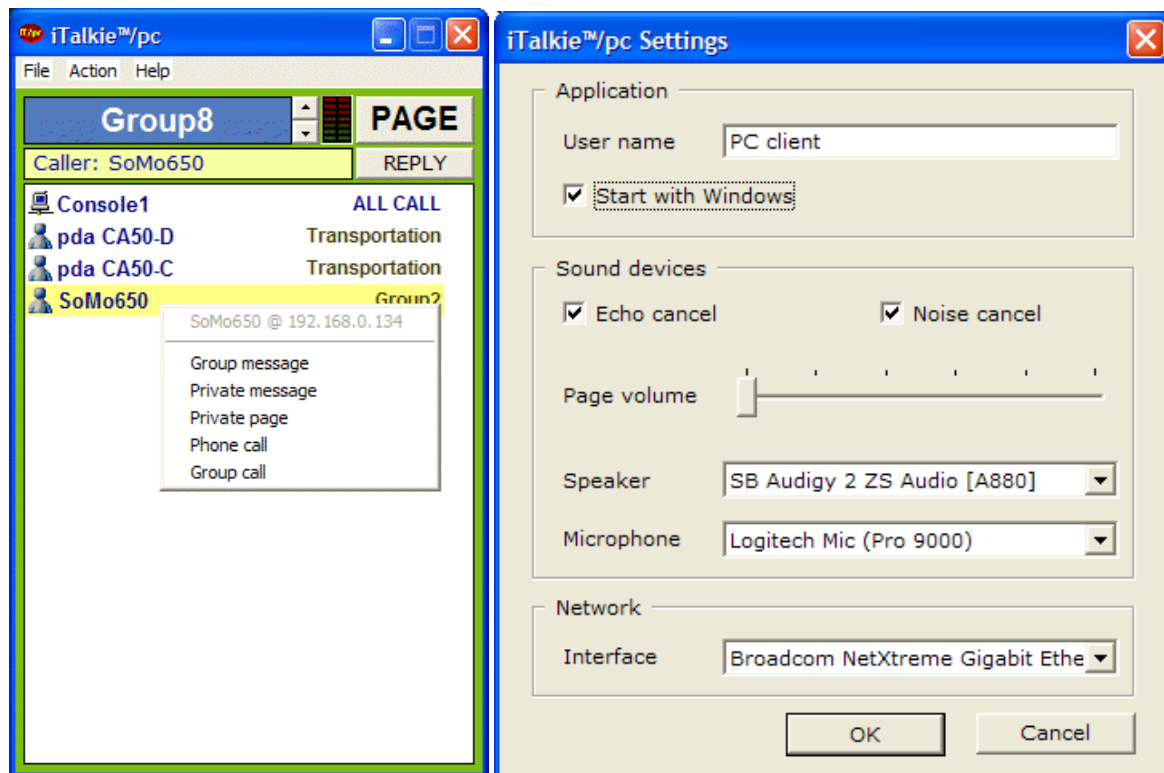
Desktop and notebook MS Windows 2000/XP/Vista/7 personal computers by contrast to MS Windows Mobile and MS WindowsCE devices are “fixed” by nature. Therefore when iTalkie™ runs on a PC it does not require many of the features of the version for mobile devices. Some of the features omitted are: the network and power management, vibrator, overlaid volume indicators.

On the other hand PCs may have multiple network and/or sound interfaces installed. iTalkie™/PC allows the user to specify the network and sound devices.

A few notes on this version:

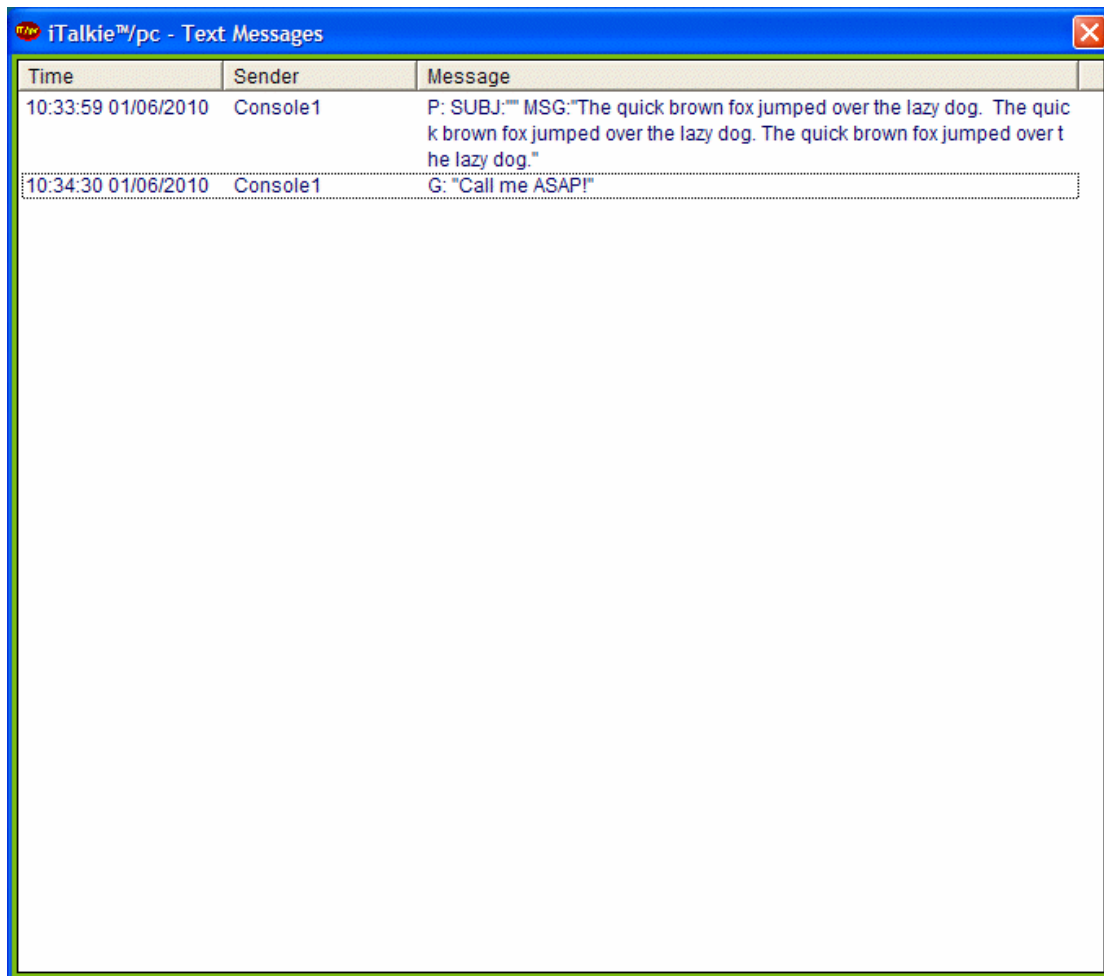
- Presence list on the main screen:
 - The channel a user is currently “tuned” into is marked by square brackets (“[” and “]”)
 - An asterisk (“*”) to the right of the user channel indicates the channel is being scanned
- 1:1 paging (private page): to activate this function select the name of the user to page and hold the left mouse button while talking. Release the mouse button when done.
- Broadcast messages: see the appropriate section in this guide. Note that at this current time PC clients can only send, not receive messages.
- Settings window:
 - Start with Windows: this option automatically restarts iTalkie™ when windows restarts
 - Speaker and microphone list: select the appropriate device
 - Network interface: select the appropriate device
- PTT hotkey: by default the system-wide hotkey is set to F5 (0x74), however this setting can be changed in the registry (dwDefPTTkey entry)

The following screenshots are specific to Win32:



Main screen

Settings screen



The screenshot shows a window titled "iTalkie™/pc - Text Messages" with a standard Windows-style title bar (blue with a close button). Inside the window is a table with three columns: "Time", "Sender", and "Message". The table contains two rows of data. The first row shows a message received at 10:33:59 on 01/06/2010 from "Console1". The message text is "P: SUBJ: MSG: The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog." The second row shows a message received at 10:34:30 on 01/06/2010 from "Console1". The message text is "G: 'Call me ASAP!'". The table is bordered by a thin green line, and the entire window has a blue border.

Time	Sender	Message
10:33:59 01/06/2010	Console1	P: SUBJ: MSG: The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog. The quick brown fox jumped over the lazy dog.
10:34:30 01/06/2010	Console1	G: "Call me ASAP!"

Incoming text message screen

8. Accessory Servers

8.1. iTalkie™ / PA Gateway

The iTalkie™ / PA gateway is an accessory server that allows pages (1:M) to be broadcast to an overhead paging system.

System Installation:

- Connect the analog input of the PA system to the output of the PC's sound card (speaker or line out)
- Install and run the iTalkie™/PA Gateway application
- Open the settings window on the application:
 - Set the iTalkie™ channel used to broadcast pages. Using the default channel labeling on the iTalkie™ clients, this is channel 1 (one) labeled as "PA"
 - Set the appropriate sound device and network interface

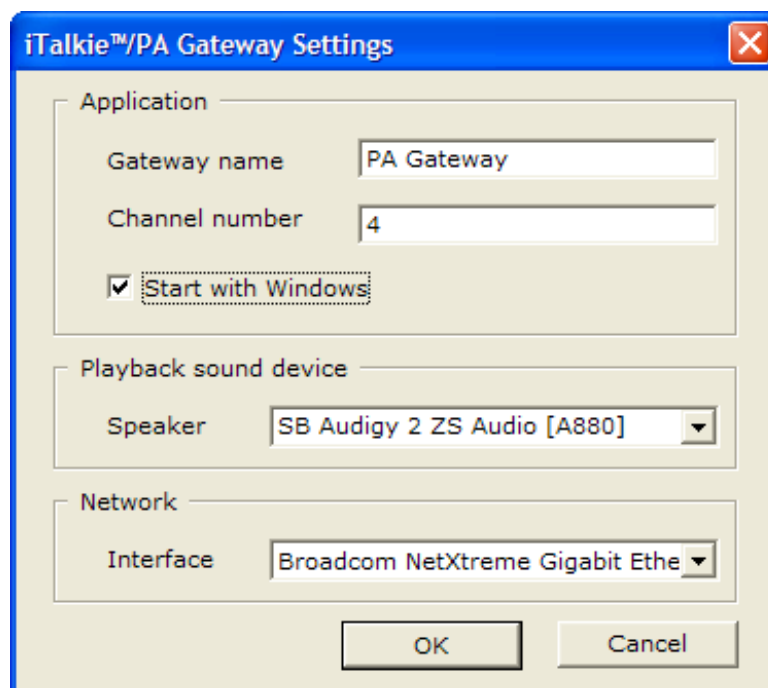
NOTE: if the PC on which iTalkie™/PA Gateway is being installed does not have a built-in sound capabilities, it is possible to easily and inexpensively add a sound device with a USB sound adapter.

The following are the screenshots of the iTalkie™/PA Gateway:



Main screen – IDLE

Main screen – receiving and playing out a page



Settings screen

8.2. iTalkie™ / Radio Gateway

The iTalkie™ / Radio Gateway is an accessory server to:

- exchange group calls and text messages (1:M) with 2-way radios (traditional VHF/UHF walkie-talkies).
- record all group calls and text messages on either or on both IP and RF networks
- email gateway to dispatch text messages between radios, PC/PDAs, SCADA interface and email
- SCADA interface to paging applications that send text alert notifications

For more information please refer to the specific document.

8.3. iTalkie™ / Licensing Server

This servers allows iTalkie™ clients on a completely private network (i.e. with no access to the public internet either directly via WLAN or indirectly over MS ActiveSync through a PC connected to the internet) to automatically receive the license activation codes.

For more information please refer to the specific document.

9. Requirements

9.1. Device

iTalkie™ requires the following minimum system:

- Microsoft Windows Mobile 2003, 2003 SE, 5.0, 6.0, 6.1 and 6.5 operating systems.
- Microsoft WindowsCE.NET 4.x and WindowsCE Embedded 5.0 and 6.0 operating systems.
- Microsoft Windows 2000 / XP operating system.
- Generic ARM, Intel StrongArm, Xscale or Xscale with WMMX or WMMX2 technology processors.
- A TCP/IP connection that supports UDP packets and IP multicasting with a suitable bandwidth and service level.

9.2. Network Load

iTalkie™ is highly optimized to reduce the load on WiFi networks.

An 802.11b network can handle the following number simultaneous sessions:

- PTT: over 30 devices transmitting. The number of devices listening bears no practical limit.
- VoIP: over 15 devices talking (transmitting and receiving)

The above numbers compare very well to traditional standards-based VoIP which can only carry 4-6 simultaneous calls with G.711 codec and less than 10 with the G.729A codec.

10. FAQ

Please also consult iTalkie™'s forum at <http://www.tabletmedia.com/forum/index.php>.

10.1. It is secure?

Yes! Enable 128-bit encryption using the appropriate registry settings.

10.2. Can it run in WiFi ad-hoc mode?

Yes! You will need to manually program the WiFi settings of your device (e.g. SSID and static IP address).

10.3. Does it run only on WiFi?

No, it can run on any network that supports both unicast and multicast packets and have enough bandwidth and quality for real-time voice.

10.4. When I run the application, it seems to hang displaying the “init comm...” message.

Since iTalkie™ expects a valid IP address, there are two reasons why it would wait: a) that the wireless network is not running properly, and, more likely, b) that the device is docked and connected to a PC via ActiveSync. Since ActiveSync has only limited TCP/IP proxy capabilities, voice applications cannot run over it. The likely solution to this problem is to un-dock the device or disable ActiveSync on the PC.

10.5. I have iTalkie properly initialized on two devices, but I cannot see anything in the presence list

This is strictly a network problem. Check your access point settings or the question below.

10.6. I receive choppy audio while paging (including Motorola/Symbol AP5131)

Provided that the devices are working properly and within range of the WiFi access points, try disabling WiFi power management on the device itself. On some models this can be done by setting them to CAM (not PSP) mode. If available on your WiFi AP, you can also try reducing the DTIM time (e.g. to a value of 2) and/or enabling multicast mask.

If using Motorola/Symbol AP5131 access points, on the web configuration screen:

- Under Network Configuration | Wireless | QoS select the policy name WLAN1 and click on Edit
- Check to enable Support Voice Prioritization
- Set both Multicast Address 1 and Multicast Address 2 to 00:00:00:00:00:00
- Click on Apply

10.7. Can I enable echo canceling on voice-enabled Motorola/Symbol devices while paging?

Yes. This can be done by setting the registry entry “bSymWTaec=1” in HKCU\Software\TABLETmedia\iTalkie.

10.8. Do you have an SDK?

Creating an enterprise-grade mobile real-time communication application requires overcoming several technical challenges, most of which are unforeseen or require trial and error practices. Though our professional services we can customize iTalkie to your specific platform and OS. However you may also want to review the “Administrators Notes” and “Command Line Operation” sections, as they may be more suitable for your development.

11. Administrators Notes

IT administrators deploying iTalkie™ can benefit from its high programmability by modifying the registry configuration.

Beyond the options available through the UI settings, iTalkie™ is designed to be managed through remote configuration tools such as Symbol MSP or Wavelink Avalanche products.

The following are some of the values available in the registry at HKCU/Software/TABLETmedia/iTalkie. Please note that the registry should be modified before running iTalkie since it may override the setting while operating or closing down.

These settings apply to all versions of iTalkie™, as appropriate for the specific platform.

11.1. Registry settings

11.1.1. Network / Communication Settings

Entry	Type	Description	Default Value
szBdcstAddr	String	Multicast address	224.0.0.1
dwBdcstPort	DWORD	Multicast port	9997
dwBdcstLevel	DWORD	Multicast level	2
dwBcstRetries	DWORD	Multicast retries (do not change!)	3
dwUnicstPort	DWORD	Unicast port start address (range = base+4)	8000 (range = 8000-8003)
dwPresenceTTL	DWORD	Presence refresh time (milliseconds)	15000

NOTE: by standard convention (IETF, Cisco, etc.) iTalkie™'s default multicast address does not allow packets to be propagated beyond the local subnet, even if the TTL level is greater than 1. Use a different value when connecting multiple sites via routers. The value of the port can remain the same (9997).

The values below are suggested by Cisco:

Overall IP multicast range: 224.0.0.0 to 239.255.255.255

LAN: 224.0.0.0 through 224.0.0.255 (never forwarded to a router)

224.0.0.1	All systems on this subnet
224.0.0.2	All routers on this subnet
224.0.0.5	OSPF routers
224.0.0.6	OSPF designated routers
224.0.0.12	DHCP server/relay agent

Globally scoped addresses: 224.0.1.0 through 238.255.255.2

RFC 2365: Limited Scope Addresses: from 239.0.0.0 through 239.255.255.255

RFC 2770: Glop Addressing 233.0.0.0/8

This list indicates the TTL thresholds and their associated scope:

TTL	Scope
0	Restricted to the same host. Won't be output by any interface.
1	Restricted to the same subnet. Won't be forwarded by a router.
< 32	Restricted to the same site, organization or department.
< 64	Restricted to the same region.
< 128	Restricted to the same continent.
< 255	Unrestricted in scope. Global.

11.1.2. Application settings

Entry	Type	Description	Default Value
szUserName	String	Unique user name	<blank>
szRegUser	String	License code (do not fill in szRegName and szRegCode!!!)	demo
bSilentReg	DWORD	Disable license code windows for internet activation. (szRegUser must be entered!) (1=enabled, 0=disabled)	0
bLocalReg	DWORD	Disables internet activation process altogether to allow for local activation through licensing server. (szRegUser must be entered) (1=enabled, 0=disabled)	0
bFlatUI	DWORD	Enables high contrast (non 3D) UI (1=enabled, 0=disabled)	0
bSilentUI	DWORD	Enables background operation (1=enabled, 0=disabled)	0
bChScan	DWORD	Enables multi-channel scan mode (1=enabled, 0=disabled)	0
bAutoRestart	DWORD	Enables automatic restarting application on reset or power-on (1=enabled, 0=disabled)	0
dwVolume	DWORD	Volume during a page (range 0x00000000 – 0xffffffff)	0xffffffff
bStandbyEna	DWORD	Enables internal standby mode (power management) (1=enabled, 0=disabled)	0
bLockCaps	DWORD	Disables certain user settings (scan settings window, broadcast port, presence TTL, auto-	0

start) (1=enabled, 0=disabled)			
bAdminLock	DWORD	Disables all UI options including changing channels, excluding changing volume. (1=enabled, 0=disabled)	0
bEC	DWORD	Enables echo canceller during 1:1 calls (1=enabled, 0=disabled)	1
bNR	DWORD	Enables noise canceller during calls and pages (1=enabled, 0=disabled)	0
dwAECdelayLen	DWORD	Acoustic echo canceller tail length (milliseconds) [PXA27x and PXA32x devices only!]	10
bVibrator	DWORD	Enable vibrator (1=enabled, 0=disabled) (Windows Mobile only)	1
bAutoAnswer	DWORD	Automatically answer incoming calls (1=enabled, 0=disabled) (Windows PC only)	0
bRXonly	DWORD	Disables incoming calls (1=enabled, 0=disabled)	0
bCurChTXonly	DWORD	Disables receiving pages on currently selected channel (1=enabled, 0=disabled)	0
bNoPresence	DWORD	Disables presence (1=no presence, 0=presence)	0
dwEncrypt0, dwEncrypt1, dwEncrypt2, dwEncrypt3	DWORD	Four 32 bit (128-bit) encryption keys. if all 4 values are set to 0, encryption is disabled.	0, 0, 0, 0

11.1.3. Device-specific Settings

Entry	Type	Description	Default Value
bSymWtaec	DWORD	Enables echo canceling on Symbol audio-enabled devices during a page	0
dwDefPTTkey	DWORD	Default PTT key (device specific)	0xffffffff

11.2. Channel definition file

The tmWT.ini file defines the number of channels that are available (999 maximum) and each channel's information.

tmWT.ini is a simple text file that can be easily modified by IT administrators and uploaded by remote management software. The file is located in the same directory as iTalkie™ (e.g. "\Program Files\TABLETmedia iTalkie") or can be located in the "\Temp" directory on Windows Mobile and Windows CE devices.

The syntax of the file is as follows:

- Section header: this must be "[channels]"
- Section values: these are in the form of "key=value". Values can be either decimal numbers or strings.
- Comments: this is a line with a semicolon (";") at the beginning.

The keys are defined as follows:

- Common settings:
 - dwChannelsTot: number of channels used (maximum is 999)
 - szEmergencyChName: name of emergency channel (always channel 0)
- Channel properties (N is the channel number, starting with 1):
 - dwChIdxN: channel ID (a number from 1 to dwChannelsTot)
 - szChNameN: channel name (string)
 - dwChDefN: channel is the default one (only one allowed in the entire list) (1=yes, 0=no)
 - dwChScan: listen (scan) to this channel (1=yes, 0=no)

NOTE: the emergency channel entry is automatically added to this list by the application.

On Windows Mobile devices the same file also includes quicktext messages defined as follows:

- Section header: this must be "[quicktext]"
- "dwQkTxtNum" defines the total number of quicktext messages
- "dwQkTxtN": defines the actual message (string)

The following is a sample of the tmWT.ini file:

```

;=====
; TABLETmedia iTalkie(tm) channel configuration file
; Copyright (c) 2004-2007 TABLETmedia, Inc. - All rights reserved.
;=====
[channels]
dwChannelsTot=6
szEmergencyChName=HOTLINE
dwChIdx1=1
dwChIdx2=2
dwChIdx3=3
dwChIdx4=4
dwChIdx5=5
dwChIdx6=6
szChName1=PA
szChName2=Info
szChName3=Sales
szChName4=Manager
szChName5=Maint
szChName6=POS
dwChDef1=0
dwChDef2=0
dwChDef3=0
dwChDef4=1

```



```
dwChDef5=0  
dwChDef6=0  
dwChScan1=0  
dwChScan2=1  
dwChScan3=0  
dwChScan4=1  
dwChScan5=1  
dwChScan6=0
```

```
; NOTE: this is for Windows Mobile devices  
[quicktext]  
dwQkTxtNum=10  
dwQkTxt1=Start  
dwQkTxt2=Stop  
dwQkTxt3=Complete  
dwQkTxt4=Accept  
dwQkTxt5=Decline  
dwQkTxt6=OnDuty  
dwQkTxt7=OffDuty  
dwQkTxt8=Terminate  
dwQkTxt9=The quick brown fox jumped over the lazy dog  
dwQkTxt10=Rise and shine!
```

12. Command line operation

Part of iTalkie™'s unique value is its unique integration into several devices. Short of using a full SDK, integrators can benefit from iTalkie's capabilities by running it directly within another application directly through command lines switches.

NOTE: the command line options are not currently implemented on the Windows 2000 / XP / Vista / 7 of iTalkie™.

12.1. PTT mode

Run iTalkie™ in the background by checking the "Silent UI" option in the settings. This can also be done by setting the registry entry "bSilentUI=1" in HKCU\Software\TABLETmedia\iTalkie.

With this option enabled, incoming pages are played in the background (silently) and pressing the assigned PTT button will send out a page also without showing iTalkie™'s user interface.

12.2. Direct calls (VoIP)

In order to call a user, a calling application needs to know the name of the user. By calling iTalkie™ with the "-l" command line switch, iTalkie™ will create a text file (updated every second) with the name of all the available users. The calling application would then read the user list, and call iTalkie™ with the appropriate command line switch.

To create the list, use the command line switches "-l -m". The "-m" will keep iTalkie™ in the background.

To call a user, use the command line switches "-l -c john", where "john" is one of the names in the list. Note to keep the "-l" switch to allow iTalkie™ to continue to generate and update the user list.

To hangup a call, use the command line switches "-l -h".

When a request to answer an incoming call arrives, iTalkie™ will only display a message indicating an incoming call and whether the user wants to answer or reject the call.

12.3. Other switches

The "-m" switch opens iTalkie™, but keeps it minimized in the background (silent).

13. Compatibility List

iTalkie™ has been tested on devices associated with several WiFi access points including:

- Cisco 1200 AP
- Linksys WRT54GS, WRT54G and others
- Dlink (1)
- 3Com OfficeConnect
- Symbol WS2000, WS5000, AP100, AP 300, AP 5131 and others. NOTE: the AP5131 requires special settings (see FAQ)

iTalkie™ has been successfully integrated on different platforms including:

Device	WM (2003, 2003SE, 5.0, 6.0, 6.1, 6.5)	WinCE 4.x	WinCE 5.0	Comments
Motorola/Symbol MC50	Yes			
Motorola/Symbol MC70	Yes			
Motorola/Symbol MC35	Yes			
Motorola/Symbol MC9090	Yes			
Motorola/Symbol MC3090			Yes	
Motorola/Symbol MK2xxx		Yes		
Motorola/Symbol WT4090			Yes	Note 5
Motorola/Symbol VC5090			Yes	Note 3
Motorola CA50		Yes		
Motorola MC75	Yes			Note 1
Motorola MC55	Yes			
Motorola ES400	Yes			
Motorola TEAM EWS	Yes (note 4)			
Intermec CN2B	Yes			
Intermec CN3	Yes			
Intermec CK3	Yes			
Intermec CN50	Yes			
Intermec 750/IS	Yes			Note 1

Intermec CN70	Yes		
LXE Vx6		Yes	
LXE HX2		Yes	
LXE MX3x		Yes	
LXE MX7		Yes	
Datalogic/PSC (WM devices)	Yes		Note 1
Datalogic/PSC Pegaso	Yes		TBD
Datalogic/PSC Kyman	Yes		TBD
Datalogic/PSC Jet, Falcon		Yes	
HHP Dolphin 9900	Yes		TBD
HHP Dolphin 9500	Yes		Note 1
HHP Dolphin 7900	Yes		Note 1
HHP Dolphin 7600	Yes	Yes	Note 2
Dell / Socket Mobile SoMo 650	Yes		
Fujitsu iPAD (100)		Yes	
Fujitsu iPAD (100-20)		Yes	
HP iPAQ 4155	Yes		
HP iPAQ hw69xx	Yes		
HTC Wizard (aka Audiovox 6700, etc.)	Yes		
HTC Universal (aka Qtek 9000, imate JasJar, etc.)	Yes		
HTC Hermes (aka Cingular 8525, etc.)	Yes		
HTC TyTN	Yes		
Imate PDA2	Yes		
BenQ P50	Yes		
T-mobile MDA	Yes		Note 1

NOTES:

1. Tested by customer/partner
2. This device has been successfully tested on Windows Mobile. For WinCE it requires a recent version of the 7600 hardware to fix hardware issues with the microphone.
3. Should use Sinbon Technologies handset with CB-like PTT button (<http://www.sinbontech.com/motorolavalidatedplus/vc5090handset.html>).
4. Need the special WM version for smartphones.
5. Use the following keys on the WT4090:
 - P3: Page (user programmable)
 - ENTER: Call selected user (use up/down keys to select user)
 - F1: Help file
 - F2: Settings window. Use TAB to navigate the options, SPACE to check an option, ENTER to save the settings and ESC to cancel the changes.
 - F3: Scan window. Navigation as above.
 - F4: Close iTalkie™
 - F6/F9: Channel up / down
 - F10: Help about

14. Demo Test Scenarios

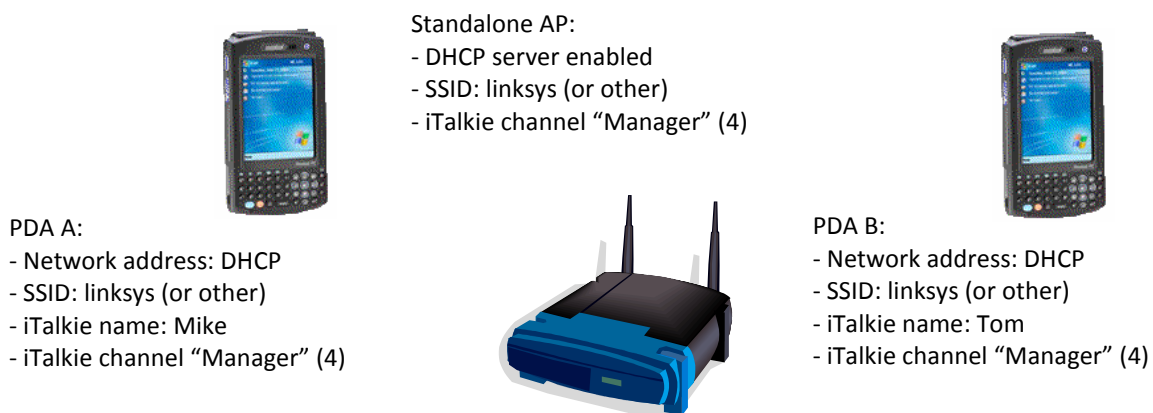
14.1. Device to Device Test

iTalkie™ can be tested with or without using a WiFi access point. If using it without it, set the device radio to “ad-hoc” mode and set the static IP addresses of the device.

To simplify the setup, the test cases below assume the use of a WiFi access point that provides the IP addresses to the devices through its own internal DHCP server. The AP can be a standalone unit and does not need to be connected to any network.

14.1.1. Setup Environment

iTalkie™ can be easily demonstrated with the following setup. The access point only needs to be connected to AC power and have the DHCP server enabled (typical default).



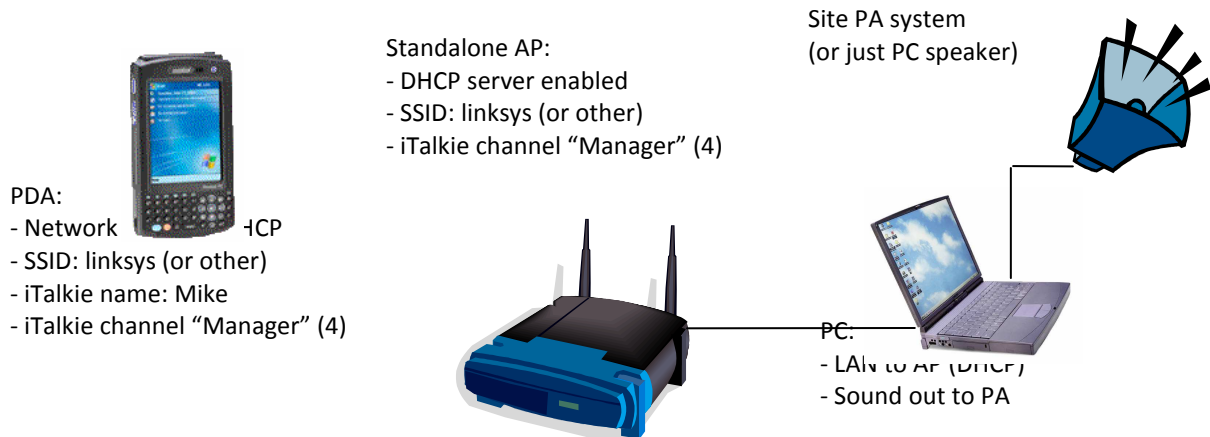
14.1.2. Test Cases:

- **Normal operation:** PDA A user clicks on PAGE and PDA B receives the page.
- **Different channels:** PDA A selects any other channel and click on PAGE. PDA B does not receive the page.
- **Emergency channel (1):** PDA A selects channel PRIORITY (or HOTLINE) and clicks on PAGE. PDA B receives the page.
- **Emergency channel (2):** PDA B clicks on PAGE to send page on any channels, PDA A selects channel PRIORITY (or HOTLINE) and clicks on PAGE. PDA B receives PDA A page even if it is currently sending a page!
- **Presence:** PDA A and PDA B see each other’s presence information
- **Talk 1:1:** PDA A tap-n-hold on PDA B name (Tom) on the presence list. Click on TALK on the popup menu. Click on YES on PDA B to accept and start the call. Click on END to hangup.
- **Power management (partial features only):** enable “Standby mode” on PDA B and wait for about one minute until LCD goes off. Click on PAGE on PDA A: PDA B will turn on and play the page.
- **Network management (partial features only):** unplug AP: PDA A and PDA B WLAN indicators become all black, main button becomes grayed out and presence list removes all devices. Plug in AP: all information is automatically restored as normal.

14.2. Device to PA Test

In this case the notebook/PC is connected to a traditional overhead PA system via the output of the sound card. For demo purposes, audio can be played through a notebook's internal speakers or the PC speakers. The PC also needs to be connected to the router/AP via an Ethernet cable.

14.2.1. Setup Environment



14.2.2. Test Cases:

- **Mobile device to PA page:** run PA gateway on PC. On PDA select PA channel (1) and click on PAGE. Page will be played through PA system.

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