

File Name	GC-CF-Training1-Rev1-0.docx	Document Revision	1.0
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Description	GlobalCache and CommandFusion Training-Module1		



Global Cache CommandFusion Training 1



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Global Cache Training 1 – Revision History

Revision	Date	By	Changes
1.0	30/09/2009	IP	Original

Global Cache and Command Fusion Training1 Index

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Introduction

This document has been prepared to serve as an introduction to Global Cache IP based interface products and CommandFusion GUI application.

The session will provide the ability to identify the product available, their application and a VERY BASIC introduction to setting up your first test

Global Cache Overview

Extracts from Global Cache On Line resources <http://www.globalcache.com/news/articles-and-media/>

The Company

- Founded in 2002 by Silicon Valley veterans from the IT industry
- Focus on WiFi and IP-enabling and connectivity products for residential, educational, and commercial markets
- Open systems based on industry standards
- GC-100 is first product of its kind
- Market leadership with over 100,000 units installed in the field

Sales Channel

Global Caché products are available through

- Distributors
- Dealers and Installers
- VARs – Sell as part of total solution; retain GC brand
- Dealers and Installers
- OEMs – Sell under their brand

Why Global Caché?

Our claim to fame? We're open!

- Architecture
- Public API
- We work with everybody

Why do you want it?

- Choice
- Cost
- Allows for changing environment
- iPhone, iPod, iPad, Android

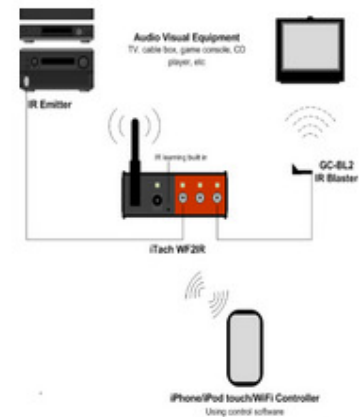
iTach Family of Products

- Connects almost any electrical device to a network instantly
- Access, monitor, and control standalone equipment
- Wired, wireless, and PoE models available
- Supports 8 simultaneous connections
- On board web server for easy setup, HTTP, DHCP
- Flash upgradeable for firmware updates in the field

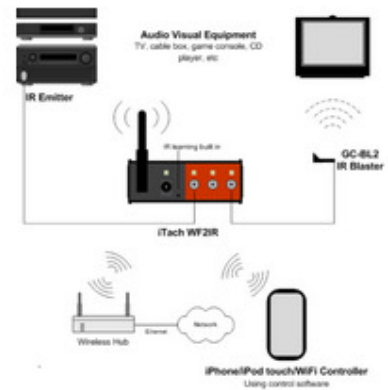
WiFi and Ethernet Models

- iTach WiFi to IR
- iTach WiFi to Serial/RS232
- iTach WiFi to Contact Closure/Relay
- iTach IP to IR
- iTach IP to Serial/RS232
- iTach IP to Contact Closure/Relay
- iTach IP to IR with Power over Ethernet
- iTach IP to Serial/RS232 with Power over Ethernet
- iTach IP to Contact Closure/Relay with Power over Ethernet

Adhoc Network (Peer-to-Peer)



Infrastructure Network



GC-100 Network Adapters

IP-enable any device
Address several market segments

Residential

- Home theater
- Home automation
- -

Commercial

- Boardrooms

Educational

- Classroom multimedia control
- AV asset management

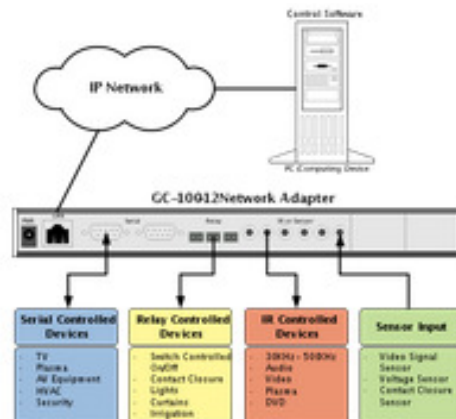


Why a Network Adapter?

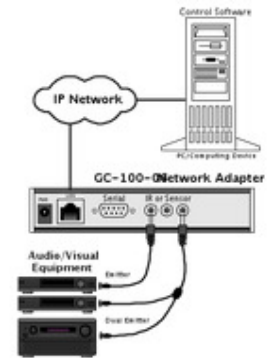
Control systems and software operate on TCP/IP networks
 Networks are everywhere - home and business environments
 Many common devices don't connect directly to a network
 Common non-IP devices

- IR – A/V equipment
- Serial – HVAC, A/V equipment, lighting, pools, security
- Relay – curtains, projector drops, motors

GC-100: IP-Enabling



IR Emitters Over a Network



Sensor Products

- Configure IR ports as sensor input
- Device state condition accessible over a network
- Verify IR command
- Interfacing with other systems
- Providing feedback
 - Three Sensors for maximum flexibility
 - Video signal sensor
 - Power sensor
 - Contact closure sensor

GC-IRL IR Learner

- Learns and digitizes IR codes simply and easily
- Full frequency IR spectrum 30KHz to 500KHz
- Free software utility to capture IR codes directly to the Windows clipboard for easy database creation
- Plugs directly into any serial port
- Tiny footprint; fits in your pocket
- Very cost effective
- Must have tool for dealers and installers
- No external power supply required

Conclusion

- Established leader in the market
- First product of its kind
- Partnered with almost every control system provider
- Flexible, cost effective, and embraces open systems
- Simple hardware design for high reliability
- Simplest way to glue it all together via WiFi and IP networking

Command Fusion Overview

Extracts from CommandFusion online resources <http://www.commandfusion.com/products/view/guidesigner>

The CommandFusion product offering has 2 main component categories

1. guiDesigner
2. Viewers for various hardware platforms

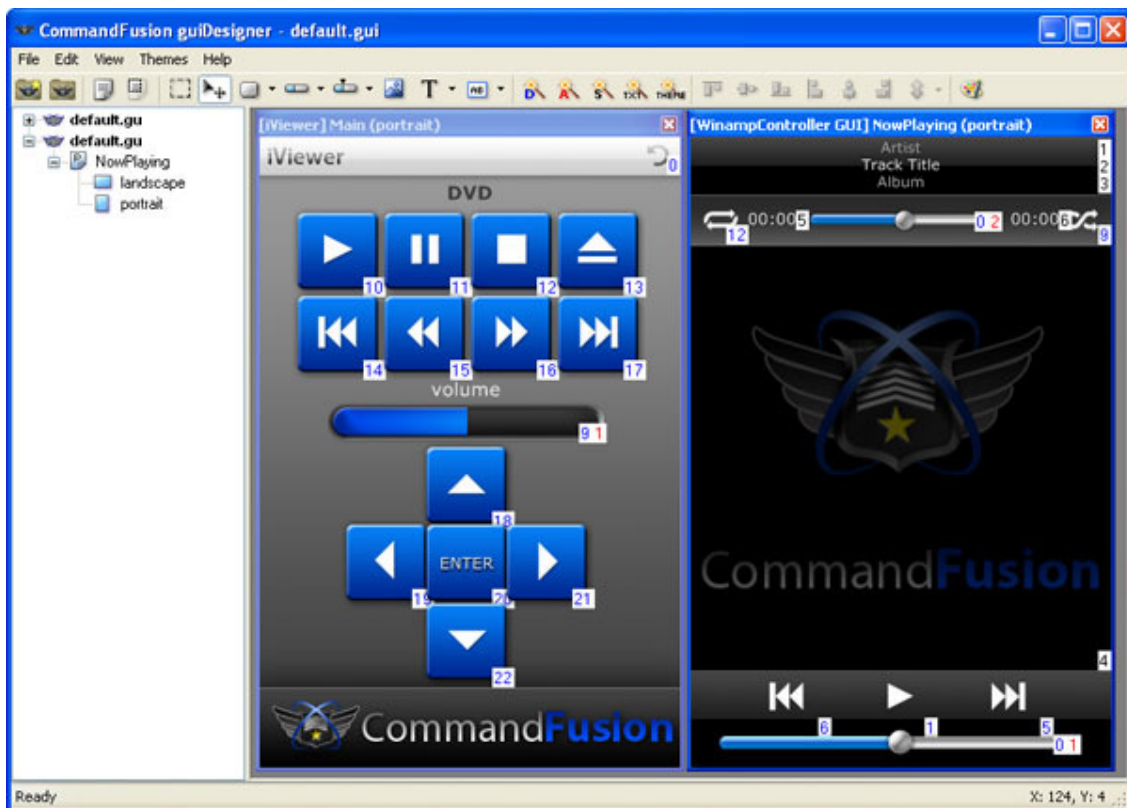
Our emphasis will be on guiDesigner and iViewer to implement control solutions for residential and professional Custom Installers.

guiDesigner

guiDesigner is a windows application used to design custom user interfaces for our viewer solutions such as the iViewer for iPhone and iPod Touch.

Main Features of guiDesigner

- Real-time GUI editor
- Command & Macro editing
- Built in, online updatable, library of pre-defined commands for third party systems
- Upload GUI to iPhone memory via WiFi



Viewers

Viewers are available for various hardware platforms. This session deals with the iViewer only

iViewer

iViewer is an application for iPad, iPhone and iPod touch that allows you to control any hardware or software capable of TCP/IP or UDP Socket communication.

Description

One of the many functions of iViewer is home automation control. Use your iPad, iPhone or iPod touch to control home automation systems such as Crestron, AMX, Control4, etc.

Interface Design

With iViewer you get full two-way control and feedback from your home automation system, allowing you to control your lights, curtains, climate and AV, just to name a few.

One of the greatest features of our iPhone application is its fully customisable interface. With our [guiDesigner](#) software, you can create fantastic looking interfaces, quickly and easily. For the system programmers familiar with Crestron or AMX's interface design software, you will find migrating to guiDesigner a snap. The interface is intentionally very similar, whilst adding features we always thought were lacking from the other software.

[GuiLink](#) will be releasing their popular touch screen interface template designs for the iViewer within the coming weeks, saving integrators time and money, whilst delivering a high quality interface to their end users.

When you turn the iPhone in your hand, the application has the ability to detect this and load a separate page. So if you're watching a DVD and want to access the number pad controls to select a different chapter, simply rotate the iPhone and you're there. This allows freeing up valuable screen real estate for more user-friendly designs. All pages in portrait and landscape orientations can be fully customised.

Page and subpage transitions allow you to customise the animation between pages. Fades, swipes, reveals, all fully customisable by time and easing.

Training Session1

Use a IP2SL (IP to serial) converter to send a string from Command Fusion button press.

- Ascii to be sent "Hello World" without the quotes. String terminated with a CR LF
- Baud Rate 57600 – No Parity, 1 Stop Bit, No Handshake

Tools

- CommandFusion GUI Designer
- CommandFusion iViewer
- iTach IP2SL (I have set the IP address to 192.168.123.2)
- Wireless Router (IP 192.168.123.1 - DHCP from .100. - SSID ILED-TEST – WEP ILED-TEST)

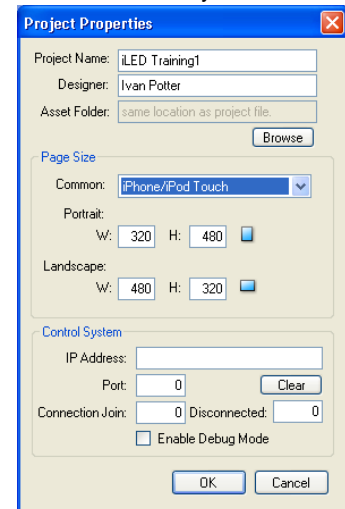
Steps for Global Cache

Install Software

1. Circulate Memory Stick with TrainingSession folder
2. Copy entire folder to desktop
3. Connect to ILED-TEST
4. Go to the GlobalCache folder and run iHelp
5. Make sure that iHelp sees the IP2SL (192.168.123.2)
6. Exit iHelp
7. Run Gscan
8. Enter IP address of IP2SL
9. Connect
10. Open Hyperterminal and connect a cross over cable from IP2SL to Laptop.
 - a. Cable is DB9Female to DB9Female
 - b. Wiring is 2 ----- 3, 3 ----- 2, 5-----5
 - c. Set Hyperterminal to 57600 , 8 data bits, No Parity, 1 Stop Bit, No Hardware Handshake.
 - d. Ensure Hyperterminal is Connected
11. Open web browser and select url <http://192.168.123.2>
12. Itach User Name and password are both blank (empty). Press OK
13. Check the network settings. Please note the default IP is as detailed in the getting started section. This IP2SL has been set up for training.
14. Check the Serial settings
15. Set the baud rate to **57600**, Flow Control to **None**, Data Bits to **8** and Stop Bits to **1**
16. Save the settings
17. Run **iHelp.exe**
18. Verify that the iTach is identified. Left click on the iTach then right click. Note that there is an upgrade option. This is where you upgrade the itach to the latest firmware.
19. Close iHelp
20. Run **Gscan.exe**
21. Type in the IP address of the IP2SL (192.168.123.2)
22. Type in the port number to send commands to the IP2SL (4998)
23. Type HELLO in the Send Window
24. Click Send
25. You will receive an error message "ERR_0:0,001". If you do not , please ensure you have typed in the correct IP address and Port and clicked on Connect .
26. Click Update to terminate the session.
27. Change the port Number to 4999 (this is the port for the serial port. Whatever is received by this port is transmitted out the serial port, whatever is received by the serial port is transmitted over IP Port 4999.
28. Click Connect
29. Type HELLO in the Send Window. Press the CR (enter key)
30. Open the Hyperterminal window we set up before and minimise the window so that you can view both GCScan and Hyperterminal simultaneously
31. Click on GScan to make it the active window
32. Click Send in GCScan.
33. HELLO will be transmitted from the IP2SL and received by Hyperterminal – HELLO will be displayed in the Hyperterminal window.
34. Exit both iHelp and GCScan before continuing.

Steps for CommandFusion

35. Go to the CommandFusion Folder (remember the software you copied in step 1)
36. Install the CommandFusion Software (2.3.1.13)
37. Install DotNet3-5SP1
38. Go to your documents folder and create a folder Training1
39. Go to the CommandFusion Folder
40. Right Click on Free GUI.zip
41. Extract All to your Training1 Folder
42. This will create a folder called Free GUI with the free GUI themes etc
43. Open Command Fusion iViewer
44. In iViewer open the Free Gui project
45. In iViewer Select Free.gui in the projects window
46. File Save Project as – Go up 1 tree level out of Free GUI folder to Training1 folder
47. Make a new folder called CFtraining1
48. Select CFTraining1
49. Enter file name Training1
50. Save - accept the warning regarding file over write.
51. In Project Tree, close the Free GUI project (Right Click on Free GUI and Close Project)
52. Right Click on Training1.gui in the project window
53. Read the CommandFusion Resources section before proceeding
54. In Project Tree right Click on Training1 and click on Project Properties
55. Fill in the project name, designer and select the page size for iPhone/iTouch. Leave the control system details address blank as shown.



Project Properties

Project Name: iLED Training1
 Designer: Ivan Potter
 Asset Folder: same location as project file.

Page Size

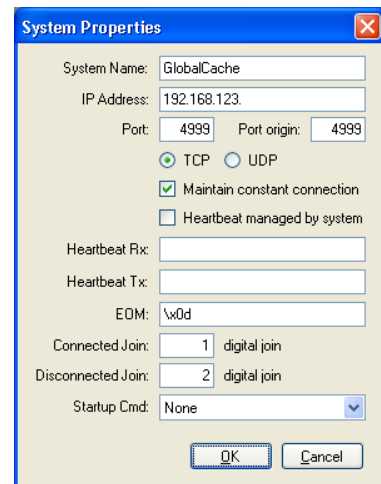
Common: iPhone/iPod Touch

Portrait: W: 320 H: 480
 Landscape: W: 480 H: 320

Control System

IP Address:
 Port: 0
 Connection Join: 0 Disconnected: 0
 Enable Debug Mode

56. Go to System Manager Tree and add a system (left click on the top left icon in System Manager Tree. If you cannot locate the system Manager Tree on the right side panel of your screen then click the black cog located across the top menu bar – to the left of the Regex icon.
57. Click Skip Wizard
58. Fill in the System Name, IP address (192.168.123.2)
59. Port 4999 and Port Origin (Global Cache Serial Port on iTach)
60. Select TCP as we are using TCP/IP
61. Tick Maintain Constant Connection. When iViewer opens it will establish a connection and keep that connection open speeding up the process of transmitting information. If this is not selected the connection will be closed after an idle time. If communications is required there will be a connection re-establishment time delay.
62. EOM type in \x0d. The \x indicates the characters that follow are hexadecimal or HEX. 0d is the HEX value to be sent
63. Connected Join fill in 1 – for details on Joins refer to CommandFusion Resources section. This is the join that will go high when the iViewer has established connection with the device specified in the IP address and Port.



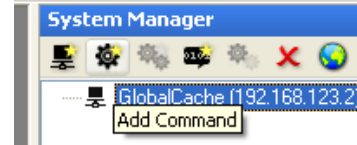
System Properties

System Name: GlobalCache
 IP Address: 192.168.123.
 Port: 4999 Port origin: 4999
 TCP UDP
 Maintain constant connection
 Heartbeat managed by system
 Heartbeat Rx:
 Heartbeat Tx:
 EOM: \x0d
 Connected Join: 1 digital join
 Disconnected Join: 2 digital join
 Startup Cmd: None

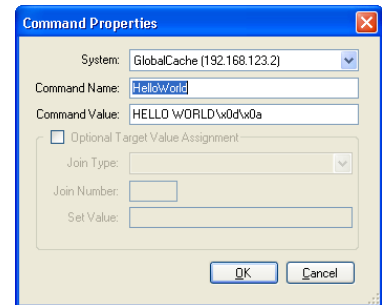
64. Disconnected Join fill in 2 - This is the join that will go high when the iViewer has NOT established connection
65. No Startup Command yet
66. Click OK.
67. The newly created system will display in the System Manager Tree



68. We now need to create a command that will send a serial string.
69. In System Manager click on Add a Command icon
70. Click on Skip Wizard
71. Select the System – GlobalCache – this should be the system already selected



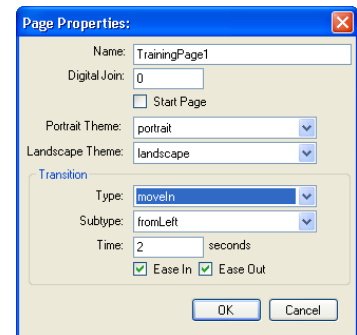
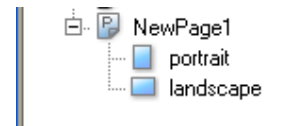
72. Type the command name “HelloWorld\x0d\x0a” without the quotes. *Note The example uses \x0d in the System Properties as the EOM. The command is terminated by \x0d\x0a. This means that when the training HELLO WORLD command is sent it will be sent as HELLO WORLD \x0d \x0a. The EOM is NOT appended to each command but expected to be the terminator for each received message.*




73. Create a new Page in the Projects Tree under Training1.gui by left clicking on Training1.gui to Hilitte the project then click on Create New Page Icon on the top menu bar.

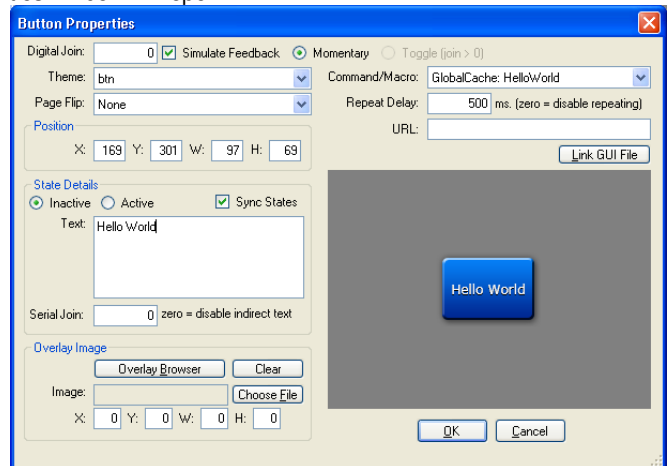


74. A new Page will be created named NewPage1 with a Landscape and Portrait view. Right click on NewPage1 and set the Page Properties as detailed below. The digital Join (we do not assign on in this example) allows for setting of a join when the page is selected. The Themes for landscape and portrait are from Free Gui. Set the transitions as shown they are self explanatory. Click OK

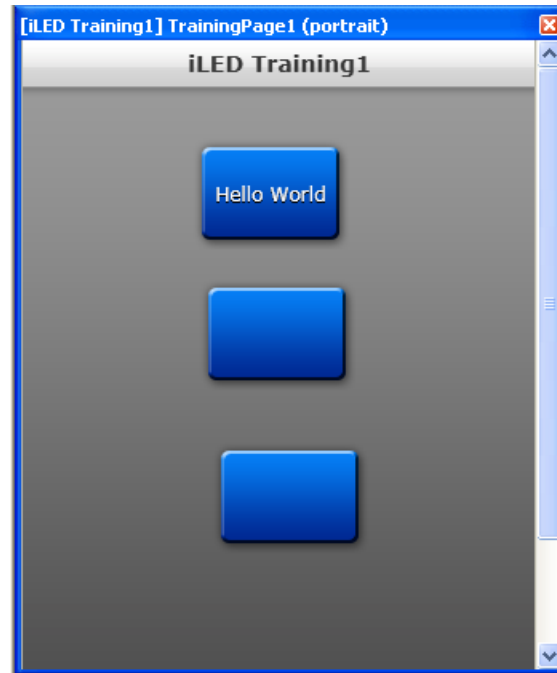


75. Double Click on the Portrait view of TrainingPage1
76. The Portrait view background will display. If the image size is not correct then goto the top menu View/Zoom 100%
77. Left Click on the TrainingPage1 (portrait) view to ensure you are working in the correct space.
78. Left click on T for Text from the top menu bar. This will select Text mode. This mode will remain until you select another mode.
79. Move your cursor into TrainingPage1 and left HOLD at the top left of the Title Bar. Move your cursor to the bottom right of the title bar and release the click.
80. If you release the left button too early and need to delete or change the text box, Select the Arrow Icon first
81. A text Properties box will be displayed. Type in iLED Training1. Leave Serial Join at 0 and Select the "title" theme. Click OK
82. Select the drop down arrow on the Button Icon  till selection box displays the available buttons. Select button "btn"
83. Move cursor to the top left of where you want to place the button
84. Left click. The button will be placed. Select the Arrow Tool
85. Double click on the new button. The Button Properties window will open.

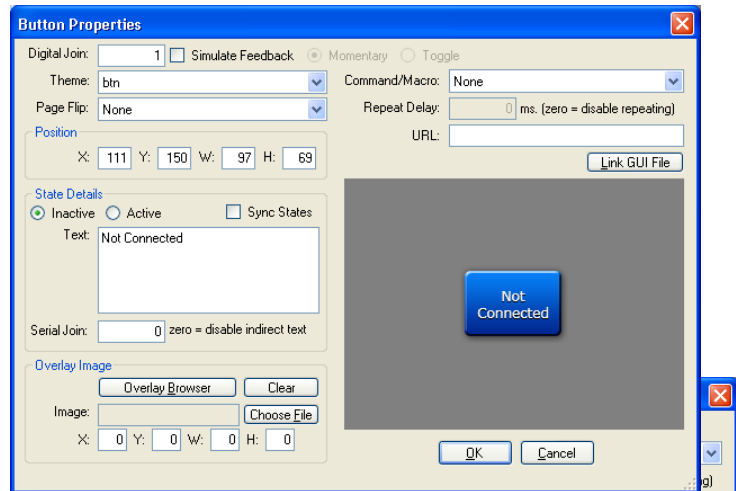
86. Enter the options as shown
87. Create 2 more buttons by Selecting the Text Tool
88. Click on the top left corner. Next button will show. Move down the page and left click to create the next button



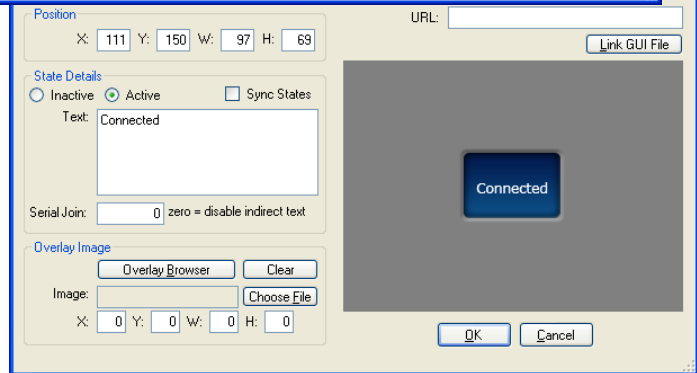
89. Training1 portrait page should look like this.



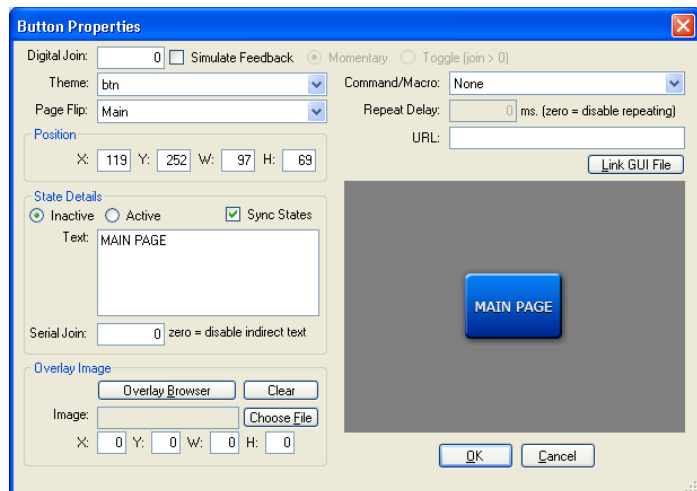
90. Select the Arrow Tool and double click on the middle button. Fill in as shown then click the Active radio button. Note the text “Not Connected”



91. Fill in the Text “Connected” and click OK

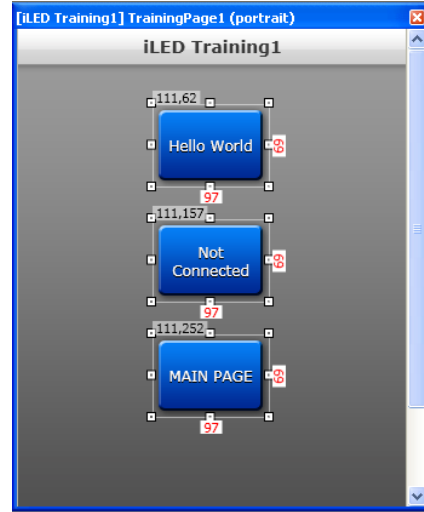


92. Double Click on the bottom button and fill in as shown. Note the drop down box for Page Flip is set to Main. Click OK.



93. Align the Buttons to the center of the page by using the marquee tool (The tool to the left of the arrow on the main top toolbar). Select the 3 buttons and align to the center of the page by using the alignment icons on the top toolbar. Use the Distribute evenly tool to give the buttons an even spacing.

94. TrainingPage1 portrait should look like.

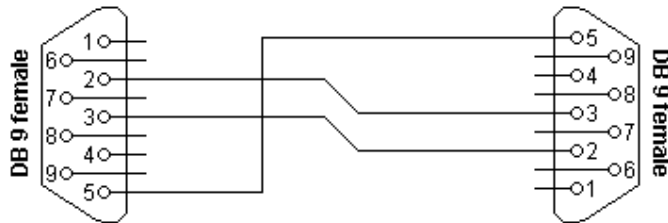


95. Save the project
96. Copy the MAIN PAGE button.
97. Select the Main page in the Project Tree and double click on the portrait page
98. Paste the button you have just copied to the bottom of the page below the existing transport controls. Edit the button text to "Training" and the page flip to TrainingPage1.
99. Copy the Training page portrait button to the Main page landscape. Place the button on the left of the landscape page
100. Copy the TrainingPage1 portrait buttons to TrainingPage1 landscape.
101. Align and distribute the buttons evenly
102. Save the project
103. guiDesigner requires the devices that iViewer will be installed on to be licenced. This is covered in the next training session. WE are going to use an iTouch to upload the project to that has already been registered.
104. guiDesigner requires the iTouch to be setup prior to uploading the project. This is covered in the next training session.
105. Assuming that
 - a. iViewer has been installed on the iTouch.
 - b. iTouch is connected to the correct network
 - c. iViewer setting on the iTouch allows for an upload
 - d. iViewer setting has the correct guiDesigner URL and port
 - e. guiDesigner IP address corresponds to d above
 - f. iTouch has been registered.
106. We can now proceed to upload and test our project
107. In guiDesigner select File / ManageDevices / Import from File. Select the desktop folder (remember Item 1 and 2 of this training session) and select "iLED-CF-Licences.cfl". Import the licences.
108. Select File / Upload (leave the port as 8019) Start
109. In iViewer (remember the assumptions in 104) select the iViewer icon. The iViewer splash screen will be displayed till a connection is made with the IP address on which guiDesigner resides.
110. In guiDesigner the upload service box will display the device id of the itouch and a green led will indicate activity. The guiDesigner will be transferred to the ipad
111. Press the training button to page flip to TrainingPage1.
112. The Not Connected / Connected button should show Connected and the button should be in the active or pressed state. If not, iViewer has not connected to the iTach. Verify the iTach IP address – you must be able to ping it from the guiDesigner PC. If you cannot ping the device, follow the steps under Global Cache above. Make sure that iHelp and GCScan are closed – if the applications are open they could prevent iViewer from connecting.

Steps for Hyperterminal

The steps shown below are for Windows XP. If you are running another operating system, read through the notes to familiarise yourself with the steps if required. These are fairly basic and can be skipped if you have serial communications experience

Global Cache to PC cable



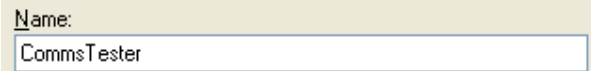
Connector 1	Connector 2	Function
2	3	Rx ← Tx
3	2	Tx → Rx
5	5	Signal ground

Running HyperTerminal to verify MZC Communications

Run HyperTerminal – From Windows Start Menu. Select All Programs – Accessories – Communications – HyperTerminal

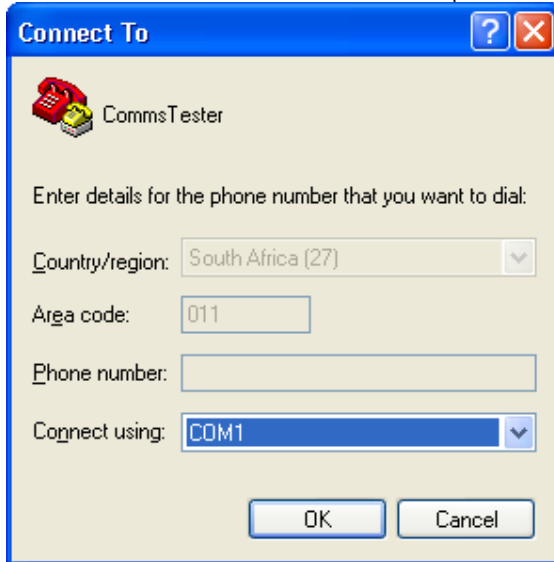


Type in the Name – Example - CommsTester

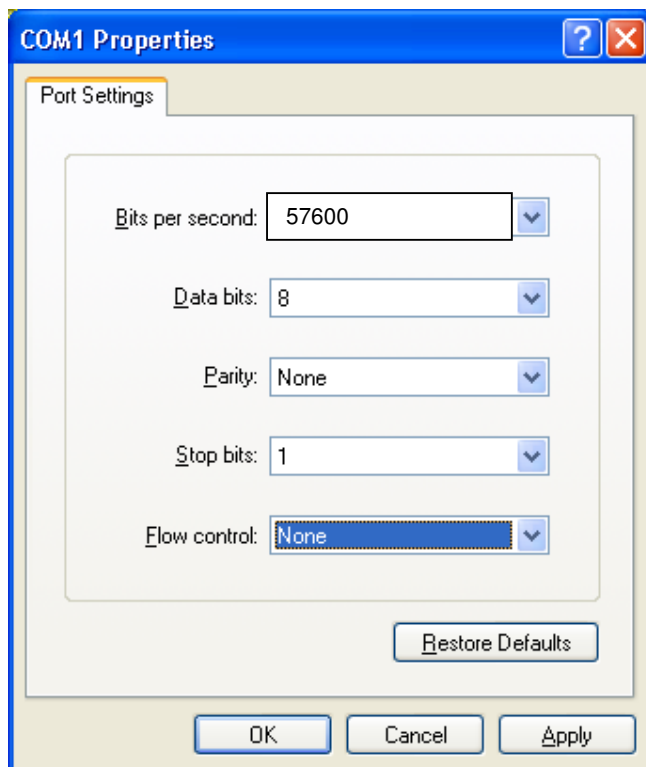


Select OK

Select the Communications Port from the drop down box



Select the communication interface parameters – A typical setting is shown. Please note the handshake is set to None because we are using a Null Modem Cable – No Handshake



Select OK

The main screen will display whatever communications are received and as you type, the ASCII value will be transmitted. If the screen has characters that make no sense, verify that the communication parameters (excluding handshake) are correct.

Global Cache Resources

Troubleshooting Note:

From Website

The setup and configuration process may be restarted at any time by resetting your iTach to its **Factory Defaults**. To do so, insert a metal pin (a large paper clip is ideal) into the opening approximately 1/8 inch (3 mm) until the reset sequence begins. The reset sequence is indicated by all LEDs on the iTach briefly blinking in unison. **Warning:** Make sure to use a light touch when resetting your iTach to factory defaults; force may damage your iTach hardware irreparably.

IP Notes

1. The reset mechanism is not a pushbutton but 2 pieces of metal that need to be shorted together with a piece of wire. Using a plastic coated paper clip or thin plastic will not work.
2. Applying too much pressure will result in possible damage to one or both of the pcb mounted metal pins.

Getting Started – Old Itach Firmware Rev ?? and Below

1. Power up the unit
2. LED's will flash during power UP.
3. After power up is complete, Power green LED will flash. (on for 1 second, off for 1 second)
4. Use a laptop with wireless connection enabled.
5. Right Click on wireless network icon (normally in windows XP bottom right)
6. Select "View Available Networks"
7. For other operating systems select Network Places from main menu then view available wireless networks
8. Disconnect from your existing wireless network if you are currently connected to one.
9. Select the iTach<macid> where <macid> is replaced by the devices mac id. MacID is found on the sticker located at the bottom of the iTach.
10. Once connected, verify that the IP address of your laptop is in the same range as the iTach. The iTach's I have tested come with DHCP disabled.
 - a. To rectify this,
 - i. select your own IP address by opening network connections
 - ii. select the wireless network connection then right click and select properties
 - iii. Under the General Tab, scroll down in the items list and click on Internet Protocol(TCP/IP) do not select TCP/IP version 6.
 - iv. Click Properties and change the IP address to 169.254.1.60
 - v. Subnet 255.255.255.0
 - vi. Leave default gateway and DNS blank.
 - vii. Click OK and Close
 - viii. Disable the Wireless adaptor (I have found that some wireless network cards require this to accept the new IP address)
 - ix. Enable the Wireless Adaptor once the adaptor shows it is disabled
 - x. Run the Command Prompt. For those not familiar with this go to Start, select Run then type in cmd and press OK.
 - xi. Type IPCONFIG enter and check under the wireless network adaptor settings that the IP address is 169.254.1.60 and the subnet is 255.255.255.0
 - xii. If you are currently connected to a wireless network other than the iTach<macid> then disconnect from the network and connect to the iTach<macid>
11. Connect <http://169.254.1.70> in the web browser
12. The Itach should be found.
13. Username and password are blank
14. Select Network and configure your network settings to suit the wireless access point.

15. Set the network to Infrastructure
16. Set the SSID the same as the SSID of the wireless access point
17. Set the WPA to the same as the wireless access point
18. Set the IP address to a fixed address outside of the wireless access points DHCP range
19. Save the settings.
20. Set the IP address of you wireless network to that of the required range of the access point (if fixed)
21. Open browser and type in your new itach IP address
- 22.

Upgrading Firmware – Prior to Rev 4 (??) not possible

Go to <http://www.globalcache.com/support/itachfirmwareupdates/> and select the correct device. This will download a ZIP file.

Follow the instructions on how to use iHelp to upgrade the firmware.

Procedure Followed

1. Follow steps as detailed above at *Getting Started – Old Itach Firmware Rev – With Wireless Access Point*
2. Once connection has been established with the browser, open iHelp.
3. The iTach should be in the list. If not Start from step 1
4. Ensure you have the firmware upgrade downloaded as detailed above
5. Select the itach unit in iHelp. Right Click and select upgrade
6. The unit goes through the upgrade phase and then reports an error that the unit cannot be upgraded.
7. Global Cache confirmed that the firmware is not upgradeable

Upgrading iTach with Firmware Rev 700-1001-04 - Version Not Compatible with new firmware.

Setting Up Wireless Access

Set the router for the house

1. SSID
2. Channel
3. Security (WPA)

Getting Started – Itach Firmware Rev?? and above

This section to be completed once I have tested the iTach using iHelp

CommandFusion Resources

Wiki

<http://www.commandfusion.com/wiki/index.php?title=Special:AllPages>

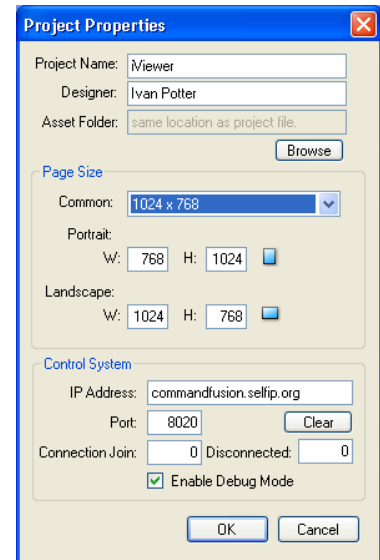
System

Control system http://www.commandfusion.com/wiki/index.php?title=Project_Properties

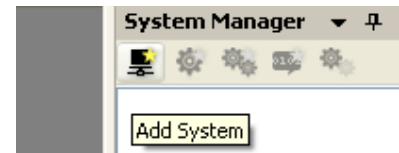
System http://www.commandfusion.com/wiki/index.php?title=System_Properties

Control system and System are not the same.

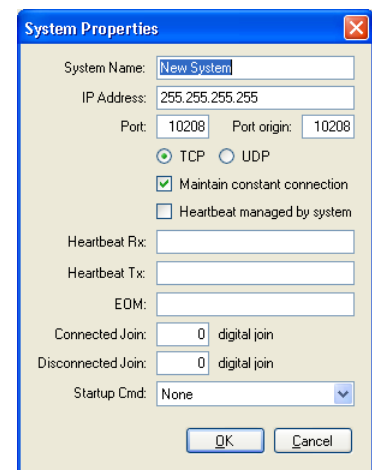
1. Right click on Training1.gui (in projects window) and select Project Properties.
2. The following Control System box will display. This is the CONTROL SYSTEM properties box – A CONTROL SYSTEM is an external device that handles CommandFusion protocol. The protocol allows communication according to the iViewer developers manual. Do not use this to set up a link to a Global Cache unit. Refer to the SYSTEM
3. Close the Project Properties box



4. Open the system Manager and click on Add a System
5. Click Skip Wizard



6. The System box allows you to define the individual IP addresses and Ports to be used for each piece of Global Cache equipment.
7. For the GC range, more than 1 System is required, a separate system per Port is to be created – Eg 1 for Port 4998 (IR Relays etc). Serial port 1 and 2 have port 4999 and 5000



guiDesigner

Start by watching the video provided **guiDesigner.mov** This has been uploaded from the CommandFusion website and is on the memory stick distributed.

Hex / ASCII

A detailed description for beginners is available at <http://www.iled.co.za/UserFiles/File/SpeakercraftRS232Rev1-2.pdf>

CommandFusion identifies a Hexadecimal or Hex value by the \x prefix

Examples

1. \x00 is the same as binary 0000 0000 and represents an ASCII Null character
2. \x0d is the same as binary 0000 1101 and represents ASCII Carriage Return (CR)
3. \x0a is the same as binary 0000 1110 and represents ASCII Line Feed (LF)

The example uses \x0d in the System Properties as the EOM. This means that each message received is expected to be terminated by \x0d. Each command is terminated by \x0a. This means that when the training HELLO WORLD command is sent it will be sent as HELLO WORLD \x0a \x0d

IP Training Notes

WF2IR ip addresses

192.168.123.1	Router
192.168.123.2	IP2SL
192.168.123.3	IP Laptop
192.168.123.4	
192.168.123.5	
192.168.123.6	
192.168.123.7	WF2SL1 (mac 20008)
192.168.123.8	WF2SL2 (mac2001D)