BARIX ONSITE

ICGRAPH

Software Manual

Universal Java-based communication and control software

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Manual version	01.30

BARIX

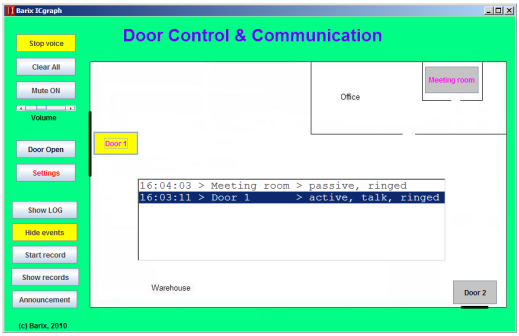
Table of Contents

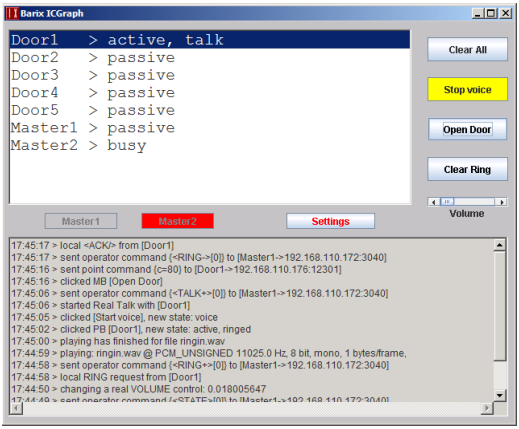
1 Introduction

1.1 About "ICgraph"

ICgraph is a Java based PC software to communicate (VoIP) to Barix Audio products, and also it allows remote control and remote monitoring of Barix products. It is extremely flexible!

Here are some possible DEMO screenshots of the application:





All three screens are made with the ICgraph application. The graphical design is completely free configurable, so you can create your own application with the optimal design for best handling and overview.

1.2 Features

- free configurable and unlimited user interface (background picture and buttons)
- unlimited points / targets (only desktop space defines the limits)
- full-duplex communication to Annuncicom/Exstreamer1000 (by using ABCL firmware)
- half-duplex communication with Annuncicom standard firmware
- unidirectional announcements to Exstreamer / Annuncicom / IPAM
- Multi-Master functionality, multiple masters can exchange status information
- logging function (to LOG window and LOG file)
- audio recording for incoming and outgoing communication
- send audio message to one, to some selected, to predefined groups or to all
- relay switching on the remote Annuncicom or Barionet, e.g. to open the door
- can execute local commands/start applications on local PC, e.g. open browser
- selective Ring sound notification for incoming requests with visual notification
- visible notification for incoming audio streams and for selected (active) communication
- can send any UDP commands (also periodically) to other Barix devices (e.g. Barionet)
- can display status messages / reports from Barix devices (give state information)

2 Installation

ICgraph is developed with the Java development kit 6.0 from and is compatible to Java Runtime Environment (JRE) 6.0 and probably to earlier versions.

This Java Runtime environment **must** run on the ICgraph PC !

The JRE is available for free for many operating systems (e.g. Windows, Mac, Linux) and is downloadable from : www.java.com !

The JRE should be installed first on the PC, when this is already installed on the PC then you can go to the next step. Otherwise please download and install the JRE on your PC first.

Note, we have tested the application with JRE6.0, this JRE version should be also backward compatible to JRE 5.0 or 4.0.

Please reboot the PC after the JRE installation!

When the PC is restarted then extract the ICgraph.zip in a separate folder.

Ready, that´s all for the normal installation.
For PCM and G.711 codec all libraries are already included.
Now it´s working with G.711 and/or with PCM!

If you will use the MP3 codec instead of the already installed PCM or G.711 codec, then please read and follow the following instructions carefully!

Note, the recording function works only over MP3 (also when a PCM or G.711 Codec is used), if used then you have also to copy the MP3 libraries (see next page) to your ICgraph PC.

Because of copyright and patent issues we cannot deliver the MP3 libraries together with the ICgraph software package.
You have to download these from the Internet by yourself.

For the MP3 mode in ICgraph the following files are required on the following locations (for MS Windows 32-bit systems):

Lame_enc.dll >> to Windows subfolder \system32
(e.g. C:\windows\system32)

Lametritonus.dll >> to Windows subfolder \system32
(e.g. C:\windows\system32)

Tritonus_mp3-0.3.6.jar >> to Java subfolder \lib\ext
(e.g. C:\Programs\Java\jre6\lib\ext)

Tritonus_share-0.3.6.jar >> to Java subfolder \lib\ext
(e.g. C:\Programs\Java\jre6\lib\ext)

jl0.4.jar >> to Java subfolder \lib\ext
(e.g. C:\Programs\Java\jre6\lib\ext)

All above mentioned files are available on the Internet, e.g.:

- from *http://tritonus.org/plugins.html*

Tritonus_mp3-0.3.6.jar, T**ritonus_share-0.3.6.jar** and T**ritonus-mp3enc-2001-04-25.zip (**contains **lametritonus.dll)**

- from *http://www.free-codecs.com/Lame_Encoder_download.htm*

the **Lame_enc.dll** (in lame3.98.zip)

- from *http://www.javazoom.net/javalayer/sources.html*

the **jl0.4.jar**

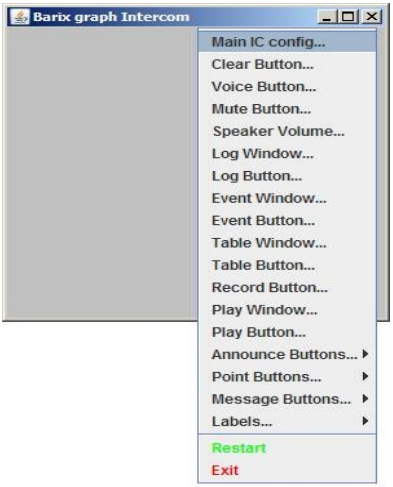
Thereafter reboot your PC so that Java can initialize the new libraries!

If you use the above mentioned files then please respect the copyrights of the software owners!

2.1 ICgraph configuration

ICgraph has two options for configuration available, there is a menu bar when you click with the right mouse button on the background of the ICgraph application (not on a button!) or you can modify the ICgraph.cfg file by using any editor (e.g. notepad).

For the most users it´s probably easier to create a completely new ICgraph user interface. That´s done in two minutes.

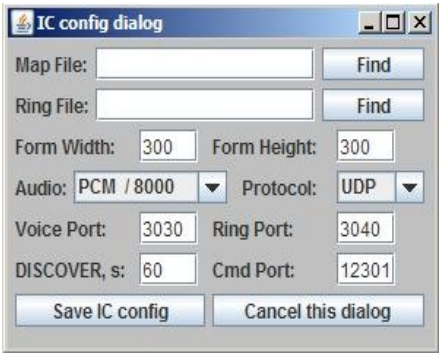


For audio communication is required :
- a "Main IC configuration"
- a Voice button
- and one or more Point buttons

Start the ICgraph.bat file. This will open up a blank (grey) window.

When clicking into this window with the right mouse button a menu bar will appear.

Click on "Main IC config..." in the menu to select/open the Main IC Configuration.
A little config dialog window will appear.



There the audio format/protocol, size, background picture, network ports and some other parameters can be defined. For the beginning define only the same audio format and protocol which is used in the Barix device and the "Ring File" (e.g. Ringin.wav from ICgraph folder).

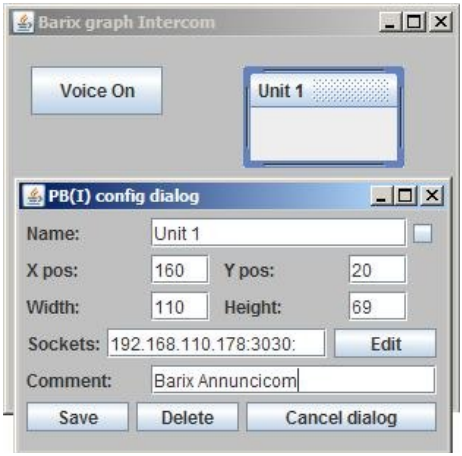
To resize/enlarge the ICgraph window change the parameters in the dialog box or resize now the ICgraph application window with your mouse directly. When the window/button size is changed by mouse (while dialog window is open) the new values for "Width" and "Height" are automatically overtaken into the dialog window.

Click on button "Save IC config" to save values and close window.

Next is the required "Voice Button". For that make a right-click with your mouse on the ICgraph window to open the ICgraph menu and select "Voice Button".

It will open a "VB config" window and automatically add a button on the your ICgraph window.

In the config window define the "Name" for the button when unpressed and name for the button when pressed. Use the mouse to move the button on the desired place or define the position manually in the config box. When everything is set, then click on "Save" and to save the values and to close the window. To get the new settings active you have to restart ICgraph. For that open the menu and select "Restart". After few seconds ICgraph will be restarted and shows now your Voice button.



Now configure your Point button, this is required to select your Barix device for communication.

For that open ICgraph menu and select "Point Button" - "New individual...". In the opening PB(I) config window also define a unique "Name" and under "Sockets" set the IP address and port number (with columns in between and thereafter) of your Barix device. Define here also the position/size of the Point button or resize the button with your mouse directly.

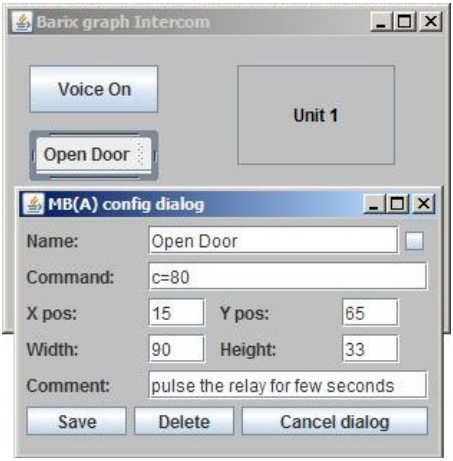
NOTE, all button names **must be unique** in ICgraph, please do not use the same name twice !

At the end click on "Save" to save and exit the config window.

To get the new settings active you have to restart ICgraph. When ICgraph is restarted it will show the Voice button and the Point button.

Now you have a minimum ICgraph configuration to communicate with an Barix device.

When your Barix device is properly configured (see next chapter) then you should be able to communicate now with your Barix device.



If ICgraph should be also used to pulse the internal relay of an Annuncicom or Exstreamer500/1000, e.g. to open a door, then it also needs a Message button.

For that open the ICgraph menu and select "Message Buttons" - "New active". In the opened config window define a "Name" for the button, the "Command" which should be send to the Barix device and set the position of the button here (or with mouse).
Thereafter click on "Save" and restart the ICgraph application to get the change active.

More details about the ICgraph configuration you can find in chapter "ICgraph configuration menu items" and in the "Advanced user section".

2.2 Configuration of Barix devices

ICgraph can use for communication the G.711 (aLaw & uLaw), PCM and MP3 audio formats.

As transport protocols are RAW UDP or RTP available.

In ICgraph you can define only one audio format and one protocol type for all points.

That means all must use the same! If you will use different target devices (e.g. Annuncicoms and Exstreamers), then you have to make the right selection to be compatible with all devices.

Overview about supported codecs on Barix devices/firmwares

Annuncicom or Exstreamer500/1000 – contained ABCL firmware with Custom1.cob: PCM, G.711
The Full-duplex communication works only with ABCL firmware (usage of contained ABCL firmware package recommended) by using the PCM or G.711 codec !

Annuncicom – Standard firmware (half-duplex only!): PCM, G.711, MP3
(must be RAW UDP protocol in ICgraph config)

Exstreamer - Standard Firmware v8.24 or higher: MP3, G.711
(G.711/PCM on RTP Receive Port only , MP3 also on UDP (Priority) Receive Port)

Exstreamer - ABCL Firmware (Full-duplex application): PCM, G.711
(The Exstreamer 100/105/110/120/200/P5 can only listen/receive.)

Exstreamer - Streaming Client version 2.x : MP3, PCM, G.711
(over Streaming Client´s "Priority Port" or "rtp://0.0.0.0:port number", must be RTP protocol,)

MP3 works only half-duplex, but is perfect for announcements to the Exstreamer (e.g. to UDP Priority Streaming Listen Port).

Capabilities of the Barix devices when used with ICgraph

	Discov-ering	Codec	RTP/UDP	Hdx / Fdx / Uni-directional	Ring	UDP Cmd Interface	Relay control	BARP
Annuncicom Standard FW	Yes	all	UDP	Hdx or Uni-directional	Yes	Yes	Yes	No
Instreamer Standard FW	Yes	all	RTP & UDP	Talk only	no	Yes	No	No
Exstreamer Standard FW	Yes	all	RTP & UDP	Listen only	no	Yes	No	No
Streaming Client FW	Yes	all	RTP	Listen only	no	Yes	on audio only	No
ABCL ICgraph FW	Yes	PCM G.711	UDP & RTP	Hdx, Fdx or Uni-directional	Yes	Yes	Yes	No
ABCL IP-Intercom FW	Yes*	PCM G.711	UDP & RTP	Hdx*, Fdx or Uni-directional	Yes*	Yes	Yes	No
ABCL Fdx FW	No	PCM G.711	RTP & UDP	Fdx, Hdx* or Uni-directional	No	No	on audio only	No
ABCL STL FW	No	PCM G.711	RTP	Hdx*, Fdx or Uni-directional	No	No	No	No
ABCL SIP FW	No	All*	RTP	Uni-directional	No	Yes	No	No
ABCL ICPaging FW	over BARP	All*	UDP	Hdx or Uni-directional	Yes	No	over BARP	Yes
ABCL IPaging FW	over BARP	All *	UDP	Listen only	No	No	No	Yes
Barionet Standard FW	No	-	-	-	-	Yes	Yes	No
Barionet with R6 Control application	Yes	-	-	-	-	Yes	Yes	No

Codec = all means MP3, PCM and G.711

* this function has some limitation, e.g. :
  - could be used not in full duplex
  - Hdx not controllable over ICgraph
  - MP3 only usable on priority port or on BGM port

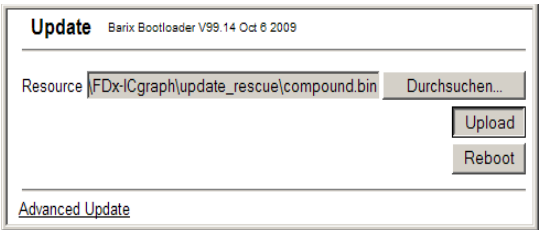
Note, MP3 is never usable in full-duplex mode with Barix devices!

Annuncicom or Exstreamer500/1000 with Full-duplex configuration for ICgraph

That´s probably the best option for two-way communication. Load the firmware (contained in ICgraph package) over serial or web update to your Barix device.

For the web update use your browser to enter the configuration of your Barix device, then click on "Update" and confirm the following message.

The unit will reboot and the browser should display the update page. There, in the resource field, select the file Compound.bin (ICgraph sub folder "\FDx-ICgraph\update_rescue") and click on "Upload".

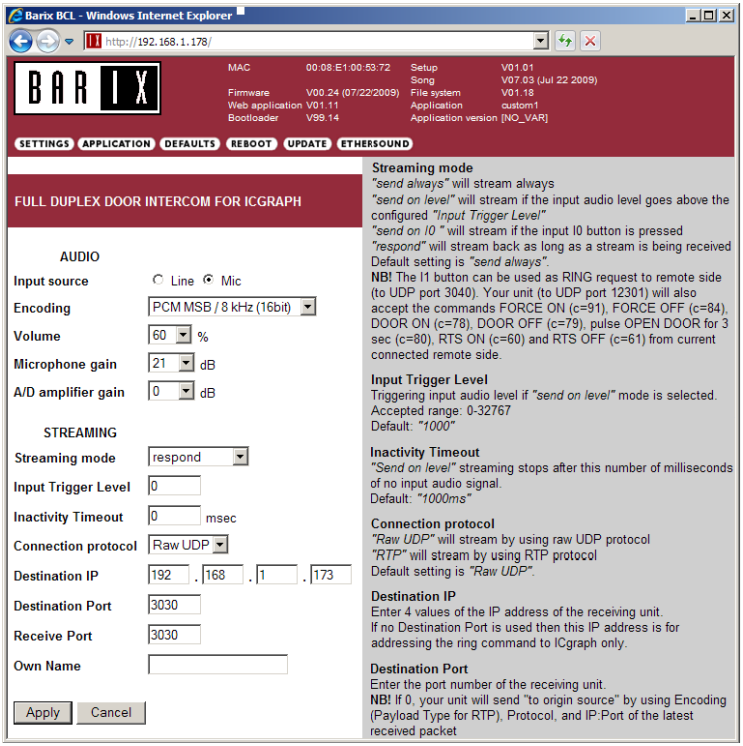


Now wait until a successful message appears on your browser. After the "successful" message reboot the Annuncicom, few seconds later you can enter the device´s home page again.

Note, it could happen that updating the firmware of the Barix device resets the IP address. In this case please assign the IP address again!

If you have entered the ABCL configuration, then please check first the IP settings, select Application "Custom Application 1 (custom1)" and click on "Apply".

Thereafter use the "APPLICATION" button on Barix device´s web page to enter the application menu.



The online help explains all available settings very clear.
The "Encoding", "Connection protocol" must have the same settings as used in ICgraph (Main IC config).

As "Streaming mode" are available "send always", "send on level", "send on I0" and "respond". "Respond" will only stream when there is also an incoming network stream at the same time, else it stops streaming immediately. For the most the installations the "respond" mode is probably the best option.

The input "I1" is usable as "ring" button, when pressed it sends a "ring" - message to Destination IP.

When ICgraph is used in Multi-master mode then it´s recommended (see online help for details) to use the "Auto detect" mode. This mode can be activated when "Destination port" is set to 0 (zero). If "Destination Port" is set to 0 (zero) then also the RTP protocol must be used on this FDx-ICgraph ABCL software and in ICgraph configuration ("Main IC" line) !

Annuncicom with Standard Firmware (half-duplex only)

Use the following configuration in the Annuncicom:

Audio / Encoding Frequency = MP3 , PCM or G.711
(must be same as used in ICgraph)

Audio / MP3 Bitreservoir Mode = kept empty
(important for MP3)

Streaming / Own Name = ...
(only required when discovering function is used)

Streaming / Mode = "send on Talk" (for the most the best)
or "Send on Level" or "auto answer"

Streaming / Non MP3 Packet Size = 500
(only important for G.711 8khz !)

Streaming / Stream Packet Strategy = lowest Latency
(important for MP3)

Streaming / Receive Timeout = 200
(important !)

Streaming / UDP Receive Port = 3030
(for example, must the same as used in ICgraph configuration)

Streaming / Stream to = from table
("origin Source" recommended for Multi-Master mode)

Streaming /Table1/ #1 = RAW UDP : IP of ICgraph-PC :3030
(port configurable in ICgraph.cfg)

IO / I0 push command = c=91
(important!)

IO / I0 release command = c=84

IO / I1 push command = r="IP address of PC":3040/ring
(e.g. r=192.168.1.20:3040/ring)

IO / I1 release command =

To start/stop to audio stream from the Annuncicom to PC the Annuncicom´s I0 button can be used or the ICgraph user can switch from talk to listen by double-clicking the point button.

If an I1 button is connected on the Annuncicom, then it can be used to send a Ring command (bell sound) to ICgraph. When I1 button is pressed then a ring sound will be played on the ICgraph PC and the ICgraph point button for this Annuncicom will change the color (magenta) as optical notification. If a Multi-Master configuration is used, then the notification will appear on all masters (ICgraph internally forwarded).

For the Exstreamer (receive only, for announcements from ICgraph)

To receive audio streams from ICgraph, the standard firmware or also the Streaming Client firmware can be used.

Standard firmware

receiving **MP3 streams** from ICgraph on the following Ports :

"UDP Priority Streaming Listen Port" , "UDP Streaming Listen Port" or "RTP Receive Port"

For the "RTP Receive Port" or the "UDP Streaming Listen Port" the Exstreamer should be configured in Mode = 4 Streaming Receiver .

The "UDP Priority Streaming Listen Port" works in all modes in the Exstreamer configuration.

Please make sure that the same port number is not used two times in the Exstreamer setup!

If the Exstreamer should be used also for MP3 background music or any other MP3 streams then also ICgraph must send in MP3! The use two different codecs on the same unit is not recommended with this firmware.

For G.711 you should use the following configuration (requires minimum firmware va8.24).

Mode = 4 Streaming Receiver

RTP Receiver Port = 3030 (as example, must be the same port number as used on ICgraph Point button)

Note, if G.711 is used on the Exstreamer with standard firmware then it cannot listen any other MP3 applications!

Streaming Client firmware

The Streaming Client firmware (version 2.17 or higher) can decode all possible ICgraph audio, but the RTP protocol must be used. Prefered setting should be to use the PRIORITY Port on the Exstreamer for the ICgraph audio stream.
All codecs are supported on this firmware, the device can work also with multiple codecs at the same time, e.g. listening MP3 stream and receive PCM stream on Priority Port.

Barix Instreamer with Standard Firmware (ICgraph listening only)

Audio / Encoding Frequency = MP3, PCM, G.711
(must be same as used in ICgraph)

Audio / MP3 Bitreservoir Mode = kept empty
(important for MP3)

Streaming / Own Name = ...
(only required when discovering function is used)

Streaming / Stream Packet Strategy = lowest Latency
(important for MP3)

Streaming/Stream to = RAW UDP or RTP : IP address : Port number

3 How to use ICgraph

When everything is installed and configured then start the "ICgraph.bat" (on Windows PCs) which is also located in the ICgraph folder. Two windows are opening now, both are needed. The black command window you should minimize to the task bar.

Note, when you create a shortcut for the ICgraph.bat on your desktop, then you can assign in the properties "Run : minimized", this will load the black window automatically to the task bar !

The ICgraph.jar application file can also started directly (without batch file) on the most PCs (especially for Linux & MAC users), in this case no command prompt window will be opened.

To get any audio communication working - press the Voice button. The button color is changing thereafter to yellow. Only when Voice button (yellow) is pressed you can make any communication !

Yellow & green (static) target button

When you click now on any point / target button then it changes the color to yellow. Yellow target button means open communication. If a full-duplex firmware is used on the Annuncicom then you can speak and listen now.

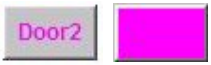
If the standard firmware is used in the Annuncicom then it is working only half-duplex, what means when one is speaking then the other can only listen. To turnaround the communication make the double-click on the yellow target button and it will change the color to green (static), now the Annuncicom can speak and ICgraph is listening. To turn to speak again make a double-click on the green button. Also the I0 button connected on the Annuncicom can be used to change the communication direction.

To deactivate the Point (and stop communication) make a single click on the yellow Point button. Note, deactivating a point button works only in yellow state, not from green state !

Green blinking target button

It´s a visual notification that ICgraph is currently receiving data or a stream from this point/target, but you cannot hear it because the channel is not selected. Click on the blinking target button (color changes to yellow) and the incoming stream is audibly on the PC, if desired. Green blinking stops automatically when remote device stops sending.

Magenta (blinking / static) target button



A magenta blinking button is a notification for an incoming "ring" request from this point. If not disabled then you should hear also the ring sound on the PC (moreover, this sound can be tuned individually for each point, if needed). The button blinks 3 times, thereafter only the name of the button remains in magenta. Using double-click on the target button, "Door open", "Remote Voice start/stop" or "Clear all" will reset to normal color. The magenta color will reset when ICgraph receives an "ACK" response for any sent command from ICgraph from this target.

It is also possible to select multiple target buttons for outgoing streams at the same time, but make sure they do not answer all, otherwise the incoming audio is stuttering .

For the use of a "new active" Message buttons one or more targets buttons must be selected before. The command behind message button is sent to selected targets then. This works also if "Start voice" is inactive!

Red button (static)

Happens only in Multi-Master mode or when IP address of ICgraph PC is used on a point button. When the red color appears on a target button then the device is busy and used by another master (also red displayed). No other activity will work in this state with this target (no voice, no message button).

Keyboard control

ICgraph is designed to control it via mouse or mouse-less via touch panel, but also the control over keyboard possible.

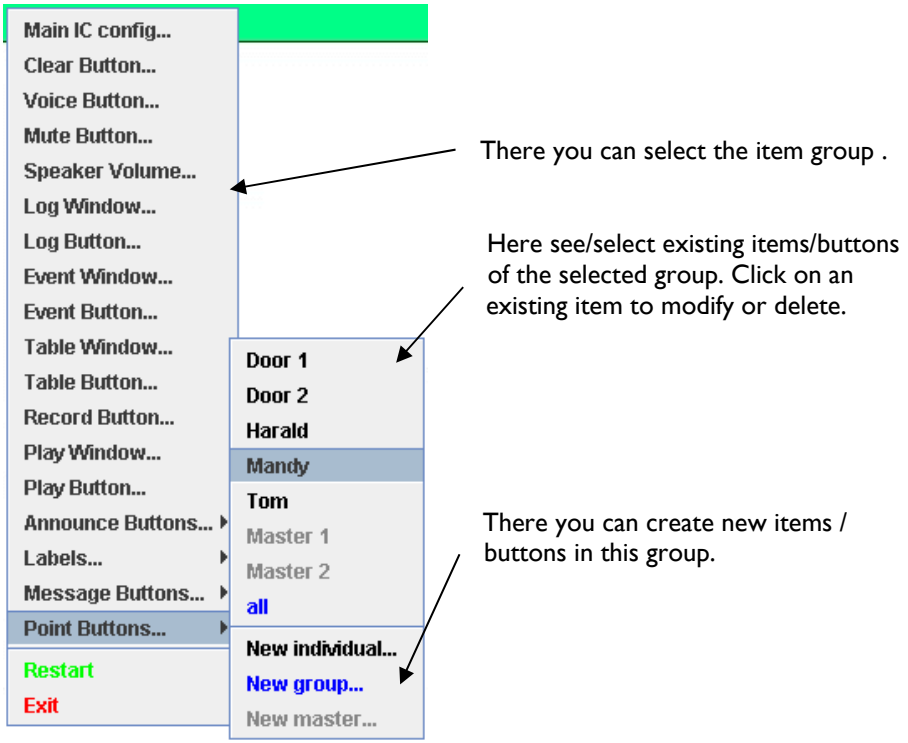
- previously press Start Voice button (then use the usual system means – move focus by TAB and select by SPACE)
- with TAB set focus to any point button (for graphical control) or into Table or Event window (for table control)
- the following buttons can be used for operation control:
  - **ESC** instead Clear button
  - **ENTER** instead the first message button (e.g. Open Door)
  - **SPACE** instead one mouse click (passive/active)
  - **double SPACE** instead double click (listen/force talk)
  - **arrows UP/DOWN** to move focus from point to point
- additionally, if there is no currently active or ringed point, for graphical control the focus will be automatically moved to just now ringed point button
- to close ICgraph use standard **ALT-F4**

4 ICgraph configuration

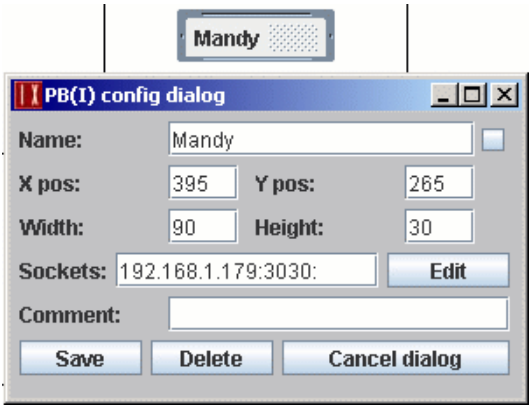
ICgraph has two options for configuration available, there is a menu bar when you click with the right mouse button into the background of the ICgraph application (not on a button!) or you can modify the ICgraph.cfg file by using any editor (e.g. notepad).

4.1 ICgraph menu

The picture on the left side shows the menu bar. With this menu almost all parameters can be set. This allows to create new windows / buttons / labels or modifying / deleting existing items!



When any item is selected then a dialog box for this item opens. There parameters can be defined for selected item. The selected item (e.g. button) is marked/inverted also on the ICgraph GUI so you know which item you have currently in work.



When an item is marked (and config dialog box is open) then you can also move (and relocate) the marked item or resize it by mouse drawing. You should see then that the position values in the config dialog box are changing automatically.

The very most of the parameters are configurable so very comfortable. To get the new values active, save the new values and restart ICgraph.

Note! If a password is set in the IC line (only in ICgraph.cfg possible) then the config menu bar is disabled / removed. Password "0" (zero) disables the menu without activating the password function.

Main IC config (IC)

Here define the environment for the ICgraph application:

Map File	background picture (if available), when empty then grey background
Ring File	played on PC at incoming ring requests, must be WAV or MP3 file
Form Width/Height	if 0 then size of the selected background JPG file is used
Audio (codec) and Protocol	settings depending from settings in used remote devices, must be the same
Voice Port	UDP port for incoming audio streams from remote Annuncicoms
Ring Port	UDP port for incoming commands, e.g. ring command
Discover,s	feature to check existing Barix devices, use 0 to disable, see following section "Point Button"
Command Port	UDP port for outgoing commands, should be Barix UDP command port

Additional (and optional) can be configured by editing the ICgraph.cfg directly only:

Password (**if set, then no config menu!**) , Title (for ICgraph window), Command button color

Clear Button (CB)

Button is optionally and can be used to clear/close any open communication.

Name	name of the button, is displayed on the button
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Comment	help / comment is displayed when the mouse points on the button

Voice Button (VB)

Button is necessary when audio communication function is used in ICgraph !

Name	name of the button, is displayed on the button when not pressed
Pressed Name	this name is displayed when the button is pressed
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Comment	help / comment is displayed when the mouse points on the button

Mute Button (UB)

This optional button can turn off/on the PC´s microphone (for communication to remote points) .

Name	name of the button, is displayed on the button when not pressed
Pressed Name	this name is displayed when the button is pressed
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Comment	help / comment is displayed when the mouse points on the button

Speaker Volume (SV)

Optional Volume slider to change the output volume on ICgraph application.

Works on the most PCs, but unfortunately not on all, then is has no function.

Xpos / Ypos	horizontal/vertical position of the slider on ICgraph window
Width / Height	size for the volume slider
Comment	help / comment is displayed when the mouse points on the slider

Log Window (LW)

Optional window for information about all activities on ICgraph, contains also informations about background activities and automated procedures .

Font size	select the size for the displayed information
Xpos / Ypos	horizontal/vertical position of the window on ICgraph window
Width / Height	size for the output window
Text color	select the color for the displayed information
Comment	help / comment is displayed when the mouse points on the window

Log Button (LB)

Optional button can turn off/on the Log window, if no Log button exists then the defined Log window is permanently displayed.

Name	name of the button, is displayed on the button when not pressed
Pressed Name	this name is displayed when the button is pressed
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Comment	help / comment is displayed when the mouse points on the button

Event Window (EW)

Optional Event window contains only information about current operations for the operator and all entries can be also selected from here by mouse instead of using the point buttons.

The use of this feature is recommended for larger installation with 30 ringing targets or more. So it is easier to retain the overview about tasks/activities or the sequence of rings.

Font size	select the size for the displayed information
Xpos / Ypos	horizontal/vertical position of the window in the ICgraph application
Width / Height	size for the output window
Text color	select the color for the displayed information
Comment	help / comment is displayed when the mouse points on the window

Event Button (EB)

Optional button can turn off/on the Event window, if no Event button exists then the defined Event window is permanently displayed.

Name	name of the button, is displayed on the button
Pressed Name	is displayed when the button is pressed
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Comment	help / comment is displayed when the PC mouse points on the button

Table Window (TW)

This is an optional feature, you can use it instead or also together with the graphical interface. It lists all defined points / targets in a table form with status information behind.

To make point buttons invisible you can assign the size 0 to the button or an unused place on the ICgraph window, e.g. *PB:Door2:0:0**:0:0**:192.168.1.177:3030:*

The "Table view" example (see page 77) shows a simple table view demo. Copy it into the ICgraph folder to activate it.

Font size	select the size for the displayed information
Xpos / Ypos	horizontal/vertical position of the window in the ICgraph application
Width / Height	size for the output window
Text color	select the color for the displayed information
Comment	help / comment is displayed when the mouse points on the window

Table Button (TB)

Optional button can turn off/on the Table window, if no Table button exists then the defined Table window is permanently displayed.

Name	name of the button, is displayed on the button when not pressed
Pressed Name	is displayed on the button when pressed
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window

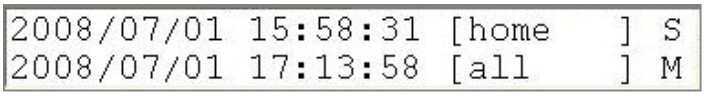
Width / Height	button size, a leading 0 on Width makes the button transparent
Comment	help / comment is displayed when the mouse points on the button

Record Button (RB)

Optional button can turn off/on the integrated recording function. This function can record outgoing and incoming audio communication to the ICgraph program folder (subfolder "Records").

Note, the recording function works only when the MP3 libraries are installed (see section "Installation") !

All created files have MP3 format with time stamp and button name in the file name. The extension "_S" at the end marks Stereo records for incoming & outgoing direction.



The extension "_M" marks Mono records (outgoing only), such files can be sent also to remote targets for announcements.
If the "Play window" function is used then recorded files can be selected from there to listen it on the PC or to stream it to selected targets/points ("_M"-files only) by double-clicking it.

Name	name of the button, is displayed on the button
Pressed Name	is displayed when button is pressed
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Comment	help / comment is displayed when the mouse points on the button

Play Window (YW)

Optional Play window shows live recorded (see Record Button) audio files and allows selecting the files. Double-clicking of one of the displayed files will play the MP3 file locally on ICgraph PC.

Font size	select the size for the displayed informations
Xpos / Ypos	horizontal/vertical position of the window in the ICgraph application
Width / Height	size for the output window
Text color	select the color for the displayed information
Comment	help / comment is displayed when the mouse points on the window

There are two different file types, "…_S" and "…_M", please see section Record Button for details! Only files with extension "…_M" (Mono) files can be sent also to selected targets.

Play Button (YB)

Optional button can turn off/on the Play window, if no Play button exists then the defined Play window is permanently displayed.

Name	name of the button, is displayed on the button
Pressed Name	is displayed when button is pressed
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Comment	help / comment is displayed when the mouse points on the button

Announcement Button (AB)

Optional button can send/stream a pre-recorded audio file to dynamically selected targets! Note, only audio files in WAV or MP3 format can be used for announcements. The audio files must be in **16-bit in mono** and have the **same frequency** as configured in ICgraph (IC line). If live-recorded ICgraph audio files are used then they must have an "….._M" extension. When MP3 files are used then the MP3 libraries are required, as described in section "Installation". Audio files in stereo or with other frequency will be played locally on ICgraph-PC only.

Name	name of the button, is displayed on the button
Pressed Name	is displayed on the button when is pressed
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Announcement File	select audio file (WMA or MP3) to stream/play
Comment	help / comment is displayed when the mouse touches the button

Labels (LL)

Optional Labels can be used to describe some items in the ICgraph window or to display information from remote points.

Name	name of the button, is displayed on the button
Font size	define the size of displayed text, default is 12
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window

Width / Height	button size, a leading 0 on Width makes the button transparent
Text color	define the color of the displayed text, default is black
Comment	help / comment is displayed when the mouse points on the button

Possible are also dynamic labels which can display requested status information of any UDP controlled Barix device, e.g. the current played song of an Exstreamer or an input of a Barionet.

ICgraph can sort the incoming messages and will display only the defined information for the field. It can filter by IP address, own name or HTML information, or also by a combination of both.

The filter must be defined in the Name for the line. More details are available later in this manual in the "Advanced User Section".

Over a Message Button (see following) a device can be periodically polled for status information and the dynamic label field can display these information.

For dynamic Labels you have to use in the "Name" field :

- "/[IP]/[tag]" -> dynamic Label (by gotten reply)

- if IP is empty -> reply from any IP will be checked

- if IP is "name" -> fix or dynamic IP of point "name" will be used

- if tag is empty -> all one-line reply text will be shown

- if tag is "<HTML>"-> all multi-line reply text with HTML formatting

- if tag is "<xxxx>"-> one-line reply text between <xxxx> and </xxxx>

- else -> only one-line reply text after tag will be shown

Message Button (MB)

The optional Message Buttons can send UDP commands to Barix devices to control those. With such control commands any API commands (check technical documentation of the Barix device) can be sent to control or to check status information (see also dynamic Label).

The "local" Message Button can also start a local application on the PC (e.g. browser).

There are three types of Message buttons :

* new active	will send UDP command to currently selected (active) targets/points
* new direct	will send the UDP command to a fix defined target
* new local	does not send UDP message, but can start/open application on local PC

Examples (from IGgraph.cfg – see "Advanced User Section"):

MB:Door Open:20:210:100:30:c=80::
(pulses Annuncicom relay for 3 seconds)

MB:Light on/off:600:718:99:40:setio,1,999:192.168.1.179:12301:
(toggles state of Barionet relay 1)

MB:Settings:870:725:120:30:>/Programs/Internet Explorer/iexplore.exe <IP>::
(open Internet browser with WEB settings for point)

The different message button types are displayed in different colors (red, blue and black).

Name	name of the button, is displayed on the button
Command	command string is send when button is pressed
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Comment	help / comment is displayed when the mouse points on the button
Sockets	target IP address & port number where to sent the command to
Send Period	optional – time in seconds when to repeat the command automatically
Line	instead of "Command", define here path to program on local PC

NOTE, an UDP command can contain every characters excepting the global delimiter (default "**:**"). If the "**:**" is needed in the UDP command (e.g. ***s=cfg://2***) then you have to replace all delimiters in all ICgraph.cfg command lines with any other not existing character (e.g: " ^ ", but not " # "). Also hex strings can be sent, for that start the command string with a leading " # ".

e.g.

*MB:Button name:20:210:100:30:***#***48454c4c4f::*

This sends the string "HELLO".

Point Buttons (PB)

The optional Point Buttons define the targets / remote devices. A Point button can be a single device (new individual), a group of devices (new group) or another ICgraph Master PC .

Name	name of the button, is displayed on the button
Xpos / Ypos	horizontal/vertical position of the button on ICgraph window
Width / Height	button size, a leading 0 on Width makes the button transparent
Sockets	target IP address & port number the for audio stream
Comment	help / comment is displayed when the mouse points on the button

ICgraph has a "Discovering" function for Barix audio devices in the same network. To activate this function assign no IP address to the point button (PB), for example :

*PB:Door 1:650:400:50:30**::**3030:*

For successful discovering the "Name" (e.g. ***Door 1***) in the PB line (in the ICgraph.cfg) must be the same (case sensitive) as in the Annuncicom/In-/Exstreamer configuration under "Own name"!

The advantage of this solution is the use of dynamic IP addresses (e.g. DHCP) and the optical notification when a unit is not available or not more reachable over network.

Undiscovered units are marked with a dark grey target button without functionality. Discovered units have light grey button as normal Point buttons with a fix IP address.

ICgraph is also Multi-Master capable, for details check the Multi-Master section on the next pages .

4.2 Configuring ICgraph over ICgraph.cfg file

For experts editing the ICgraph.cfg file is often the faster option than using the Config menu.

The complete configuration file is human readable, it´s in plain text and can be edited with any editor (e.g. notepad). If an ICgraph configuration is created "from zero" then you will miss the syntax description in your ICgraph.cfg, also it´s not in right sequence as here in the following example.

The file looks very long but the very most are only help comments. Not needed functions you can out-comment or remove. Really required are only the "IC" and the "VB" (for communication) line.

The syntax of the command lines below are marked in blue.

The red lines are the description of the syntax. The active configuration is marked in **bold**!

Not needed commands or buttons can be outlined with "#" (marked as comment) at the beginning of the line. More details you can find in following chapter "Advanced User section".

Following is ICgraph.cfg file from the example screen shot on page 81 (Door Control and Communication):

```
##############################################################################
# ICgraph main configuration:
# IC:MF:W:H:AF[SR]:PR:LP:RP:DT:CP:RF:[PW:[TL:[BC:]]]
# NB! if need, use ICx to set 'x' as new global delimiter instead ':'
# MF is map file (jpg), if empty -> usual background
# if MF exists and W=0 or H=0 -> the proper size by picture
# AF is audio format, mono: P(PCM MSB,default)/F(PCM LSB)/U(uLAW)/A(aLAW)/M(MP3)
# SR is sample rate, Hz: 8000,default/16000/22050/24000/32000/44100/48000
# PR is sending protocol (receiving auto): U(UDP,default)/R(RTP)
# LP is local voice UDP/RTP receiving port (default 3030)
# RP is local ring port (default 3040 for UDP RING request)
# DT is DISCOVER timeout (default 60 sec), if 0 -> disabled,
# if DT > 0 -> sends DISCOVER requests and checks replies
# if DT < 0 -> only checks replies (unit will be lost after 3*DT)
# CP is remote command port (default 12301 for UDP commands)
```

```
# RF is ring file (wav or mp3), if empty -> no ring sound
# PW is optional startup password, if empty or 0 -> no password
# TL is optional title for customization, if empty -> "Barix graph Intercom"
# BC is optional command buttons color (RGB,R:16-23,G:8-15,B:0-7 bits)
IC:house.jpg:0:0:P8000:U:3030:3040::12301:ringin.wav::Barix ICgraph:
##########################################################################
# any element below can be commented by # -> will disappear
# [~] marker does any element as invisible with start
# [#] marker does any element Name as invisible
# N is element Name, must be unique for all ICgraph
# X,Y,W,H are coordinates and sizes of rectangle element
# if 0W, any element will be transparent in passive state
# N2 is optional alternative name in pressed/active state
# FS is optional font size for text in element (default 12)
# TC is optional text color (RGB,R:16-23,G:8-15,B:0-7 bits)
##########################################################################
# Clear button
# CB:[~][#]N:X:Y:W:H:[[:]:]
CB:Clear All:20:70:100:30:::
##########################################################################
# Voice & mUte buttons
# VB:[~][#]N:X:Y:W:H:N2:[:]
# UB:[~][#]N:X:Y:W:H:N2:[:]
VB:Start voice:20:30:100:30:Stop voice:: # start/stop voice mode
UB:Mute ON:20:110:100:30:Mute OFF:: # Mute ON/OFF
##########################################################################
# any element below can be commented by # -> will disappear
# [~] marker does any element as invisible with start
# [#] marker does any element Name as invisible
# N is element Name, must be unique for all ICgraph
# X,Y,W,H are coordinates and sizes of rectangle element
# if 0W, any element will be transparent in passive state
# N2 is optional alternative name in pressed/active state
# FS is optional font size for text in element (default 12)
# TC is optional text color (RGB,R:16-23,G:8-15,B:0-7 bits)
##########################################################################
# Speaker Volume slider
# SV:[~][#][N]:X:Y:W:H:[[:]:]
# if W>H -> horizontal, else vertical slider
SV::20:150:100:10::: # current Speaker Volume
##########################################################################
# Log Button & Log Window
# LW::X:Y:W:H:[font size (default 12):[TC:]]
# LB:name:X:Y:W:H:name2 (pressed state):[:]
# if LB is absent -> LW is visible constantly
# TC is optional text color (RGB,R:16-23,G:8-15,B:0-7 bits)
LW::225:275:550:140::3355443: #
LB:Show LOG:13:313:110:30:Hide LOG:: # show/hide Log Window
```

```
##########################################################################
# Event Button & Event Window
# EW:[~][#][N]:X:Y:W:H:[FS:[TC:]]
# EB:[~][#]N:X:Y:W:H:N2:[:]
# if EB is absent -> EW is visible constantly (if no ~)
EW::225:275:520:140:18:3355443: #
EB:Show events:13:351:110:30:Hide events::
##########################################################################
# Table Button & Table Window
# TW:[~][#][N]:X:Y:W:H:[FS:[TC:]]
# TB:[~][#]N:X:Y:W:H:N2:[:]
# if TB is absent -> TW is visible constantly (if no ~)
#TW::225:275:520:100:20:255: #
#TB:Show table:10:330:0120:30:Hide table: # show/hide Table View
##########################################################################
# Record Button
# RB:[~][#]N:X:Y:W:H:N2:[:]
RB:Start record:13:389:110:30:Stop record::
##########################################################################
# PlaY Button & PlaY Window
# YW:[~][#][N]:X:Y:W:H:[FS:[TC:]]
# YB:[~][#]N:X:Y:W:H:N2:[:]
# if YB is absent -> YW is visible constantly (if no ~)
YW::225:275:550:140:20:: #
YB:Show records:12:427:114:30:Hide records:: # show/hide Records Table
##########################################################################
# Announcement/Playing Buttons
# AB:[~][#]N:X:Y:W:H:N2:AF:
# AF is path to audio file, for playing -> any audio format,
# for announcement -> only MONO with proper sample rate accepted
# AB:Announcement:13:465:110:30:Stop ANN:barix.wav:
##########################################################################
# Labels
# LL:[~][#]N:X:Y:W:H:[FS:[TC:]]
# if name has ".jpg|.gif" extention -> graphical Label from the file
# if name is "/[IP]/[tag]" -> dynamic Label (by gotten reply)
# if IP is empty -> reply from any IP will be checked
# if IP is "name" -> fix or dyn IP of point "name" will be used
# if tag is empty -> all one-line reply text will be shown
# if tag is "<HTML>"-> all multi-line reply text with HTML formatting
# if tag is "<xxxx>"-> one-line reply text between <xxxx> and </xxxx>
# else -> only one-line reply text after "tag" will be shown
LL:Door Control & Communication:200:15:0450:33:29:6684927:
LL:Volume:45:165:050:12::: #current Volume settings
LL:(c) Barix, 2010:24:514:090:20::0: # Barix copyrights
##########################################################################
# Messages buttons (can have some IP items for direct commands)
# MB:[~][#]N:X:Y:W:H:[>|#]text command:[IP1:port1:[IP2:port2:]...[SP:]]
```

```
# [>] marker is used to execute local command in this OS, where
# also possible substitutions <NAME> and <IP> for active points
# [#] marker converts HEX to binary command, where also possible
# substitutions <ID> and <BM> for own ID and active points Bitmap
# optional IP items are used for direct commands (without points)
# if IPx is "name" -> fix or dyn IP of point "name" will be used
# if an optional port is empty -> CP will be used
# SP is optional sending period, sec, if 0 or empty -> disable
MB:Door Open:20:210:100:30:c=80::          # Open door
# MB:Light on/off:20:330:100:30:setio,1,999:192.168.1.179:12301:
MB:Settings:20:250:110:30:>/Program files/Internet Explorer/iexplore.exe <IP>::
##########################################################################
# Points buttons (each can be with some IP items for group)
# PB:[~][#][*]N:X:Y:W:H:IP1:port1:[IP2:port2:]...[[+|-]ring file:]
# [*] asterisk is used for Operator points in Multi Master Mode
# if name has "=N" extension -> BARP ID number is N (1-1024)
# Please, set individual IP points before group IP points!
# if IPx is empty -> dynamic IP will be gotten from "name" unit
# if IPx is "name" -> fix or dyn IP of previous "name" will be used
# if portx is empty -> port of "name" (else LP) will be used
# optional ring file for the point, if empty -> no sound
# if optional ring file is absent -> RF will be used
# [+|-] optional RING action -> to make active/passive
PB:Meeting room:710:85:90:45:192.168.1.178:3030:
PB:Door 1:150:195:76:40:192.168.1.176:3030: # Front door
PB:Door 2:757:448:74:40:192.168.1.177:3030: # Back door
# PB:*Master 1:315:505:90:30:192.168.1.173:3030: # Master operator
# PB:*Master 2:462:505:90:30:192.168.1.172:3030: # Master operator
# PB:all:145:505:060:30:192.168.1.255:3030: # speak to all
### End of configuration ###########################################
```

There is no limitation for the number of buttons or targets/points on ICgraph.

As background picture any picture in JPG format can be used. If desired, created your own background picture in JPG format with any graphic program, e.g. Paint in Windows. When no background picture is used then the size of the application should be defined (in the "IC" parameter line) otherwise you have it always to enlarge the application window after startup.

The buttons must be not contained in the background picture, they are configured in the ICgraph.cfg or over the menu! All buttons a can be defined also transparent or invisible.

When the ICgraph.cfg is changed then the ICgraph application must be restarted to get the new changes active!

Note, each button name (e.g. message or point) must be unique in the ICgraph.cfg , otherwise the application will perhaps not properly work !

There is also a "quick info" feature which gets active when the mouse arrow points on any button. The quick info text you can add for each button behind the button configuration line after the "#", e.g. :

MB:Open Door:20:160:100:30:c=80: # Opens door for 3 sec
(the end of the "quick info" requires no delimiter !)

When the PC mouse is touching this button, then automatically the "quick info" field with the information "Opens door for 3 sec" appears. Each button can have a own quick info.

If you will use another existing example then copy all files from the desired example sub folder in the main program directory.

4.3 Password

The password protection (configurable in the "IC" parameter line in ICgraph.cfg file directly) is surely only very simple and no hard protection against hackers or similar. To increase the security you can hide the ICgraph.cfg or make this file inaccessible for others.

If no password is set, then the config menu is available by clicking with the right mouse button on the applications background. Any password or "0" disables the config menu.

4.4 Log file function

If ICgraph is started over the batch file it will log every activity on the application in the ICgraph.log . Per default this log file is renewed / deleted by reopening the ICgraph application.

To disable the function "Log to file" change the command in the ICgraph.bat to :

java -jar ICgraph.jar

Alternatively start the ICgraph.jar file directly without batch file.

To append (instead of deleting) new log entries to the LOG file by restarting ICgraph, change the start command in the ICgraph.bat to :

java -jar ICgraph.jar >>ICgraph.log

If multiple PC users should access the same ICgraph folder from a network share, then you have to disable the LOG file or to create for each user a separate BAT file with a separate LOG file.

Multiple users cannot access the same LOG file at the same time.

4.5 Multi-Master function

ICgraph can work also in a Multi-Master mode, means all the Annuncicoms can be controlled from two or more ICgraph PCs.

If one of the masters is communicating with an Annuncicom or Exstreamer, then the target button for this device is marked in red on all other masters, so they can see that this device is in use by any other ICgraph Master-PC. For all other masters the red target is not usable for any activities.

All Masters must be defined in the ICgraph.cfg in the Point Buttons (PB) section, they must be marked with a "*" at the beginning of the button name , e.g. :

*PB:*Master1:20:600:100:30:192.168.1.172:3030:*

If you use ICgraph in the Multi-Master mode then you have to make sure that also the Annuncicom devices uses a dynamic mode (e.g. origin source), that it can respond to each master!

On the Annuncicom standard firmware you have a feature "***origin source***", on the ICgraph ABCL Full-duplex software is "***Destination Port = 0*** " according to "origin source" setting!

If you will use the ring button on the Annuncicom, then you should define for the ring the IP address of one of the masters, this master will receive the ring and forward the information to all other masters.

The ring sound/notification will appear on all masters. When this ring request is answered by one of the masters, the target button resets automatically to normal state on all masters.

All masters are exchanging status information over their "Ring Port" (per default UDP Port 3040).

Note, by using the dynamic modes on the Annuncicom, the message buttons are working only after communication! Opening the door directly after incoming ring will not work !

If you use the LOG file function and you start the ICgraph from a shared network folder then it needs multiple batch files (one for each master) to start to the application. Each PC needs to write in his own log file.

In that case create new ICgraph1.bat which writes to another log file (e.g. ICgraph1.log).

Otherwise the application on the second PC will not start, because both PCs cannot write the same log file at the same time! Or disable the LOG file function (see section 4.4).

Voice communication between the Master-PCs is also possible.

4.6 Auto-Discovering Mode

ICgraph allows to discover Barix devices in the local network. Over the point button color the status of the device can be checked. If ICgraph discovers a device in the local network then the color of this point button will change from dark grey to light grey.

necessary settings to activate Auto-discovering mode :

- make sure a DT value (Discover time) is set in the IC line, default is 30 seconds , e.g.:

*IC::1000:600:P8000:U:3030:3040:**15**:12301:ringin.wav:*

- the button name of the Point buttons must match the "Own Name" in the device´s web setup

- the Point button (PB) has no IP address configured in the PB line, the IP addresses is learned automatically from the response of the devices , e.g.:

*PB:Door 1:10:100:100:30**::**3030:*

Note, when additionally to the single point buttons is also a Group point button (a point button which lists all the single point buttons) used, then this group button is also changing the color when of the of the listed devices is not discovered. This function can be used in bigger installations the keep the overview of live status of all the devices, e.g. also when some point buttons are hidden because they are used in sub layers.

Example:

*PB:Door 1:10:100:100:30**::**3030:*

*PB:Door 2:50:100:100:30**::**3030:*

PB:Both Doors:10:100:100:30:Door 1::Door 2::

4.7 Announcement of pre-recorded audio files

When a pre-recorded audio file is sent to the Barix audio device, then it´s played on ICgraph locally and on the selected Barix devices. But when the audio file has the "wrong" format, then it will be played only locally on the ICgraph PC, and not on the Barix device . The correct format for the audio file is :

- WAV or MP3 format (MP3 format needs MP3 libraries)

- mono (!)

- same frequency as used in IC line (!), means when there is defined e.g. :

*IC::0:0:P**24000**:R:3030:3040::12301:ringin.wav:::*

In this case the audio file must have 24000 Hz mono !

4.8 Work with incoming network messages

Incoming network messages could be displayed in ICgraph (e.g. over dynamic labels) or could be used in macros to activate those. For both it is senseful to activate general tracking of incoming network messages with the following config line :

LL://:0:0:0:0:

Note, this is not necessary for the normal RING procedure ! **Attention**, this line will also disable the RING function.

When this config line is used, then ICgraph can e.g. poll devices with a command (MB button) and display (dynamic labels) response

e.g.

*MB:Input 2:0:0:0:0:**getio,202**:192.168.1.25:12301:**10**:*

*LL:/192.168.1.25/**state,202,**:50:100:30:30:*

The MB button above is requesting the Barionet status of Input 2 every 10 seconds, the response (e.g. state,202,x) behind "state,202," will be displayed in ICgraph window.

4.9 Migration from the oldest to newer ICgraph version

The latest version 2.02 has no changes to the previous version 1.46. But there were some changes from the very first ICgraph version to ICgraph version 1.46 in the configuration syntax. This means the ICgraph.cfg file from earliest ICgraph versions is not compatible with the current version. Here are the steps to get your old ICgraph.cfg file in the new version working :

- PTT Button is now Voice Button called

e.g. old: *PB:Start voice:20:100:100:30:Stop voice:*

new: ***VB****:Start voice:20:100:100:30:Stop voice:*

- Point Buttons are starting now with PB, please add "PB:" at the begin of each Point Button

e.g. old *: Door1:150:195:76:40:192.168.1.176:3030:*

new : ***PB:****Door1:150:195:76:40:192.168.1.176:3030:*

- Audio Format in IC -line changed, e.g.:

old
IC:House.jpg:0:0:P:U:3030:3040::12301:ring.wav::Barix ICgraph:

new
*IC:House.jpg:0:0:****P8000****:U:3030:3040::12301:ring.wav::Barix ICgraph:*

Also the button style has changed a little bit, so maybe it needs also some cosmetic changes.

Because of a new design mask (was necessary to get MAC compatible) the style and the size of the buttons/points is little bit different.

Since version 1.46 the recording function is changed, the oldest version could record only in WAV format. The version 1.46 and newer records now only in MP3 format (also if any other audio format is selected in IC line) to save hard disk space.
For that reason the MP3 libraries (see section "Installation") are definitively necessary, when the recording feature is used !

5 Advanced user section

The ICgraph program file is the ICgraph.jar. When this is starting, it checks for the ICgraph configuration file, the ICgraph.cfg. If there is no ICgraph.cfg existing it will open a blank window. By using the ICgraph config menu it will create an ICgraph.cfg file and add entries according to the setup. Over the ICgraph setup menu can be used approximately 90 percent of the features. All features (e.g. also password and macro) are only available by editing the ICgraph.cfg file directly.

For professional users editing the ICgraph.cfg file directly could be the most effective way. In this case the lines in the config file can be written in the right sequence for a better overview, otherwise they are unordered (when menu is used).

The following section describes the syntax in the ICgraph.cfg and gives more details.

5.1 ICgraph.cfg

ICgraph main configuration (IC)

 # IC:MF:W:H:AF[SR]:PR:LP:RP:DT:CP:RF:[PW:[TL:[BC:]]]

*# NB! if need, use IC**x** to set '**x**' as new global delimiter instead '**:**'*

This line describes the main general parameters of ICgraph at all, starts always with prefix "IC", and has the fixed syntax (blue color line above). Call your attention that a global ICgraph delimiter (default ":") is not fixed. You can use any another char if need, but you must be sure that this delimiter will not be used inside any ICgraph parameter later. So, ICgraph will recognize automatically the character after "IC" prefix as the new global delimiter for the complete CFG file.

Also you can see that some parameters and delimiters are enclosed by square brackets – it means that you can omit these values as optional. Almost all other parameters in CFG file also

can be omitted (then ICgraph will use the default values) but the proper delimiters must be left!

 # MF is map file (jpg), if empty -> usual background

 # if MF exists and W=0 or H=0 -> the proper size by picture

The map file is a picture (usually in JPG format) that ICgraph uses as background from the left top corner of window. When this parameter is omitted the ICgraph just uses a light gray background color. The parameters W (width) and H (height) are usually obligatory and give the ICgraph window size on the screen, however if one (or both) size is zero, ICgraph will automatically use the proper size of given picture (or collapsed window if a map file is absent). At last, when a size parameter is omitted, then ICgraph will use default size 300 pixels instead. ICgraph does not scroll a picture when the size is more than the given window or even screen – it´s in your responsibility to fit a proper picture size at the beginning of your project.

 # AF is audio format, mono: P(PCM MSB,default)/F(PCM LSB)/U(uLAW)/A(aLAW)/M(MP3)

 # SR is sample rate, Hz: 8000/16000/22050/24000/32000/44100/48000

The audio format and sample rate you can define over right mouse button menu but it allows using only the main encoding formats of Barix devices. Over editing the ICgraph.cfg file directly it is allowed to use considerably more variants that you can use also for other tasks, for example, in VoIP system. However ICgraph always uses mono audio format because it´s intercom and paging system firstly.

 # PR is sending protocol (receiving auto): U(UDP,default)/R(RTP)

 # LP is local voice UDP/RTP receiving port (default 3030)

 # RP is local ring port (default 3040 for UDP RING request)

The ICgraph can use raw UDP and RTP protocols for unicast, broadcast, and multicast (for paging) sending audio packages. With voice stream receiving the ICgraph automatically

recognizes the protocol of packages gotten on local voice port (default 3030 if omitted). Also the ICgraph can catch the control UDP messages gotten on local "ring" port (default 3040 if omitted). The ICgraph uses this port for getting:

- acknowledge and discover messages from Barix devices
- mutual status and sync messages in ICgraph Multi-Master mode
- reply messages from Barix devices for ICgraph dynamic labels
- secret macro commands from remote operators or devices
- DOOR RING requests from Barix Annuncicoms

 # DT is DISCOVER timeout (default 60 sec), if 0 -> disabled,

 # if DT > 0 -> sends DISCOVER requests and checks replies

*# if DT < 0 -> only checks replies (unit will be lost after 3*DT)*

This parameter defines the behavior of ICgraph by discovering Barix devices, it allows automatically to recognize the devices with dynamic IPs and to watch their live status on-line in network. If this value (default 60 sec) is more than zero, the ICgraph sends the broadcast discover requests (c=65535) within this period and checks incoming replies to identify by name the Barix Annuncicoms, Exstreamers and Instreamers. If a device does not reply for more than three times of these value, the status is changing to dead. Alive or dead status is shown on screen (color of point button). If this value is less than zero, then ICgraph does not send the broadcast discover requests, but checks the proper "replies". It allows discovering of active Barix devices that send these "replies" themselves even if they are out of the local network. Beside that the same discover method also is used for Barix devices with Paging Client SW that send the BARP paging status messages to paging status port (see below).

 # CP is remote command port (default 12301 for UDP commands)

The remote command port is a UDP port (usually 12301) that the Barix devices uses for getting remote commands from

ICgraph or another operator. For example, ICgraph sends to this port the mentioned broadcast discover request or command "OPEN DOOR for 3 sec" (c=80), etc.

 # RF is ring file (wav or mp3 w/o header), if empty -> no ring sound

The ring file is proper sound file that ICgraph will play (with getting DOOR RING request on local "ring" port) together with magenta color notification for proper device point button. Usually it is a normal WAV file. If you want to use MP3 file, you must have installed the proper MP3 extension libraries. If this parameter is omitted, ICgraph will play no sound on DOOR RING request at all.

 # PW is optional startup password, if empty or 0 -> no password

The optional startup password is open text in CFG file and not really secret protection – it only blocks accidental start from shortcut (of course, to increase the security you can hide the CFG file or make this file inaccessible for others by OS means). If the password is omitted, the ICgraph will start without password protection at all. If the password is set, the ICgraph will wait 10 sec for the correct password, else it will exit. Also if the password is set, the right mouse button menu cannot be used for configuration (only for Restart and Exit). There is one special case - if the password is "0" (zero) , then no password protection, but the right mouse button menu is also disabled.

 # TL is optional title for customization, if empty -> "Barix graph Intercom"

The optional title you can use to show your own text as the ICgraph window title (for example, to show your project name). If it is omitted, the ICgraph will show the standard title "Barix graph Intercom". Also you can use for additional customization your own icon – just named "barix.jpg" and placed instead of the original Barix icon file in ICgraph directory. Beside that you can add your own data in LOG file by using own text instead "IC" line comment after "#" char (here is "comment to LOG with startup", see below).

 # BC is optional command buttons color (RGB,R:16-23,G:8-15,B:0-7 bits)

This optional parameter sets a new general color for command buttons in ICgraph. If it is omitted, the ICgraph uses default "metal" color. To set a new RGB color you should convert the decimal values (0 – 255) for Red, Green and Blue to general decimal value = (R*256+G) *256+B.

Here is example of ICgraph main configuration line:

IC:map.jpg:952:697:U24000:R:3030:3040:30:12301:ringin.wav:: #comment for LOG file

This config line means e.g.:

- background picture from file "map.jpg"
- window with width of 952 pixels and height of 697 pixels
- uLaw (G.711) 24 kHz audio format and RTP protocol for audio stream
- local voice port 3030 and local "ring" port 3040
- 30 sec period for broadcast sending to port 12301 of Barix devices the discover requests
- DOOR RING sound from file "ringin.wav"
- text "comment for LOG file" for customization output in LOG file/window at ICgraph startup

General configuration rules and parameters in ICgraph.cfg

any element below can be commented by # -> will disappear

Each ICgraph element is described by one line in CFG file. Generally the order of elements is free, but you should follow logic – if a new element configuration has reference to another element, then this element should be described before. Any element can be out-commented by using the "**#**" char in the first position of configuration line – after restart ICgraph will not use/display the out-commented element anymore.

 # [~] marker makes any element as invisible with start

 # [#] marker makes any element Name as invisible

 # N is element Name, must be unique for all defined ICgraph items

The main parameter for any ICgraph element is Name! The Name must be unique in all ICgraph because other elements can use the Name of this element as reference. If needed, you can use the special optional markers before the name:

- marker "**~**" will hide this element constantly or temporary, i.e. ICgraph will operate with this element as usual, but the element will be invisible – such element in future can become visible again by using the proper marker "**=**" in macro button (see below)
- marker "**#**" will hide only name of this element – it can be useful, for example, to locate transparent elements on map picture that already has all necessary decorations

Some ICgraph elements (volume slider, info windows) have optional names – you should use a name only if you are going to control visibility of these elements by macro buttons (see below).

At last, for any ICgraph element you can use the name with HTML formatting for multi-line output, specific color or font, or other decoration. The same you can use also for optional alternative names and mouse point comments (see below).

 # X,Y,W,H are coordinates and sizes of rectangle element

 # if 0W, any element will be transparent in passive state

The coordinates (X,Y) and sizes (W,H) of rectangle area for a element always follow the element name. Also you can constantly hide the element by using zero values for width and height of the element. Beside that the leading zero before "width" value has a special sense – the element will be transparent in passive state, e.g. for viewing background picture.

 # N2 is optional alternative name in pressed/active state

Some elements (toggle command buttons) can have this optional different name in the active state (usually shown with yellow background color). If you want to use the same name, just repeat the element name in this parameter. If you want to hide the name in the active state, just leave this parameter empty.

 # FS is optional font size for text in element (default 12)

 # TC is optional text color (RGB,R:16-23,G:8-15,B:0-7 bits)

Some elements (info windows) can use these optional parameters for additional decoration. You can tune the size of text and text color as RGB value (see BC description above). If parameters are omitted, the ICgraph will use the default size 12 and black as foreground color.

At last, for any ICgraph element you can use in the end of its CFG line the mouse point comment that starts after char "**#**" – The ICgraph will show this comment automatically when the mouse will shortly stop over this element.

According with logic, usually you should place the elements in following order:

- command buttons and windows
- point buttons (first individual points, then group points)
- message buttons and label elements
- macro buttons

Command buttons and windows configuration in ICgraph.cfg

Following are all buttons and windows explains and shown by an config example.

Clear button (CB)

 # CB:[~][#]N:X:Y:W:H:[[:]:]

CB:Clear All:10:10:0120:30::: # total clearing and disconnect

The Clear button allows very fast to restore the source passive state for all points and to stop intercom or page stream to Barix devices. This example shows the Clear button with name "Clear All", proper coordinates and sizes, transparent, and mouse point comment "total clearing and disconnect". It´s not recommended to use this button in Multi-Master mode !

Voice button (VB) & mute button (UB)

 # VB:[~][#]N:X:Y:W:H:N2:[:]

 # UB:[~][#]N:X:Y:W:H:N2:[:]

VB:Start voice:10:50:0120:30:Stop voice:: # start/stop voice mode

UB:Mute ON: 10:90:0120:30:Mute OFF:: # Mute ON/OFF

These buttons are used for the standard intercom voice connection with active points. Usually for intercom mode the Voice button is constantly active and an operator switches real connections by mouse clicking on the necessary points. If is needed to switch own microphone OFF, an operator can press Mute button. This button is a toggle button, you can use the alternative button name in active/pressed state.

The Voice button can be also used for BARP intercom (not paging !) functionality, in this case it´s using the parameters (port and priority) of the Page button. When used with BARP clients

then the voice button must be pressed before the Point button/s is/are selected. When ICgraph detects that a BARP client (id=x) is used then it sends BARP commands before communication. Note, bi-directional BARP communication must be requested (ringed) by the BARP client first.

Page button (PG - for BARP paging & control only)

 # PG:[~][#]N:X:Y:W:H:N2:Pr:IP:port_a:port_c:port_s:

 # Pr is BARP Priority parameter 0-255 (default 100)

 # IP is multi/broadcast IP for audio/control/status (default broadcast)

 # port_a is target port for sending audio (default 5555)

 # port_c is target port for sending control (default 5556)

 # port_s is local port for receiving status (default 5557)

PG:Start page:800:50:120:30:Stop page:200::::: # start/stop page

This button / function is only required, when the special Barix Paging Client or Iclient software is used on the Barix devices! With Barix standard firmwares or ICgraph ABCL application this button is not necessary. In the normal mode you only need the Voice button for communication.

The Page button supports the paging mode (uni-directional) for Barix devices with Paging Client Software using the special BARP protocol (BARix Paging protocol). For a better functionality select first the points/targets and then press the Page button thereafter, otherwise the paging starts little bit delayed.

When the Page button is pressed then ICgraph sends a control command and starts paging thereafter. Both is sent as broad- or multicast, so all BARP clients can receive the command and check it. In the control command are the target BARP IDs and the priority defined. The priority, the port numbers and the broad- or multicast address are taken from the Page button configuration line.

ICgraph allows to configure the Voice and Page buttons

simultaneously, but you should use them only alternate because they use the same active points set. Theoretically it´s possible to use a combination of Barix devices with Paging Client SW (BARP mode) and FDx-Intercom SW (normal Voice mode) and to use both modes in the same network at the same time.

The Voice button is supporting also the BARP protocol in the Hdx – Intercom mode when used together with BARP points (id=x) and the Voice button is pressed first, see under "Voice & Mute buttons".

Speaker volume slider (SV)

 # SV:[~][#][N]:X:Y:W:H:[[:]:]

 # if W>H -> horizontal, else vertical slider

SV::140:10:020:230::: # current Speaker Volume

The Speaker Volume slider allows changing the ICgraph output volume on-the-fly. Unfortunately this feature is HW and OS dependent, ICgraph usually sends message to Log if using the Speaker Volume slider is not possible. The slider allows not only changing the volume from ICgraph, it shows the external volume change from other PC applications also.

Log button (LB) & Log window (LW)

 # LW:[~][#][N]:X:Y:W:H:[FS:[TC:]]

 # LB:[~][#]N:X:Y:W:H:N2:[:]

 # if LB is absent -> LW is visible constantly (if no ~)

LW::180:10:520:230::39168: #

LB:Show LOG:10:250:0120:30:Hide LOG:: # show/hide Log Window

Beside this Log window function all the Log output can be written also in a Log file (by console redirection in your OS,

see chapter 4.4 Log file function). The LOG window will display all ICgraph activities (even background activities) with current time stamp on the fly. Log button controls visibility of Log window, although now you can use the macro button for it instead. If Log button is absent, the Log window will be shown constantly (if not marked with "~").

All written/displayed output in Log window or Log file can be used for automated macros, more details are in the following Macro section.

Event button (EB) & Event window (EW)

 # EW:[~][#][N]:X:Y:W:H:[FS:[TC:]]

 # EB:[~][#]N:X:Y:W:H:N2:[:]

 # if EB is absent -> EW is visible constantly (if no ~)

EW::180:440:520:100:20:16711680: #

EB:Show events:10:290:0120:30:Hide events: # show/hide Event Table

The Event button can display/hide the Event window. In the Event window are listed all current communication activities with points on-the fly, e.g. when points are in communication with ICgraph or have ringing. All entries have time stamp and are sorted by time order. When a call is finished cleared, then the entry will automatically disappear from the event window. The Event windows shows the status of all none idle Barix devices, even if used by other masters (in Multi-Master mode).

The Event window entry can be used for point selection (when they have ringed) and for direction control (in half-duplex mode) to react directly.

The event window is a recommended feature on ICgraph installations with a larger number of clients. It helps the operator to retain the overview (e.g. who ringed first ...).

Table button (TB) & Table window (TW)

 # TW:[~][#][N]:X:Y:W:H:[FS:[TC:]]

 # TB:[~][#]N:X:Y:W:H:N2:[:]

 # if TB is absent -> TW is visible constantly (if no ~)

TW::180:550:520:100:20:255: #

TB:Show table:10:330:0120:30:Hide table: # show/hide Table View

This button and window you can use like Event window, it shows the status of all points on-the-fly in the table of points and allows to use table view instead or together with graphical view. But here all points are permanently displayed.

Record Button (RB)

 # RB:[~][#]N:X:Y:W:H:N2:[:]

RB:Start record:10:370:0120:30:Stop record: # start/stop talk recording...

The Record button is used to record the current conversation on-the-fly, just click this button for start of recording and then again for finish. The ICgraph automatically saves the full-duplex (non-MP3 stream) conversation in Stereo MP3 file with proper sample rate in directory RECORDS with name *YYYY_MM_DD_hh_mm_ss_[name]_S.mp3*, where "*name*" is name of active point for this conversation, and suffix "*_S*" means that the file recorded as quasi Stereo – left channel for "ICgraph to point" direction, and right channel for "point to ICgraph" direction. However, if you select a group point (when obviously you use only one direction to notify) or use half-duplex (MP3 stream) conversation the ICgraph records only Mono MP3 file with suffix "*_M*". Such files you can be used for direct announcement to points too (see below).

Note: For saving/recording an audio file to your hard disk this ICgraph version is not supporting the WAV format anymore (only to MP3 file). Therefore, if you want to use the recording feature then you must have installed the proper MP3 extension libraries (please see chapter „Installation")!

Play button (YB) & Play window (YW)

 # YW:[~][#][N]:X:Y:W:H:[FS:[TC:]]

 # YB:[~][#]N:X:Y:W:H:N2:[:]

 # if YB is absent -> YW is visible constantly (if no ~)

YW::180:245:520:100:20:: #

YB:Show records:10:410:0120:30:Hide records: # show/hide Records Table

This button and window you can use for direct access to files recorded by Record button (see above). Play button controls visibility of Play Window that shows the list of MP3 files in RECORDS directory. You can select any file and play it in ICgraph by mouse double-click. To stop playback before finish you can just select another file in this list or close Play window by clicking on Play button again (here this button will have at this moment the alternative optional name "Hide records"). If the played file is Mono and has the current ICgraph sample rate format, you can play this file on ICgraph PC and simultaneously send this file as audio stream to selected points in active Voice or Page mode as announcement.

Announcement button (AB)

 # AB:[~][#]N:X:Y:W:H:N2:AF:

 # AF is path to audio file, for playing -> any audio format,

 # for announcement -> only MONO with proper sample rate accepted

AB:Start ANN:10:450:0120:30:Stop ANN:barix.mp3: # play "Welcome to Barix"

AB:RING ON:10:490:0120:30:RING OFF:ringin.wav: # playing usual RING sound

The Announcement/Playing buttons allow to play any WAV or MP3 files from any given place of your PC. You should just point the necessary path to the desired file in configuration line. As soon as you click this button, ICgraph will play this file until you click the button again or file will finish itself (then the button automatically return to source passive state and name). When the played file is Mono (16-bit) and has the current ICgraph sample rate format (defined in IC line), you can play this file on ICgraph-PC and simultaneously send it as audio stream to selected points in active Voice or Page mode as announcement or pre-gong. ICgraph sends during playback the important info in Log, and you can check directly in Log the original file format, converted formats, availability of the file for announcement, etc. By using macro (see below) you can send the necessary announcements, voice commands or pre-saved directives to different points or group automatically. If the audio format is not correct the audio file will be played only locally on the ICgraph PC.

Point button (PB)

 # PB:[~][#][*]N:X:Y:W:H:IP1:port1:[IP2:port2:]...[[+|-]ring file:]

 # [*] asterisk is used for Operator points in Multi Master Mode

 # if name has "=N" extension -> BARP ID number is N (1-1024)

 # Please, set individual IP points before group IP points!

The Point buttons are graphical equivalents of Barix devices. By common sense there are three main kinds of Point buttons:

- individual (a separate Barix device – Annuncicom, Instreamer, Exstreamer, Barionet)
- master (any copy of ICgraph in Multi-Master mode)
- group (join point for some individual or master points together)

Formally all kinds of points are equivalent each other – ICgraph fulfills all actions for all points by the same way and generally you can use only individual points (especially by using macro buttons for grouping). Nevertheless the ICgraph uses the difference for some additional services, e.g. for exchanging status and sync messages between ICgraph operators (e.g. master points that have prefix "*" before button name). Also for supporting BARP protocol a point name can use suffix "**=N**" where **N** means an ID number of a Barix device (configured in setup).

Generally the order of points in CFG is free. But for decreasing ICgraph start time it is strongly recommended to use a logical order, e.g. to locate the individual points before the group points because the group points can use references to the individual points. Else ICgraph will try to recognize any such reference as external DNS name and spend the considerable time for it.

 # if IPx is empty -> dynamic IP will be gotten from "name" unit

Usually it is possible only for the individual points that use the dynamical IP address from DHCP server (it´s more comfortable for Administrator of bigger LANs and easier for possible replacement of Barix devices). ICgraph will automatically try to recognize such Barix devices by its "Own Name" / ID with using

DISCOVER method or BARP status messages. Also an additional advantage is that you can see on-line status of all devices and react to a possible damage. If this field is not empty then ICgraph will try to recognize it as real IP. Therefore you can use also a DNS name . If ICgraph can get the real IP the point button will be shown as light gray or transparent, otherwise it´s dark gray.

 # if IPx is "name" -> fix or dyn IP of previous "name" will be used

It is possible only for the group points that use the names of individual points as references / aliases. The group point will be shown as recognized only when all aliases used in its CFG line are recognized by ICgraph.

 # if portx is empty -> port of "name" (else LP) will be used

Usually for voice streaming to any Barix device of your LAN you use the same port (typically the LP from the main "IC" line, default 3030). However by your own reasons you can tune the local voice port of any point individually and send the stream to different ports. For example, it could allow decreasing traffic in a big LAN by using the broadcast stream from individual points to the specific ports for the specific groups instead using the group points that really send many unicast streams. Also theoretically you can write for Barix device an application that will receive the voice stream from several different ports and use it from one or some ICgraph for access to different names of the same physical Barix device. If you omitted the port parameter, the ICgraph will take automatically for group point the port of the proper individual point (by alias name) or, if this port is also omitted, the general LP port.

 # optional ring file for the point, if empty -> no sound

 # if optional ring file is absent -> RF will be used

 # [+|-] optional RING action -> to make active/passive

Usually you use the same RING sound (RF from main CFG line) for any ring request. But for each point you also can use a specific sound (an optional ring file), then the operator will react automatically to the ring request by ear. If this parameter field is used but empty the sound for this point will not be played at all, e.g. by such way you can cancel RF parameter for specific individual point.

Beside that by using the prefix you can use the ring request to make the proper point automatically active (prefix "**+**") or passive (prefix "**-**"). For example, it can be useful if you would like to answer to this point automatically by ring request, then (when Voice mode is already active) such ring request will automatically activate this point and start voice conversation.

Or vice versa, you want to use the ICgraph in order to see and log who is late to job place – then (when firstly all points were selected and each person should press ring button on his device) you can see all truants at any moment.

Some examples:

PB:Door A: 20:350:070:30:192.168.1.25:3030: # User 1

This point is a typical Barix intercom device with own name "Door 1" and fix IP address and port number.

PB:Door B: 20:400:070:30:::notify.mp3: # User 2

This point is similar as above but has a specific ring tone from file "notify.mp3". Also it is using no IP address or port number, because it is using Discovering feature to detect the IP address.

*PB:*M1:750:450:070:30:192.168.1.50:: # Master Operator*

*PB:*M2:750:500:070:30:192.168.1.53:: # additional Operator*

These points are the master points – usually the master points have the fixed IP. The ICgraph automatically marks the own point as busy (red). Also when another operator talks with a point, the sync messages show this info on the screen of your ICgraph also as busy (red) for both. The similar sync messages also show the info about ring request activation/deactivation even when this request is gotten by another master. It allows each operator to see the same state of your intercom network and to act independently. Beside that, if needed, the operator can talk each other as with any another point and agree their actions. Call you attention that Multi-Master mode works correct only when all operators use the copies of the ICgraph with the same CFG file.

PB:all: 650:400:070:30:Door A::Door B:: # user1& user2 together

This is a group point, practically using this point is the same as using macro (see below) for activation these individual points ("Door A" and "Door B") together.

PB:brcst:650:200:070:30:192.168.1.255:: # broadcast

This formally individual point can be used as real "all group" point by using the broadcast IP for this LAN. You can page your messages to all points by using usual Voice mode, because of the existing IP address setting the point is automatically recognized (transparent immediately).

PB:INstr:650:250:070:30::: # Instreamer

It is an usual point but you are going to use it for listening from Instreamer (mono only). The ICgraph must automatically discover the Barix Instreamer by own name "INstr", show that this device is accessible (transparent) and workable (green blinking), then you can activate this button (yellow) and listen the stream from Instreamer, however in such case ICgraph will work in full duplex mode and automatically send the useless voice stream to Instreamer, therefore it is better to double-click the point (green) and stop sending from ICgraph.

PB:door=41: 650:300:070:30::: # Exstreamer in the Lobby

This point has suffix "=41", e.g. can be used in ICgraph Page mode. According with BARP protocol, when this point is active, the ICgraph in Page mode will send the special binary messages to target control port (port_c) where it will mark the bit 41 in the point Bitmap field. The Paging Client SW on this Barix device will accept these messages and (if the current ICgraph page priority level is enough) to activate receiving the page stream on to the target audio port (port_a).

Message button (MB)

 # MB:[~][#]N:X:Y:W:H:[>|#]text command:[IP1:port1:[IP2:port2:]...[SP:]]

The Message buttons are used to send a command to the Barix device or call a command line. The ICgraph uses the following variants of Message buttons:

- active (sends UDP message to all active points)
- direct (sends UDP message to the sockets specified in CFG line)
- local (calls the OS command line with parameters of the active point)

Formally the Message buttons of ICgraph you can use to control any Barix or other devices.

The advantage of Barix devices is that you can easy program them and agree the commands and replies in order to create the very complex system by easy means.

 # [>] marker is used to execute local command in this OS, where

 # also possible substitutions <NAME> and <IP> for active points

The marker "**>**" as start char of the text command means that it is the local Message button and the following message (text command) is the call of the command line for this OS. You can use in this command line two types of substitutions: the name and the IP address of the active point. If you have activated some points the calls will be fulfilled in series. Call you attention that generally you must close these call windows before exit from ICgraph at all.

 # [#] marker converts HEX to binary command, where also possible

 # substitutions <ID> and <BM> for own ID and active points Bitmap

The marker "**#**" as start char of the text command means that the following text is a hex string that ICgraph must convert to binary array and send as active or direct message. Usually it is used for supporting the commands of BARP protocol. Therefore

you can use here two specific BARP substitutions: the own ID number of the master point of this ICgraph (if known, else 2 zero bytes) and the point Bitmap field (1024 bits with set bits of the active points). However generally you can use the binary messages instead text messages anywhere (for example, by security reasons).

 # optional IP items are used for direct commands (without points)

 # if IPx is "name" -> fix or dyn IP of point "name" will be used

 # if an optional port is empty -> CP will be used

 # SP is optional sending period, sec, if 0 or empty -> disable

If after text command there is a list of sockets it is the direct Message button and this message will be sent directly to these sockets. You can use the fixed IP (including DNS names) or alias names of already mentioned Point buttons – obviously, the message will be sent really only if the proper IP is already resolved or recognized. Also if the port is omitted the ICgraph will use CP from the main CFG line (default 12301).

The direct message can be sent manually by clicking on this button, but also can be sent periodically and automatically if its CFG line has the optional sending period. Usually it is used for getting automatic replies from the Barix devices in order to control on-the-fly their status and to show it on the ICgraph application screen by using dynamical Labels (see below).

Some examples:

MB:Open Door:10:130:0120:30:c=80:

This Message button sends the command (c=80) to all selected points / targets (Annuncicoms). "c=80" is the open door/relay command. So messages can be sent dynamically to selected targets.

MB:Open Door:10:170:0120:30:c=80:192.168.1.25:12301::

This Message button sends the same command as before but only to the defined IP address and port number (without point button selection).

*MB:Open Door:0:0:0:0:getio,1:192.168.1.20:12301:**30**:*

This Message button is invisible and sends every 30 sends the same command (getio,1) to a fix IP address (e.g. Barionet) to request relay status. Button is always active, must not be pressed or released.

MB:CMD:10:130:0120:30:#733d6366673a2727320d:

This Message button sends the command "s=cfg://2" to all selected points (Annuncicoms). Usually you would not be able to send a ":" in the command because it is already used as delimiter in ICgraph. But with the introducing marker "#" the complete command string can be written in HEX.

MB:Settings:10:210:0120:30:>/Program Files/Internet Explorer/iexplore.exe <IP>::

This local Message button is used to call WEB settings for any active point by using IE browser.

MB:open: 0:0:0:0:c=78: # invisible Open Door

MB:close:0:0:0:0:c=79: # invisible Close Door

These invisible buttons can be used by macro (see below) to open/close a door of an active point.

MB:BGM
OFF:800:170:120:30:#424152000106000000000000000000000000000000<ID>0
0000000000000000000000100000000000<BM>:224.1.1.1:5556:

MB:BGM
ON1:800:210:120:30:#424152000106000000000000000000000000000000<ID>0
0000000000000000000010100000000000<BM>:224.1.1.1:5556:

These buttons send the binary BARP control commands (here the commands for controlling the background MP3 channels in Paging Client SW) to multicast group given by IP 224.1.1.1. The active points that will really react on these commands are given indirectly by the points Bitmap field that will be automatically inserted here instead <BM>.

Label (LL)

 # LL:[~][#]N:X:Y:W:H:[FS:[TC:]]

The Labels are used to show any static or dynamic info on ICgraph screen. The ICgraph uses the following variants of Labels:

- static textual (shows a text in given place of screen)
- static graphical (shows a picture in given place of screen)
- dynamic textual (shows a text reply from Barix devices in given place of screen)

By default the Labels is a static textual – the ICgraph shows the name of Label as usual text in given place of screen with optional font size "FS" and foreground color "TC". For example :

LL: Control Center:150:10:0230:40:30:255: # headline

LL:(c) Barix, 2007:10:630:0120:20::16711680: # Barix copyrights

 # if name has ".jpg|.gif" extension -> graphical Label from the file

However, if the name ends with JPG or GIF extension, the ICgraph understands it as path to the graphical file and automatically shows this picture in given place of screen. The ICgraph shows the graphical file "as is" without resizing; therefore you should fit yourself the Label and picture sizes.

For example here:

LL:door_closed.gif: 140:570:030:30::: # current state picture - closed door

LL:~door_opened.gif:140:570:030:30::: # current state picture - opened door

LL:~logo.jpg:0:0:1000:1000::: #

Labels have also a special feature, they will give more status messages to LOG file as the other buttons, e.g. when :

- touched by mouse (State : entered LL)

- clicked with pressed button by mouse (State : pressed LL)

- releasing pressed mouse button (State : released LL)

- directly thereafter comes also State : clicked LL

- removing the mouse point from label (State : exited LL)

That are some more states as with other ICgraph buttons. Together with the Macro function this allows some interesting solutions, e.g. like a real PTT button.

Here is an example for that :

VB:Start voice:10:50:0143:40:Stop voice:: # start/stop voice mode

PB:Door A: 20:350:070:30::3030: # User 1

LL:PTT.jpg:50:100:100:60:::: # displays PTT picture

*XB:M1:0:0:0:0:**pressed LL [PTT.jpg]**:+Start voice:*

*XB:M2:0:0:0:0:**released LL [PTT.jpg]**:-Start voice:*

If a point button is selected and the label "PTT.jpg" is clicked & pressed with the mouse, the hidden macro M1 will find the state in the LOG messages and automatically activate the "Start voice" button. After releasing the label "PTT.jpg" the "Start voice" button will be deactivated automatically by the hidden macro "M2".

The used macro function is explained in the next section of this manual.

 # if name is "/[IP]/[tag]" -> dynamic Label (by gotten reply)

 # if IP is empty -> reply from any IP will be checked

 # if IP is "name" -> fix or dyn IP of point "name" will be used

 # if tag is empty -> all one-line reply text will be shown

 # if tag is "<HTML>"-> all multi-line reply text with HTML formatting

 # if tag is "<xxxx>"-> one-line reply text between <xxxx> and </xxxx>

 # else -> only one-line reply text after "tag" will be shown

If the name of Label starts with slash char "*/*" the ICgraph understands it as dynamic Label and will check all non-standard messages gotten on ring or BARP status port on matching the conditions given in CFG line. The name of dynamic Label can include two optional fields: IP of remote Barix device and (after next obligatory slash char) the search text tag. As usually the IP can be replaced by proper point name . The proper IP will be used automatically after the point will be resolved or recognized.

If IP in CFG line is omitted then ICgraph will check for this Label the message from any remote Barix device, else it will pass only the message from the given IP. Call you attention that if this remote Barix device should be recognized by discover or BARP status method and will be lost, the ICgraph will automatically clean the dynamic Labels with proper IP.

If the search text tag is omitted then ICgraph will output all gotten one-line message into this Label. If it is necessary to output the multi-line message, you should use the "<HTML>" tag. Then ICgraph will automatically add the start (<html>) and end (</html>) tags, and insert new line tag (<br>) after each line of the gotten multi-line message, for example:

LL:/Door A/<HTML>:730:50:200:290:::

Generally speaking, if it is necessary to output the message with specific format, you should program the remote Barix device to send the message with proper HTML formatting (then you can use empty tag here – ICgraph will automatically recognize HTML format and display the proper output).

If the search text ***tag*** is enclosed by angle brackets the ICgraph will search in the gotten message and output the text between the XML tags: **<*tag*>** and **</*tag*>**. It can be useful if you must select the specific part from a big XML info string, for example:

*MB:<html>Get State for
Exstreamer</html>:800:60:120:60:L=getstate.ack:Room2::20:*

LL:/Room2/<SONG>:730:350:200:30::: # dynamic Label

These two CFG lines allow to send each 20 seconds the status requests to Exstreamer with name "Room2", select from Exstreamer reply the current song between tags **<**SONG**>** and **</**SONG**>**, and output it in this dynamic Label.

If the tag is just usual search text, ICgraph will search in the gotten message this text and output all one-line text after this tag, for example:

MB:Relay status:600:720:140:30:getio,2:192.168.1.55:12301::

LL:/192.168.1.55/,2,:400:720:150:30::0:

On getting the request "getio,2", the Barionet will send reply "state,2,**0**" or "state,2,**1**" .Therefore, after the search text ",2," the Label will find and output the necessary Relay status line: "**0**" or "**1**".

At last, if both parameters (IP and tag) are omitted, you can catch all messages from all remote Barix devices (including the DOOR RING requests from Barix Annuncicoms), for example:

#LL://:0:0:0:0: #total LOG for all replies

Such dynamic Label outputs nothing, but all received remote messages will be printed in ICgraph Log. It allows using the strings of the received remote messages in ICgraph macros (see next section "Macro function"). But this config line disables the "Ring" function!

Macro function/button (XB)

ICgraph offers also a Macro function, this you can use to combine any activities, automate processes or change the design of ICgraph screen. Macros cannot be created or changed over the ICgraph menu, macros can be created/edited only in the ICgraph.cfg file!

The Macros can imitate the operator action, control visibility (display/hide pictures, buttons or other elements) and activity of ICgraph elements or changing some parameters of these elements on-the-fly. The Macro buttons can be activated by mouse click as other ICgraph buttons, but also an automatic start when a predefined string is found in the ICgraph LOG is possible. Typically the Log text contains time stamp, short text description of internal ICgraph events, actions of operator, and sent or received UDP messages. Therefore you can create any macro reaction for any ICgraph event that you can see in Log, for example:

- create scheduled macro by using the time stamp from Log string
- use a keyword (IP, name, status info, file, etc) in standard Log for proper ICgraph action/reaction
- create secret reaction for specific string sent by UDP from another or the same PC, etc

To change the ICgraph design the following operators are available :

=	makes an element visible
~	makes an element invisible
+	activates a Point button (yellow state)
-	deactivates a Point button (light grey state)

These markers control visibility and activity of ICgraph elements, they set this new state independently on previous state. Sometimes, in order to be sure in initial state of the elements you should use these markers before start of your main macro.

 # XB:[~][#]N:X:Y:W:H:event:[=|~|+|-|#]name1:[[=|~|+|-|#]name2:]...

 # event is LOG text that will call this macro automatically

Here are some simple examples :

>> to bring a point button into the listening (green) state

e.g. *XB:listening Joe:20.20:120:25::+Joe:Joe:Joe:*

+Joe is activating the button "Joe", each further listing of "Joe" in this command line is according for one mouse click.

>> or change multiple item states at once

e.g. *XB:select all:10:530:0120:30::+Door A:Door A:Door A:+Door B:*

Up to 100 elements (same or different) you can combine in one macro, including other macro buttons. Practically you can always organize the nested calls of the macros like calls of the subroutines with usual programming. However you cannot use the direct or indirect recursive calls (else the ICgraph will be cycling endless).

The next example macro changes background picture of ICgraph and plays an audio file thereafter it hides the new background picture again. For that the following is required:

- a second picture in the ICgraph folder, e.g. picture.*jpg*
- an LL: (label) entry to define the position of the hidden (~) new picture, e.g.: *LL:~logo.jpg:0:0:1000:1000:::*
- an Announcement button, e.g.: *AB:Start ANN:10:450:0120:30:Stop ANN:barix.mp3:*
- the macro which automates the operation, e.g. : *XB:~welcome:0:0:0:0:end of initialization:=logo.jpg:Start ANN:*

  XB:~wel_end:0:0:0:0:Stop ANN:~logo.jpg:

Here the two hidden macros "welcome" and "wel_end" perform together the audio-visual startup of ICgraph. The first macro "welcome" starts automatically, when ICgraph finishes

the initialization and outputs the phrase "end of initialization" in the Log. Then used prefix "=" (=logo.jpg) makes the hidden picture visible and the following "Start Ann" and starts the announcement by quasi "clicking" the Announcement button "Start ANN". Then ICgraph plays the file "barix.mp3" as announcement with proper messages into Log:

12:39:07 > playing: barix.mp3 @ MPEG2DOT5L3 8000.0 Hz, unknown bits per sample, mono, unknown frame rate,

12:39:07 > barix.mp3 is converted to PCM_SIGNED 8000.0 Hz, 16 bit, mono, 2 bytes/frame, big-endian

12:39:07 > File barix.mp3 is NOT possible for announcement

12:39:08 > gotten remote DISCOVER reply from [Door A=10->192.168.1.56]. Dynamic IP is resolved.

12:39:08 > gotten remote DISCOVER reply from [Door B=40->192.168.1.51]. Dynamic IP is resolved.

12:39:12 > playing has finished for file barix.mp3

When the audio file finishes then ICgraph automatically "clicks" the Announcement button again in order to return the Announcement button in start state with proper message:

*12:39:12 > clicked AB [**Stop ANN**], new state: silent*

This phrase "Stop ANN" runs the second macro "wel_end" that just hides (prefix "~") again the picture "logo.jpg" and returns the ICgraph in source state.

Also for dynamic Labels it is used for the specific action that operator cannot do by mouse, e.g. to clean a current text of a dynamic Label. It can be used in scheduled macro in order to clean in time the false values gotten long time ago from lost Barix devices to avoid confusion.

Next (and last) is a complex example to open/close door (as FLIP button) with changing status pictures, for example :

MB:open: 0:0:0:0:c=78: # invisible Open Door

MB:close:0:0:0:0:c=79: # invisible Close Door

LL:door_closed.gif: 140:570:030:30::: # current state picture - closed door

LL:~door_opened.gif:140:570:030:30::: # current state picture - opened door

>> example of text/color/picture/command combination in macro as flip button

XB:<html><body bgcolor="red">[Open Door]</body></html>: 10:570:0120:30:open door from UDP:=<html><body bgcolor="lime">[Close Door]</body></html>:~<html><body bgcolor="red">[Open Door]</body></html>:open:=door_opened.gif:~door_closed.gif:welcome:

XB:~<html><body bgcolor="lime">[Close Door]</body></html>:10:570:0120:30::=<html><body bgcolor="red">[Open Door]</body></html>:~<html><body bgcolor="lime">[Close Door]</body></html>:close:=door_closed.gif:~door_opened.gif:

Here are two macros with HTML formatting, therefore the names are so long and the macros conventionally are shown as multi-line although really the CFG line is only one long line for each macro. Call your attention that both Macro buttons have the same location and size, and the first Macro button is visible at start state, but the second Macro button is invisible at start state.

It allows to create the flip-flop effect when these macros hide/display each other in the same place.

In source state this "flip" button the first Macro button is visible and has red color (that means: door is closed now) and picture shows the same (graphical Label "door_closed.gif" is visible too). The name of the first macro shows the possible action ("... Open Door ...") and you can click the Macro button in order to open the door for an active point (alternative start is possible by using the secret external UDP command "open door from UDP" to ring port that will be shown in Log and call this macro).

One click on first macro button executes the following steps:

- shows alternative flip macro (prefix "**=**") – the second Macro button
- hides itself (prefix "**~**")
- clicks the Message button in order to open door really ("open")
- shows alternative flip picture ("**=**door_opened.gif")
- hides previous flip picture ("**~**door_closed.gif")
- and fulfills the greeting macro ("welcome") described above for visitor invitation

Now you can see the "flip" state: the second Macro button is visible and has lime color (that means: door is opened now) and picture shows the same (the graphical Label "door_opened.gif"

is visible too). The name of the second macro shows the possible action ("…Close Door…") and you can click the Macro button in order to close the door for an active point.

One click on second macro button executes the following steps:

- shows alternative flip macro (prefix "**=**") – the first Macro button again
- hides itself (prefix "**~**")
- clicks the Message button in order to close door really ("close")
- shows alternative flip picture ("**=**door_closed.gif")
- hides previous flip picture ("**~**door_opened.gif")
- then ICgraph returns to source state…

Over macro also the ICgraph configuration can be changed temporary, for example :

MB:Status1:10:100:100:30:getio,1:192.168.10.20:12301:3:

*XB:P9999:10:150:100:30:**#Status1#7=9999**:*

As soon as the macro "P9999" is pressed it will change temporary the 7th position/field of the button "Status1" to 9999. The position counting starts by the button name with zero (0). The change is valid until it´s changed again by another macro or ICgraph is restarted .

So, you can create own macros to make your ICgraph as possible as comfortable and smart. Also call your attention that Macro buttons have the highest level on ICgraph screen, i.e. cover any other elements over (even if transparent).

6 Contained example configurations

As written before the ICgraph application is extremely flexible.

We have created several demo configurations to give you an idea about the functionality and the flexibility. These Demo configurations are coming with the ICgraph application and are stored in the ICgraph subfolder "Examples".

If you will use it then copy the content of the subfolder into the ICgraph main folder and start the file ICgraph.bat thereafter.

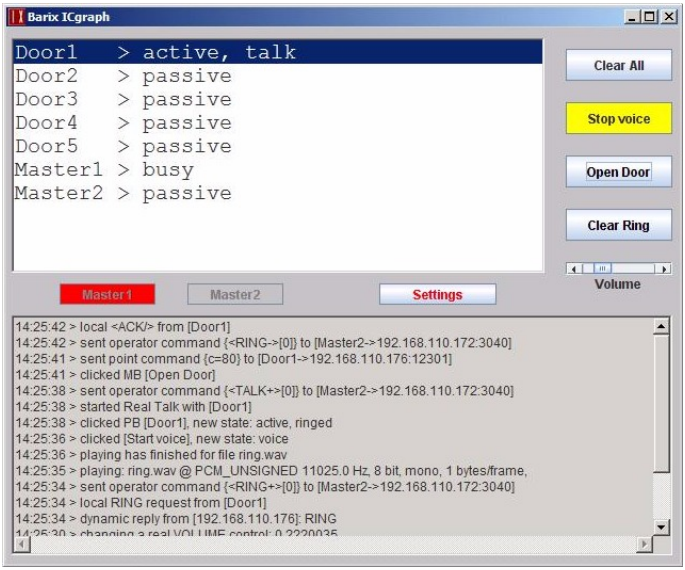
For this version we have removed all BARP examples, because we offer two independent software packages with ICgraph and an BARP configuration (please contact Barix directly for info).

Following is a short description and a screenshot for each example.

Virtual remote control for Exstreamers

The demo sends no audio to the Exstreamer. It works like the original Exstreamer IR remote control, but over network and the buttons have the same functionality. The button here are invisible / transparent over the IR-remote control picture. Additional it allows to check the some status of the selected Exstreamer or to open the browser with the Exstreamer config menu. The advantage, this remote control works also when you are not in the same room or allows to select a single Exstreamer, also if you have multiple Exstreamers in one room. This example contains also the "Label" function to display status information from the Barix devices.

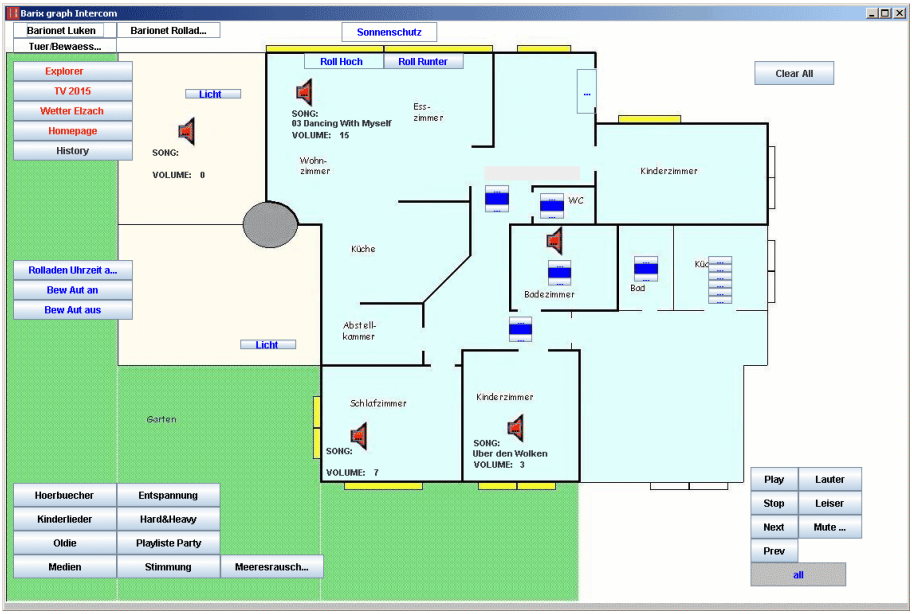
Table view



This design is similar to the older SoftIC application. It allows communication (also full-duplex) with multiple Annuncicoms and Exstreamers (unidirectional).

The design is just simpler but it has the same functionality as the graphical ICgraph design. Additional it allows to open the door (switching relay) on the selected Annuncicom or to open the browser with the Annuncicom/Exstreamer config menu.

Home automation & control

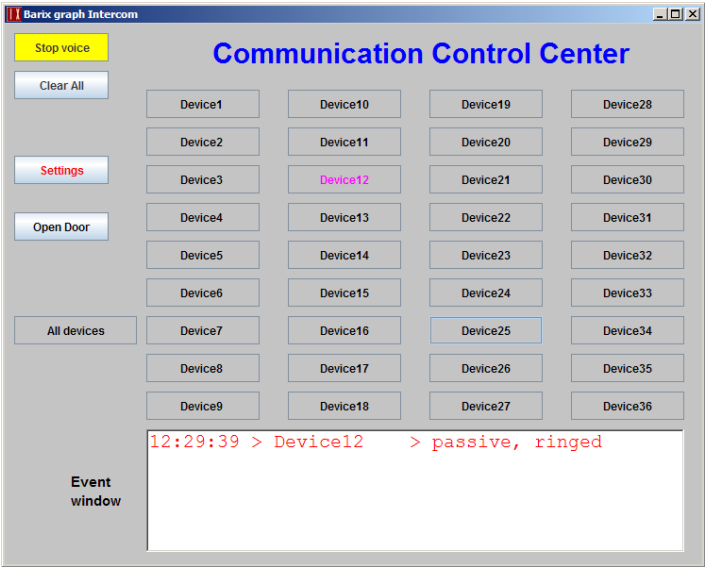


ICgraph is not used for voice intercom here, it is used as control center for the complete home.

Many Barionets and Exstreamers are used in this installation. The Barionets control shades, roof hatches, lights and flower/green irrigation. The Exstreamers are playing music (predefined playlists from webserver) in the house .

Everything can be controlled/monitored by the ICgraph application. This example contains also the "Label" function to display status information from the Barix devices together with hidden message buttons which poll the "L=getstate.ack" command every 15 seconds to the Exstreamers.

36 target/point buttons



This is a simple example for users who need many targets, so they can save some work. The example is using no background picture, for that reason the size is defined in the "IC" configuration. The "Start voice" button is activated per macro automatically at startup. A event window is very useful in larger installations because it will show up all incoming requests/rings in the right sequence.

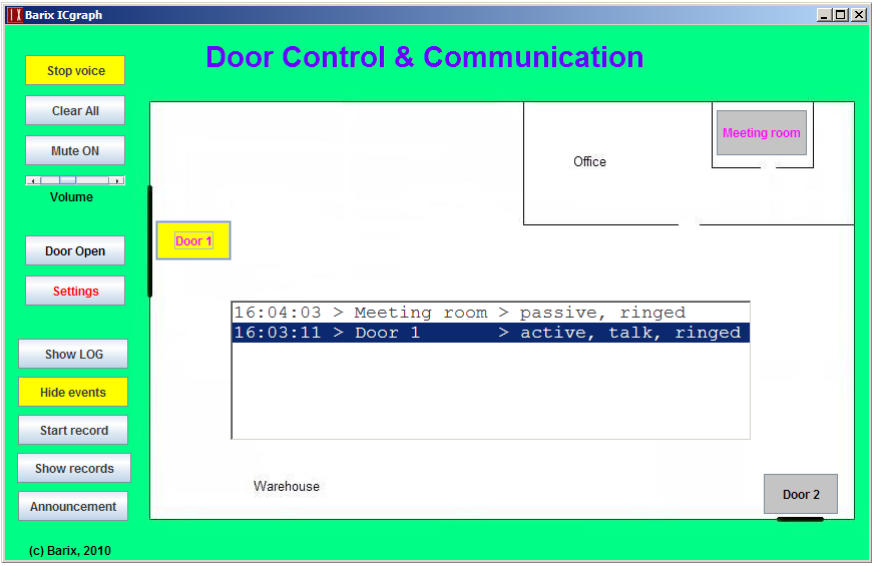
Barionet Control

This example is extensively using the very powerful macro function and also dynamic labels. If you will use it with your Barionet, change only the IP address in the ICgraph.cfg (PB) and define the UDP Control port 12301 on your Barionet setup.

The example can monitor & control the Barionet IOs, it is requesting periodically the state of the IOs and displays the response on the ICgraph screen. Additionally it allows relay switching when pressing the "Relay xx" button.

The state 0 is displayed on white background, the state 1 will be displayed on a red background. When the unit is not more reachable over network, then all IO values disappear and the "NOT Connected" label is displayed.

Door Control & Communication



Simple example with background picture for three points and Log or Event window. In the ICgraph.cfg file is additionally (but out-commented) a macro to start automatically the Voice button and the use of the Multi-Master mode.

7 Legal information

For information about our devices and the latest version of this manual please visit www.barix.com .

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