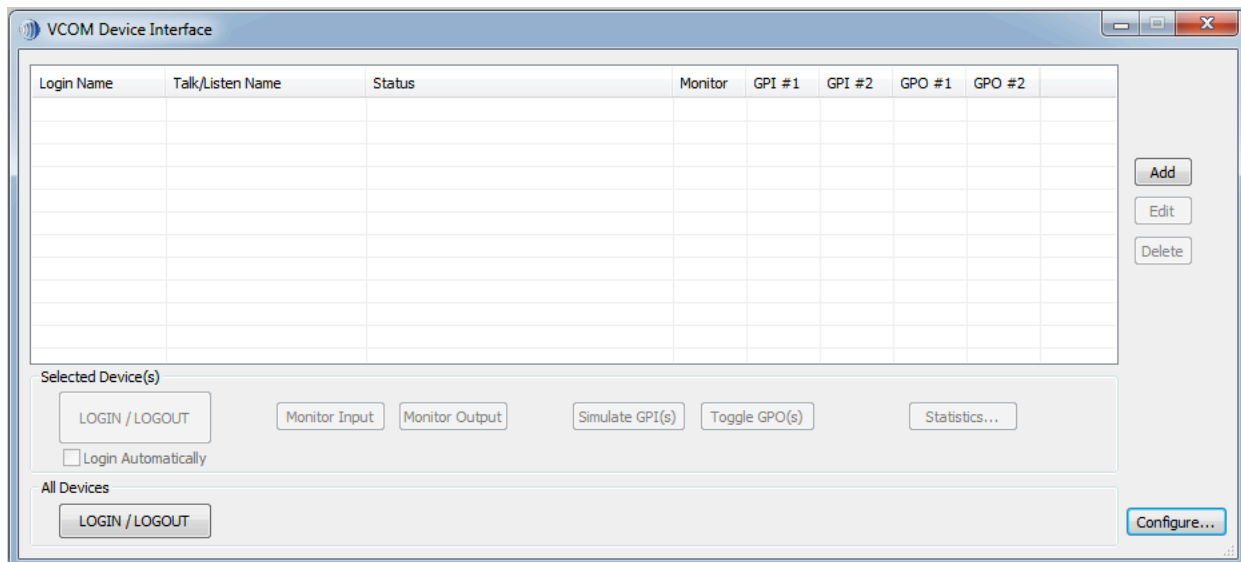




# VCOM Device Interface User Guide

Patent Pending: U.S. Serial # 11/970,871



*Revised: October 2013*

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# INTRODUCTION

## 1.1 VCOM Device Interface

VCOM is a non-blocking, multi-channel/multi-access Intercom System using a dedicated server, multiple-client architecture that operates over an existing LAN/WAN infrastructure. VCOM is engineered for professional, mission critical communications including broadcast, production, military, aerospace, and government applications.

The VCOM Device Interface is a software application that bridges VCOM with multiple external communications systems. This document provides information on how to install, configure, and use the VCOM Device Interface.

Note, a hardware audio/logic interface is required to convert 4-wire and 2-wire analog signals into digital to bridge with the IP world, typically via USB or FireWire connection. To bridge a telephone system a hybrid is also required or a PC/server card which accepts analog phone lines or T-1(s) directly.

## 1.2 SYSTEM REQUIREMENTS

- Hardware Requirements
  - Dedicated: Pentium Celeron 1.0 GHz or equivalent w/ 1 GB RAM
  - Multi-purpose: Pentium 4, 2.0 GHz or equivalent w/ 1 GB RAM

*Lower processing power PCs can be used, however audio quality may be comprised under heavy CPU loads.*

- Software Requirement
  - All versions of Windows® XP, Windows® Vista, Windows® 7, including versions for Tablet PCs
- Network Requirement
  - Recommended configuration: 100BaseT connection over private LAN
  - Minimum configuration: 56kbps dial-up connection over public Internet

- Bandwidth Utilization per client:

Audio Sample Rate	Data Rate (Kbps) [ATS=20ms*]	Data Rate (Kbps) [ATS=40ms*]	Data Rate (Kbps) [ATS=60ms*]	Data Rate (Kbps) [ATS=80ms*]	Data Rate (Kbps) [ATS=100ms*]
8 KHz	32	23.6	20.8	19.4	18.56
16 KHz	44.8	36.4	33.6	32.2	31.36
32 KHz	46.8	38.4	35.6	34.2	33.36

\*ATS = Audio Time Slice per packet which controls how many 20ms audio frames are transmitted within a single UDP packet. As each UDP packet requires a fixed amount of overhead, the more frames sent at the same time, the less the UDP overhead which conserves network bandwidth. Conversely, the more audio frames sent per transmission, the greater the system latency and the potential audible consequence of a lost packet. The default is 20ms.

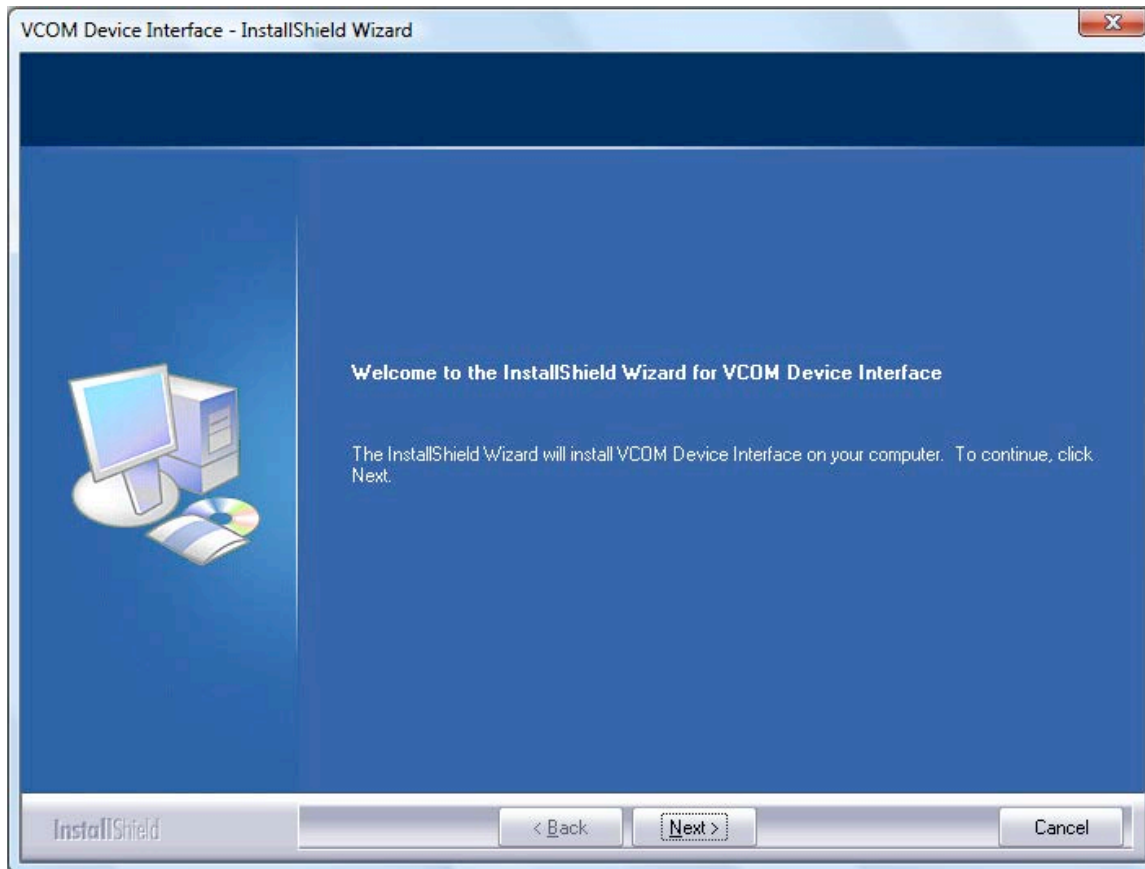
- Firewall Requirements
  - Allow TCP connection for data on port 1000 and UDP connection for audio on port 1000

## 2. INSTALLATION

### 2.1 WINDOWS OS

Locate the VCOM Device Interface setup application, typically named 'VCOM\_Device\_Interface\_Setup.exe,' that was provided either electronically or on CD.

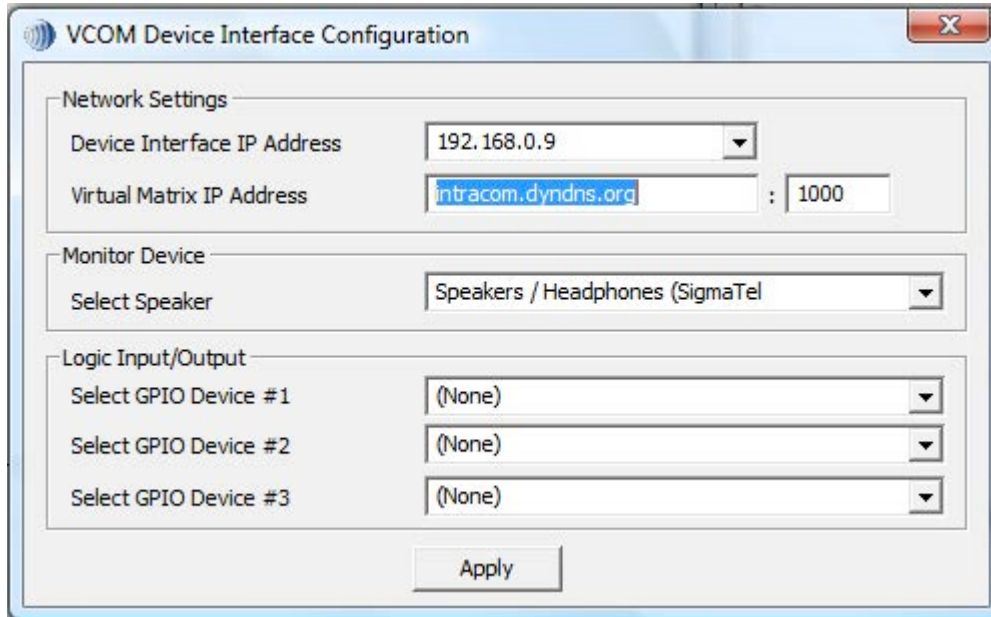
Run the installer and follow the prompts. You will need to accept IntraCom Systems' License Agreement to install the software.



Once installation is complete check the 'Launch VCOM Device Interface' box and click 'Finish.'

### 3. CONFIGURATION

When running the 'VCOM Device Interface' for the first time, the 'VCOM Device Interface Configuration' screen will automatically appear.

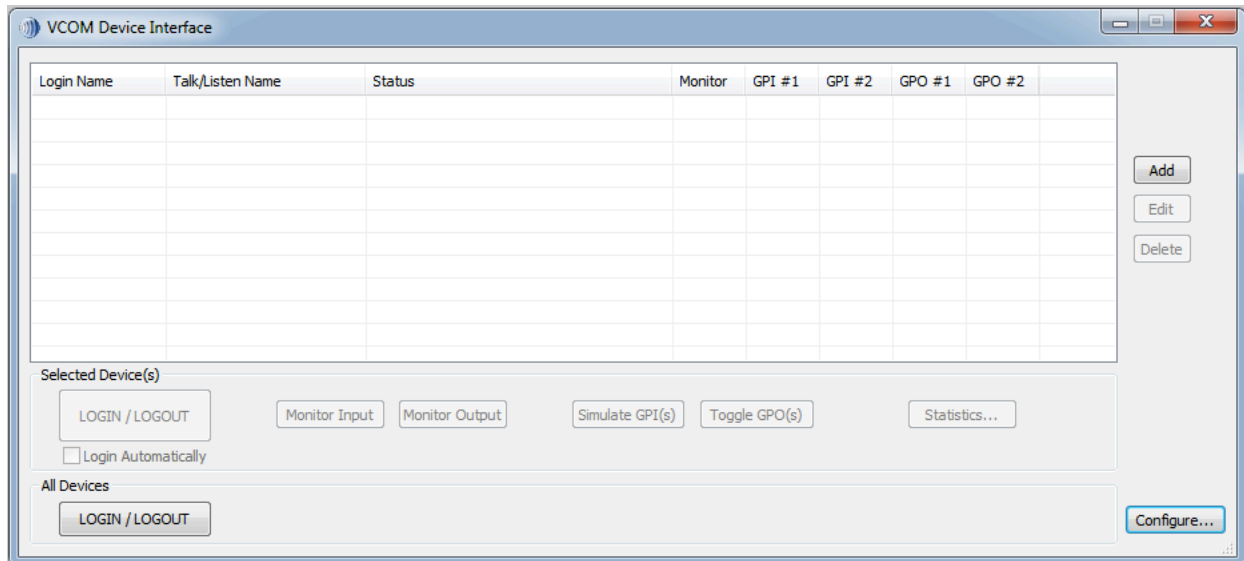


The screenshot shows the 'VCOM Device Interface Configuration' window. It has three main sections: 'Network Settings', 'Monitor Device', and 'Logic Input/Output'. In 'Network Settings', 'Device Interface IP Address' is set to '192.168.0.9' and 'Virtual Matrix IP Address' is 'intracom.dyndns.org' with a port of '1000'. In 'Monitor Device', 'Select Speaker' is set to 'Speakers / Headphones (SigmaTel)'. In 'Logic Input/Output', three GPIO devices are all set to '(None)'. There is an 'Apply' button at the bottom.

Section	Field	Value
Network Settings	Device Interface IP Address	192.168.0.9
	Virtual Matrix IP Address	intracom.dyndns.org : 1000
Monitor Device	Select Speaker	Speakers / Headphones (SigmaTel)
Logic Input/Output	Select GPIO Device #1	(None)
	Select GPIO Device #2	(None)
	Select GPIO Device #3	(None)

- Under 'Network Settings' enter the 'Virtual Matrix IP Address' and port number (after the colon) supplied by your system administrator. The 'Device Interface IP Address' is your computer's IP address and should already be input however some PC may have multiple connections so be sure that the correct address is selected.
- Under 'Monitor Device,' the secondary audio output device can be selected. Typically this will be an external speaker that will allow monitoring the audio input and output of the configured devices.
- Under 'Logic Input/Output,' optionally select the GPIO(s) device (if any) that you will use to control your audio device(s).

When complete, click the 'Close' button to save the configured settings and close the 'VCOM Device Interface Configuration' dialog box. The main 'VCOM Device Interface' window will be displayed.



Next, the individual device(s), which will be displayed in the Device list, must be configured. To add a device click "Add" to display the VCOM Device Configuration screen. Once configured click "Add" to add each additional device. To edit a device click on a device in the Device List to highlight the line and click "Edit" to get back to the VCOM Device Configuration screen for the associated device. To delete a device, click on a device in the Device List to highlight the line and click "Delete."

VCOM Device Configuration

Login Information

Login Name: io04

Login Password:

Analog to Digital Audio Device

Select Input Device: Microphone / Line In (SigmaTel)

Select Input Connector: Master Volume

Select Input Channel: Mono

Set Input Level: 16%

Select Output Device: Speakers / Headphones (SigmaTel)

Select Output Connector:

Select Output Channel: Mono

Set Output Level:

Logic Input/Output

Select Logic Input #1: (None)

Select Logic Input #2: (None)

Select Logic Output #1: (None)

Select Logic Output #2: (None)

Apply

- Under 'Login Information' enter the 'Login Name' and 'Login Password' for the device as pre-configured in the VCOM System Configuration application.
- Under 'Analog to Digital Audio Device' the audio input/output device must be selected. Typically this will be a USB 4-wire to digital converter however any audio input and output device can be used. Use the 'Select Input Device' drop down to locate the correct audio input device. Often, but not always, the 'Select Input Connector' and 'Select Output Device' drop downs will automatically default to correct setting.



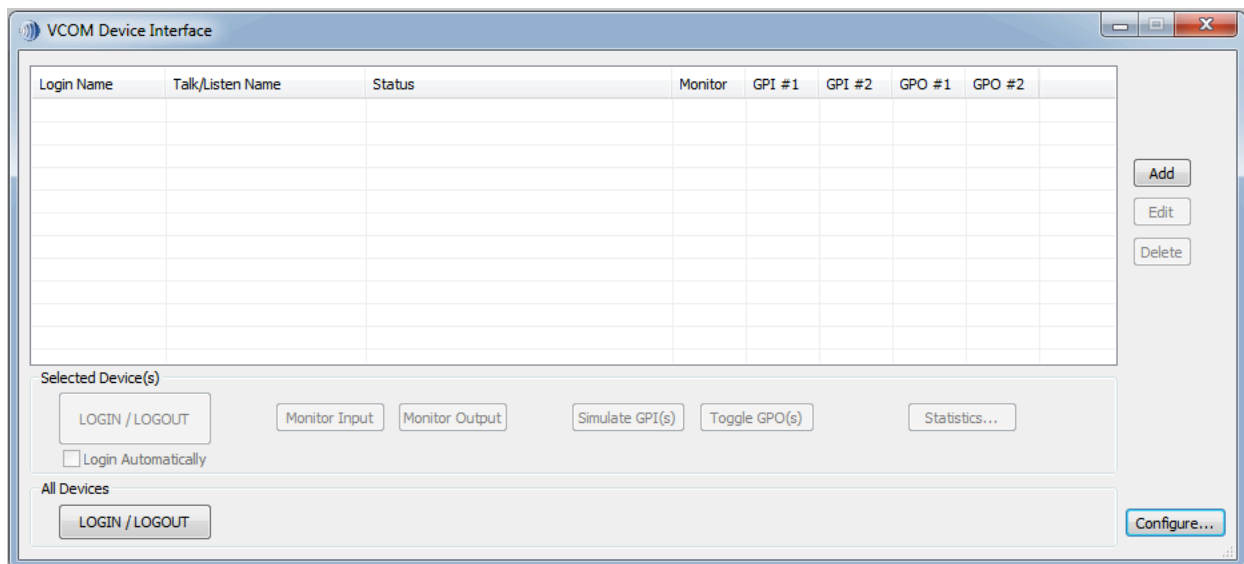
The 'Select Input Connector' drop down allows selection of which input jack the audio input device is to use. The 'Select Input Channel' drop down allows selection of 'Mono,' 'Stereo – Left,' or 'Stereo – Right.' Use 'Set Input Level' to adjust your input audio level if necessary and/or applicable. Use the 'Select Output Device' drop down to locate the correct audio output device if not already defaulted. The 'Select Output Connector' drop down allows selection of which output jack the audio output device is to use. The 'Select Output Channel' drop down allows selection of 'Mono,' 'Stereo – Left,' or 'Stereo – Right.'

- Under 'Logic Input/Output,' select the logic protocol and input(s)/output(s) that you wish to use for the given audio device. Note, in most circumstances you will only have one logic input and output.

## 4. OPERATION

### 4.1 BASIC FUNCTIONALITY AND FEATURES

This section covers the basic functionality and features of the VCOM Device Interface.



#### All Devices

- The 'Login / Logout' button connects or disconnects all configured Devices simultaneously.

#### Selected Device(s)

*Buttons in the section operate only on the selected device in the Device List*

- 'Login / Logout' connects or disconnects the selected device.
- 'Monitor Input' allows monitoring off the audio being sent from the Device to the Virtual Matrix.
- 'Monitor Output' allows monitoring off the audio being sent from the Virtual Matrix to the Device.
- 'Simulate GPI(s)' demonstrates the effect of activating the configured General Purpose Inputs and is for testing purposes only.
- 'Toggle GPO(s)' forces activation of the configured General Purpose Outputs and is for testing purposes only.
- 'Statistics' displays the send and receive audio rates and packet loss data.

The screenshot shows a window titled "VCOM Device Interface Statistics". It contains several sections with input fields and labels:

- System**
  - Device Name:
- Send Audio**
  - Before resampling:  (Kbps) ... After resampling:  (Kbps) .... After encoding:  (Kbps)
- Receive Audio**
  - Before decoding:  (Kbps) ... After decoding:  (Kbps) .... After resampling:  (Kbps)
- Send Audio Packet Loss (%)**
  - Last second:  Last minute:  Since login:
- Receive Audio Packet Loss (%)**
  - Last second:  Last minute:  Since login:
- Close** button

### Side Bar Buttons

- 'Configure' brings up the 'VCOM Device Interface Configuration' window. For a description of this window, please refer to the Configuration section of this manual.
- 'Add' brings up the 'VCOM Device Configuration' window to add a device.

- 'Edit' brings up the 'VCOM Device Configuration' window corresponding to the device highlighted in the Device List.
- 'Delete' deletes the device highlighted in the Device List.

## **5. TROUBLESHOOTING**

### **Q: When attempting to login to the Virtual Matrix, why do I get a "Cannot connect to Virtual Matrix" message?**

A: The Control Panel is unable to establish a TCP/IP data connection with the Virtual Matrix. Check the Control Panel Configuration to ensure the 'Control Panel IP Address' is valid and represents a valid and active network connection. Ensure that the 'Virtual Matrix IP Address' is entered exactly as provided with the designated port number. Check to ensure a corporate firewall is not intentionally blocking the designated TCP/IP data port.

### **Q: When attempting to login to the Virtual Matrix, why do I get an "Unable to establish return audio path" message?**

A: The Control Panel is unable to establish a UDP audio connection with the Virtual Matrix. Check to ensure a corporate firewall is not intentionally blocking the designated UDP audio port, which is typically the same as the TCP/IP data port.

### **Q: When attempting to login to the Virtual Matrix, why do I get a "Provided user name and/or password is invalid!" message?**

A: The Control Panel is unable to validate the username and password. Check to ensure the name is typed exactly as provided as the username and password are both case sensitive. Check to ensure the correct TCP/IP data port is specified to ensure you are logging in to the correct system.

## **6. SUPPORT**

Visit our web site at [www.intracomsystems.com](http://www.intracomsystems.com) for general information.

Email us at [support@intracomsystems.com](mailto:support@intracomsystems.com) for questions not addressed in the sections above or call our technical support hotline at **(888) 318-6187**.