



# VCOM Software IP Intercom

Matrix • Wireless • IFB • Ringdown • Interop

Patent Pending: U.S. Serial # 11/970,871; International Serial # PCT/US08/50481

**VCOM™ Offers it All:**

**Featuring:**

- Point-to-Points, Group Calls, Party Lines, and Program Audio Listens
- Non-blocking communications
- Individual channel level controls
- Interoperable with two-way radios, SIP, phone networks
- Dynamic configuration from any workstation on the network
- Connect anywhere with ANY Internet connection

**VCOM™** is the leading IP Software Matrix Intercom for professional communications. The system runs on standard computer and network infrastructure and is based on a client/server architecture. At the core of the system is the VCOM Virtual Matrix summing/mixing engine that facilitates multi-channel/multi-access communications using intuitive VCOM Control Panels, which run on PCs, touchscreen Tablet PCs, Handhelds, and rackmount panels.

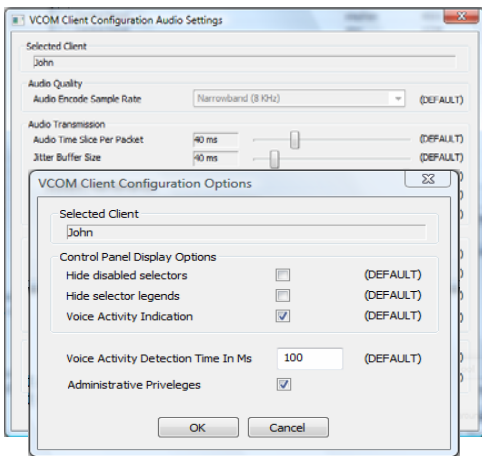


VCOM Control Panel v2.1

**The VCOM Control Panel** provides point-and-click control for establishing talk and/or listen voice paths. Multiple group and individual voice paths can be established simultaneously and multiple conferences can be accommodated in any configuration. Subscribers may talk and/or listen in a single conference or multiple conferences, in any combination or sequence. All basic paths are set up in advance and are "always on" for instant (multiple) channel access for talking and listening.



**System Administration Application:** VCOM is dynamically configurable from any workstation on the network using the intuitive VCOM System Administration application. Administrators can:



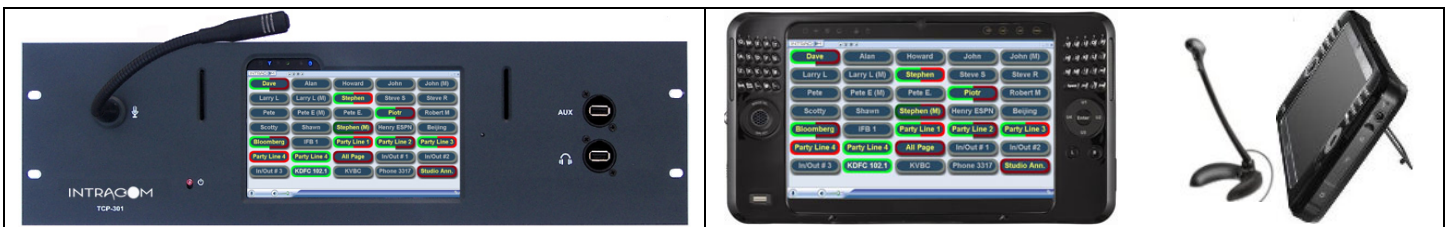
- View system runtime, number of clients connected, active audio inputs and outputs, and audio statistics from all clients, and system-activity log
- View and change network settings, system sampling rate, and selector color schemes that indicate audio on a given channel
- View, add, edit, and delete configured users and devices and log in names, passwords, selector labels, and client type
- Set system audio parameters and enable automatic gain control and echo cancellation.

**VCOM Wireless Intercom:** Leverage the VCOM Control Panel for Mobile to add Handheld clients to an existing VCOM System or use as a stand-alone wireless intercom system—a powerful, highly interoperable substitute to proprietary, hardware-based wireless intercom systems and two-way radios.

- Works over WiFi and data cellular networks
- Supports as many as 200 users that can talk hands free privately or in full-duplex conference
- Offers virtually unlimited channels configurable for point-to-points, group calls, and party lines
- Use in push-to-talk or push-to-enable mode
- Freedom from radio-frequency constraints
- Use as multi-purpose, wireless IFB solution with multiple return talkbacks



**VCOM Touchpanel™:** Our revolutionary intercom panel brings unprecedented power, ease of deployment, and affordability to multi-channel intercom panels. The intuitive 7" touch screen supports virtually an unlimited number of channels configurable for Point-to-Points, Group Calls, Party Lines, and Program Audio Listens.



VCOM TOUCHPANEL uses a Tablet PC core, easily removable for use as a desktop intercom station!



## System Features

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| <ul style="list-style-type: none"><li>• Full multi-channel/multi-access, non-blocking professional communications functionality</li><li>• Intuitive Client Control Panel provides simple user interface for initiating all types of communication: Point to Point (private channel between any two operators); Group Call (one caller to many listeners); Party Line (group conference); and Program Audio (listen only channel feeds)</li><li>• Client Control Panel Selectors (keys) can be configured for Talk, Listen, or Talk/Listen</li><li>• Client Control Panel Selectors dynamically indicate the state of the associated channel: offline (gray), online (green and/or red), actuated (bright green and/or red), channel activity (color oscillates), incoming call (fast flash), device active tally (slow flash), in-use tally (slow double flash)</li><li>• Selectors can be programmed for latching or momentary mode or both</li><li>• IFB function serves as a voice cueing mechanism for on-air talent</li><li>• ISO allows for private communications between users</li><li>• Dynamic selectors addition for incoming calls from clients for whom a dedicated key is not programmed</li><li>• Client Control Panels can be oriented horizontal or vertical</li><li>• Client Control Panel can be minimized and will "pop-up" when a new call is received</li><li>• Individual selector volumes can be adjusted by +/- 18dB</li><li>• Optional System wide automatic microphone gain control provides uniform audio levels</li><li>• Dual audio output capability enables monitoring on both headset and speakers simultaneously</li><li>• Device Interface Client supports connection with two way radios, hardware-based communications systems, or public/private telephone networks via standard hardware interfaces</li></ul> | <ul style="list-style-type: none"><li>• Number of selectors assigned to a Control Panel is virtually unlimited</li><li>• Seamlessly supports client connections from the public internet and dedicated, secure, private networks</li><li>• Device Interface supports General Purpose Input and Output modules for external device triggering and internal status indication</li><li>• Optimized network bandwidth architecture allows use over wireless, cell-phone data cards or 56k modem</li><li>• Client applications traverse firewalls unless specially configured to prohibit</li><li>• Dynamic system administration from any network workstation</li><li>• Support for integrated, multi-line phone interface using "off-the-shelf," multi-line PCI card to connect to POTS lines</li><li>• Distributed system architecture allows connection of external Audio source from any location</li><li>• Control Panel provides incoming caller ID and dial-pad for outgoing call initiation</li><li>• Ability for one Control Panel to release a talk selector activated from another Control Panel</li><li>• Automatic Client Software Updates through server</li><li>• Optional Voice Activity indicator causes Control Panel selector name to modulate when audio is detected on a given channel</li><li>• Optional Silence Suppression stops the transmission of unused bits after a period of undetected voice activity</li><li>• System internal audio sampling rate configurable to accommodate network bandwidth requirements</li><li>• Server side "Port" for IP Data and UDP audio is configurable allowing easy firewall configuration when allowing public internet access</li><li>• Ability to enable or disable client login from a Control Panel for users designated as "Administrator"</li></ul> |
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## Technical Specifications Summary

- System internal audio processing sample rate: 32 KHz Default (configurable)
- Clients supported: 200 on single processor (no inherent software limitation)
- Client Operating Systems supported: Windows 2000, XP, Vista; Windows Server 2003, 2008
- Server Operating Systems supported: Windows Server 2003, 2008; Windows XP, Vista
- Jitter Buffer Size: 20ms default (configurable for system and individual client)
- Bit Rate: Fixed or Variable, Typically 10% of System sampling rate (configurable for system and individual client)
- UDP packet Audio slice per transmission: 20ms Default (configurable for system and individual client)
- Input audio gain at server: 0dB (adjustable +\ -18dB)
- Output audio gain from server: 0dB (adjustable +\ -18dB)
- Automatic Gain Control
- Echo Cancellation
- Server UDP audio port: Configurable (default 1000)
- Server IP audio port: Configurable (default 1000)
- Support for SIP (Session Initiation Protocol)

## System Architecture

