Using Quadro's “CallControl” Interface

Revision: 1.7

Abstract: **This document describes the functionality of the sample applications included in the CallControl Pack.**

Table of Contents:

Document Revision History

Rev.	Date	Description	Valid for Quadro SW	Valid for Quadro models
1.2	02-Apr-07	Initial release	4.1.22 and higher	Quadro IP PBXs
1.3	02-Jul-07	The section on HotCall Outlook Add-In is removed. A section on SubCDRs is added.	4.1.22 and higher	Quadro IP PBXs
1.4	04-Oct-07	Updated for CallControl Pack 1.5	4.1.35 and higher	Quadro IP PBXs
1.5	05-Sep-08	A section on the Extension Watching added Function descriptions in Section 4.6 edited	4.1.35 and higher	Quadro IP PBXs
1.6	20-May-09	Figure 2 updated.	5.1.17 and higher	Quadro IP PBXs
1.7	14-Jun-11	Updated	5.2.46 and higher	Quadro IP PBXs

1 Introduction

The **CallControl Pack** is a package of sample applications that use Quadro's 3rd party "CallControl" interface to remotely initiate/handle calls from the Quadro.

The following four applications are included in the CallControl Pack to illustrate some usage examples of Quadro's "CallControl" interface in different development environments.

1. CallControl Test
2. Extensions Watching
3. SubCDRs
4. HotCall
5. PHP Sample

The description and use of each of those applications are given below.

Please Note: For proper operation of CallControl Test, HotCall, and PHP Sample, it is required that telephony destinations specified in those sample applications match the syntax used in Quadro's "CallControl" methods. The syntax is the following:

[CallType]:[CalledParty]

where [CallType] must be one of the following: "pbx", "sip", "pstn", "tel", "ar" or "vm".

For more information on this syntax, please refer to the *"CallControl" ActiveX Control* or *Quadro "CallControl" Interface* documents available at Epygi's Technical Support Web portal.

2 Accompanying Material

This document comes bundled with the following software and documents, all of which can be found under the Downloads section of Epygi's Technical Support Center:

- **"CallControl" ActiveX Control –** the setup file for the "CallControl" ActiveX control.
- **Quadro "CallControl" Interface** - a guide that gives a detailed description of the "CallControl" interface functions.
- **CallControl Pack** - the setup file for a package of sample applications that demonstrate the usage of the "CallControl" ActiveX control and 3pCC interface functions in different development environments.
- **Using Quadro's "CallControl" Interface** - a guide that describes the functionality of the sample applications included in the CallControl Pack.

3 CallControl Pack Installation

To install the **CallControl Pack**, run the executable file "setup.exe" for the CallControl Pack and follow the instructions of the CallControl Pack Setup Wizard.

Please Note: Prior to starting the installation, please make sure no previous version of any of the Quadro CallControl Pack applications is running.

4 Using CallControl Pack Sample Applications

4.1 Connection Settings

The following connection settings should be specified in all sample applications:

- **Server:** The IP address or host name of the Quadro.
- **Port:** The listening port of the Quadro for call control requests, by default *4849.*
- **Username** and **Password:** The administrator's or an extension's username and password used for authentication on the Quadro.
- **Secure Connection:** (used in CallControl Test) Indicates whether or not the connection with the Quadro should be established using the secure connection mode (SSL). When enabling the secure connection mode, make sure it is also enabled on the Quadro.
- **Timeout:** Specifies the number of seconds after which the connection attempt will fail if there is no answer.

4.2 CallControl Test

Description:

This sample illustrates how to use Epygi's "CallControl" ActiveX control on a VB6 project.

It allows a VB6 project to connect to the Quadro's "CallControl" interface and use the interface functions.

This sample allows for the following operations:

- Initiate calls to specified destinations using the settings of a specified extension. Up to two simultaneous calls can be created (initiated) with the CallControl Test. The display name of the call originating extension can be overwritten prior to setting up the call.
- Join the created two calls or unjoin them.
- Play a selected WAV file for a specified number of times to a called/caller party.
- Play RTP stream specified in the RTP streaming channel.
- Transfer a created call to a specified destination.
- Play the DTMFs corresponding to the entered digits to a called/caller party.
- Output the digits corresponding to the detected DTMFs.
- Subscribe to new voicemail notifications received to a specified extension.
- Intercept incoming calls to a specified extension for further handling: accept, reject or forward. With the forwarding option, the user also has the option of overwriting the CallerID and CallerName settings.
- Subscribe to Call Detail Recording (CDR), the information on calls passing through the Quadro.
- Subscribe to DIALOG, the information on calls taking place on a specified extension, and on-hook and off-hook states of the extension.
- Subscribe to Presence is used to update the specified extensions DND, UCF, Call Waiting and Online Status text fields.
- Subscribe to Call Routing is used to pass the call through the Call Routing Table.
- Call Split subscription is used to separate an active call into two joined calls.

- Displays the system information (the unique ID of the unit and the software version running on it) on the application's status bar.

Configuration:

Run the CallControl Test.

On the CallControl Test dialog box, choose **Connection→Connect** to specify the connection settings.

Once the connection settings are specified, click the **Connect** button.

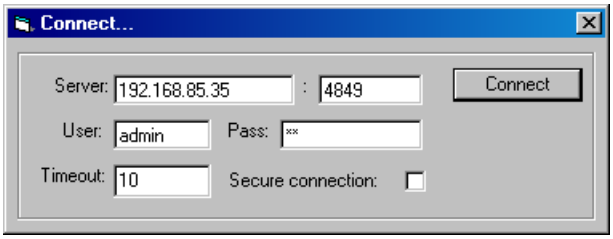

Figure 1. Configuring the CallControl Test to connect to Quadro

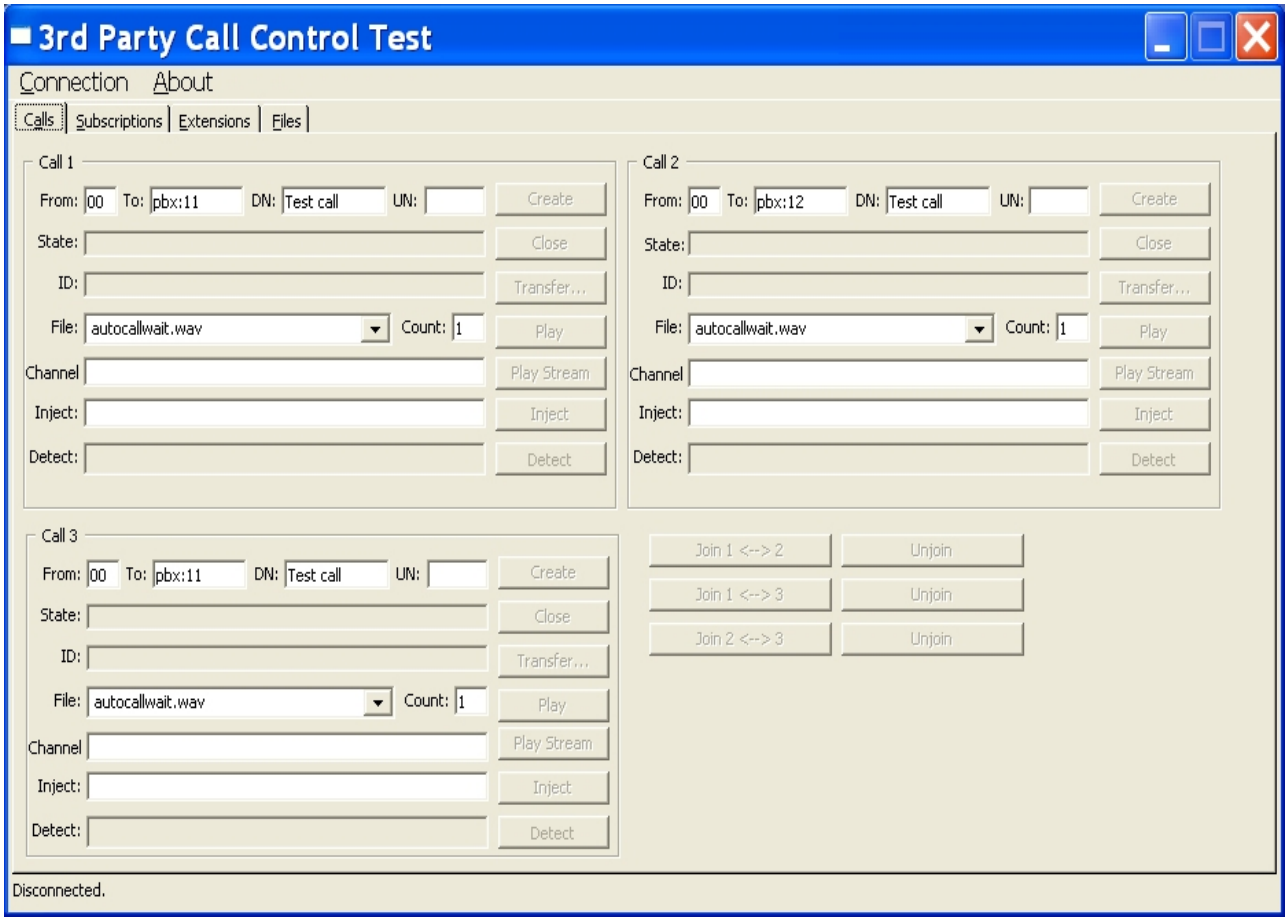

Figure 2. The CallControl test in the idle state

Use:

Run the CallControl Test and make sure it connects to the Quadro (the connection state is displayed at the bottom of the application's main window, see Figure 2).

The following instructions describe how to use some of the main features of the CallControl Test.

Create a call

1. In the **From** text field in the **Call 1** group, specify the extension whose settings should be used to set up the call.
2. In the **To** text field, specify the destination number or SIP URL. Use the appropriate syntax. To overwrite the original display name, specify a new display name in the **DN** text field, otherwise leave it blank. **UN** text field requires an optional User Name to identify the caller.
3. Click **Create**. The Quadro will make a call to the specified destination using the settings of the specified extension.

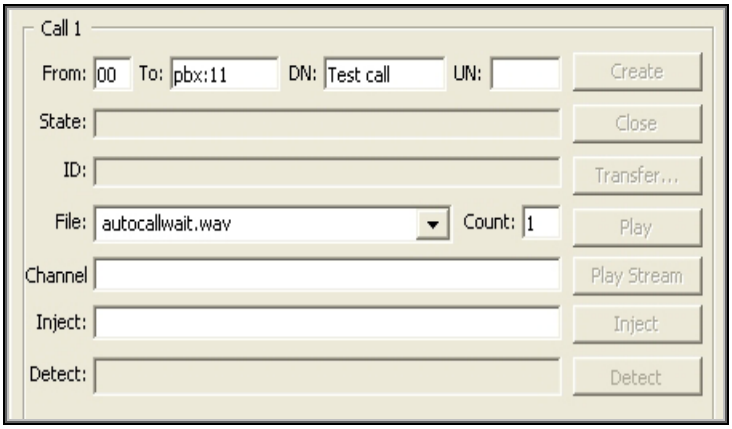

Figure 3. Creating a call to a pbx destination

Transfer a call

When the CallControl Test is connected with an active call (displayed in either of its Call windows), follow these steps to transfer the call:

1. Click the **Transfer** button.
2. Specify a destination and click **Transfer**.

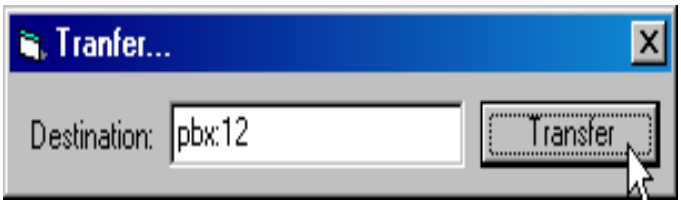

Figure 3. Transferring a call to a pbx extension 12

Play a massage to call parties

When the CallControl Test is connected with an active call, follow these steps to play a message to call parties:

1. From the **File** drop-down menu, select a WAV file to be played.
2. In the **Count** field, specify the number of times to play the selected WAV file.
3. Click **Play**.

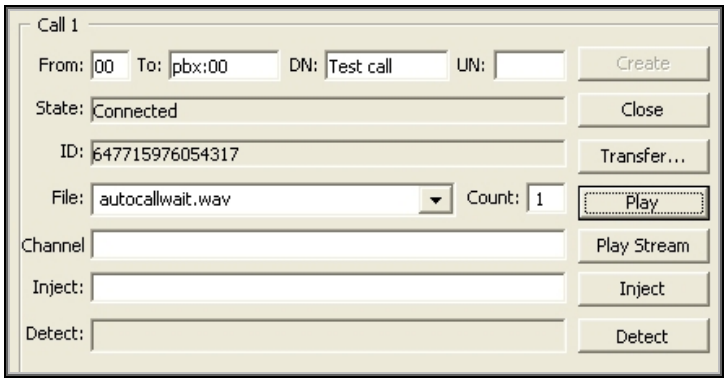

Figure 4. Playing a wav file to a called party

Play RTP Streaming

When the CallControl Test is connected with an active call, follow these steps to play RTP stream:

1. In the **Channel** text field in the **Call 1** group, specify the RTP streaming channel name.
2. Click **Play Stream**.

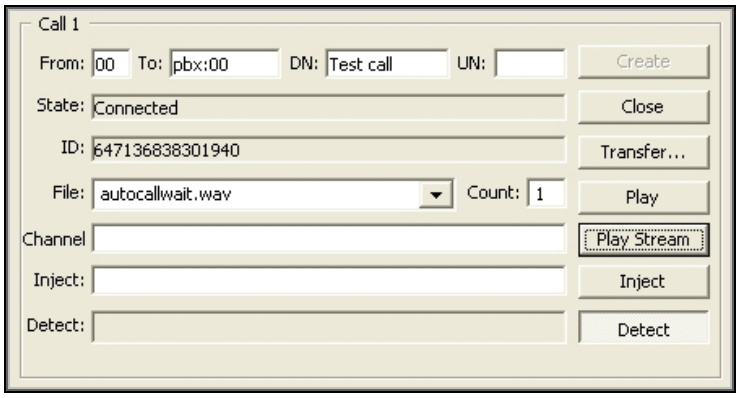

Figure 5. Play RTP Streaming

Inject DTMFs

When the CallControl Test is connected with an active call, follow these steps to simulate key pressing:

1. In the **Inject** field, enter the digits to be played to a called party.
2. Click the **Inject** button.

The DTMFs associated with the entered digits will be played to the called party.

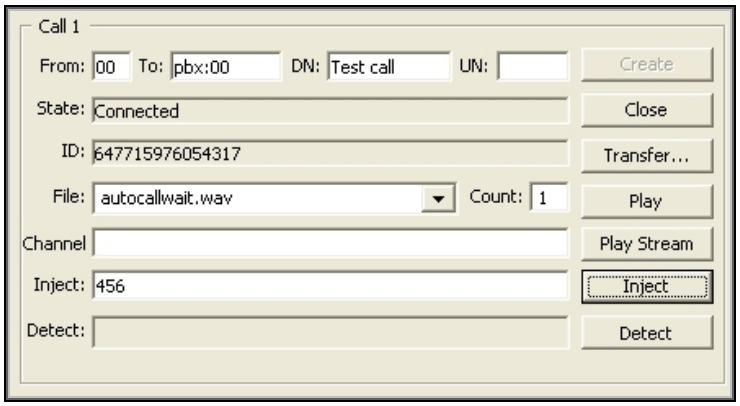

Figure 6. Injecting DTMFs associated with entered digits

Detect DTMFs

To allow the CallControl Test to detect the keys pressed by a remote party, click the **Detect** button when the CallControl Test is connected with an active call.

The digits associated with the DTMFs detected on the far end will be displayed in the **Detect** text field.

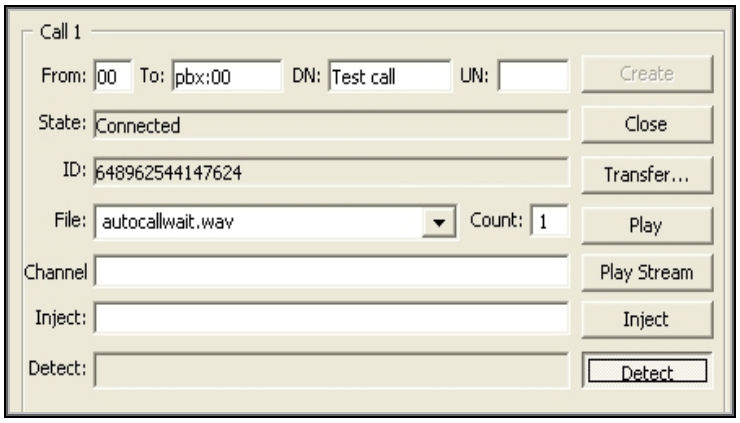

Figure 7. Displaying the associated with the detected DTMFs

Join / Unjoin Calls

1. Create two calls using the **Call 1** and **Call 2** groups.
2. When the calls are set up, click **Join**.

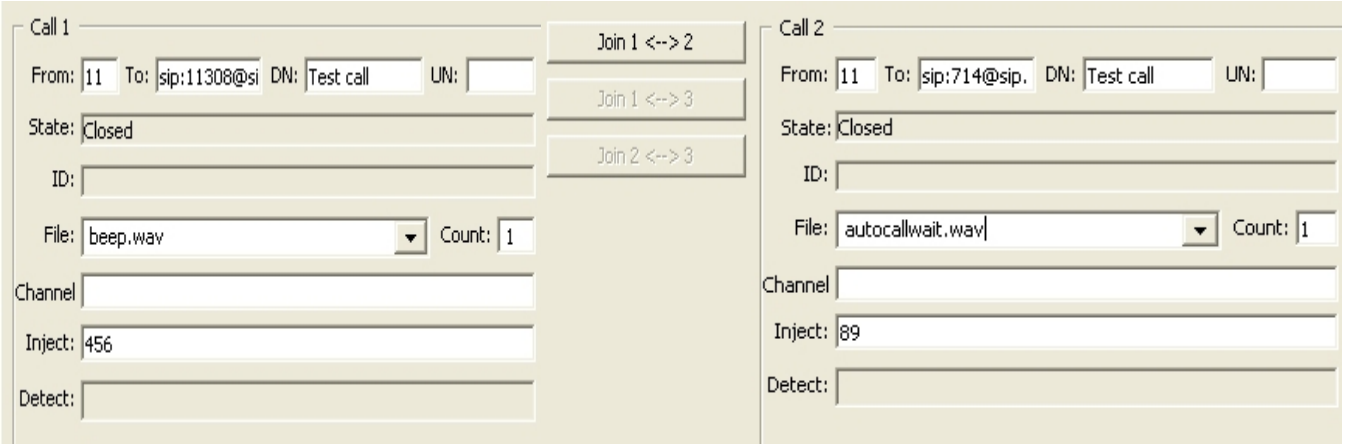

Figure 8. Setting up a call between two called parties 11308@sip.epygi.loc and 714@sip.epygi.loc

Handle Incoming Calls to an Extension

1. In the **Extension** field, specify the extension whose incoming calls the CallControl Test should handle.
2. Click the **On** button.
3. When an incoming call is received to a specified extension the CallControl will pop up a window and wait for further actions:

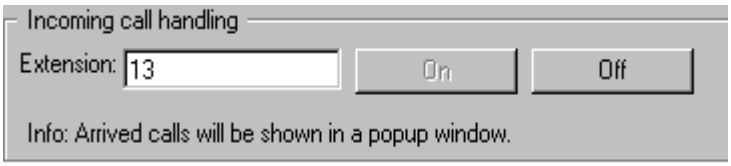

Figure 9. Activating the Call Handling Feature for extension 13

- **Accept** will process the call in a
- **Reject** will close the call.
- **Forward** will forward the call to a specified destination.
- The **Overwrite Caller ID and Name** checkbox allows the original call number and display name to be overwritten with those specified in the **Caller ID** and **Caller Name** fields.
- The **Accept for Remote Control** checkbox allows the intercepted call to be held for further handling by the CallControl. Click **Accept** to accept the call on the CallControl Test application as **Call 1**.

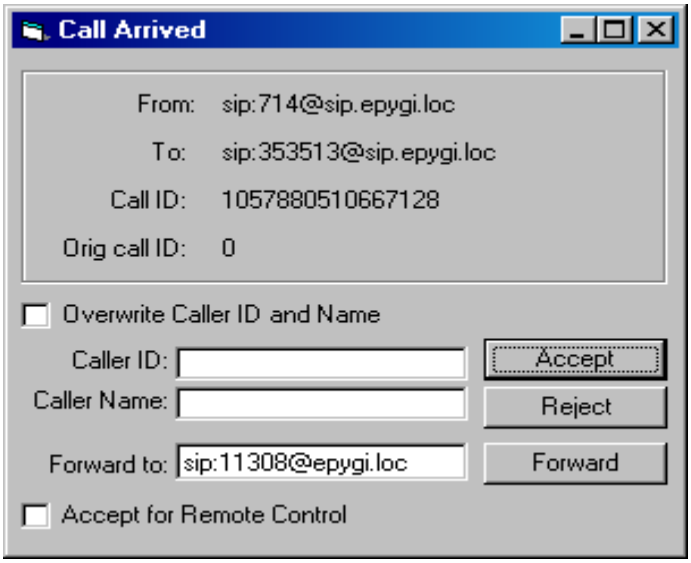

Figure 10. The CallControl is waiting for further actions to proceed with an intercepted call

Subscribe to Presence

Enter the desired extension into the **Extension** text filed and click the **Subscribe** button in the **Presence Subscription** group.

The **Update Status** button is used to update the specified extension's **Online Status**.

DND, **UCF**, and **Call Waiting** text fields include notifications (On or Off) of the corresponding extension.

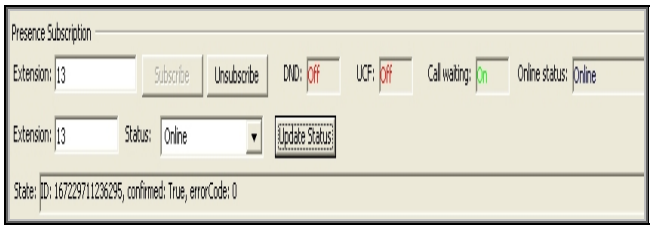

Figure 11. Presence Subscription notifications of extension 13

Subscribe to DIALOG

Enter the desired extension into the **Extension** text filed and click the **Subscribe** or the **SubscribeEx** button in the **Dialog Subscription** group. Once the CallControl Test subscribes to DIALOG, it will start displaying detailed information on all calls taking place on the extension, and on-hook and off-hook states of the extension in the **Dialog Subscription** window (see Figure 11).

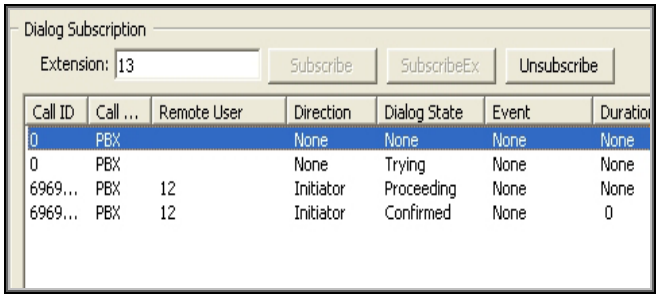

Figure 12. Displaying call detail records Figure

Subscribe to new voice mail notifications

1. In the **Extension** field, specify the extension. New voice messages to the specified extension will be notified by a popup menu. See below.
2. Click the **Subscribe** button.

Figure 13. Subscribing to new voice mail notifications of extension 11

When a new voice message is received to the mailbox of the specified extension, the CallControl Test will pop up a notification window.

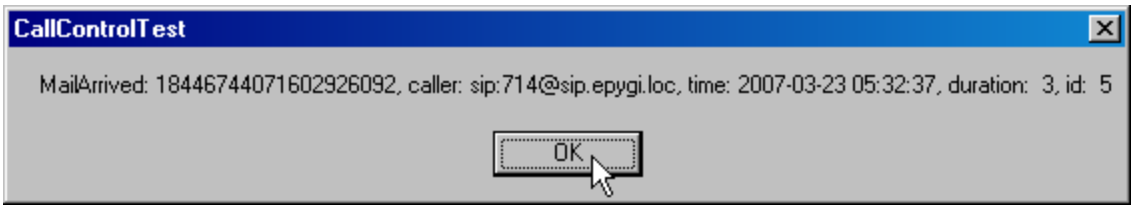

Figure 14. Receiving a new voice mail notification

Subscribe to Call Detail Recording (CDR)

Click the **Subscribe** or **SubscribeEx** button in the **CDR Subscription** group. Once the CallControl Test subscribes to CDR, it will start displaying the details of calls passing through the Quadro in the **CDR Subscription** window (see Figure 15).

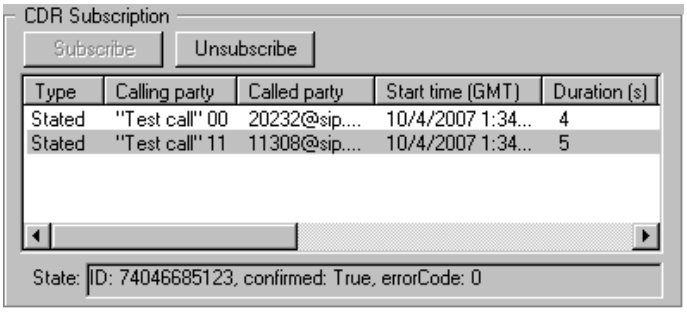

Figure 15. Displaying call detail records

Subscribe to Call Routing (CR)

1. In the Quadros Call Routing Table enable the **Check with 3PCC** checkbox.
2. Click the **Subscribe** or **SubscribeEx** button.
3. When an incoming call is received to a specified extension the CallControl will pop up a window and wait for further actions:

To accept the call press the **Accept** button, otherwise press the **Reject** button.

The **Forward To** text field selection is available only when the **SubscribeEx** option is selected.
The **Forward To** text field requires a SIP address, a PBX extension or a PSTN number, where an incoming call from a certain caller should be forwarded.

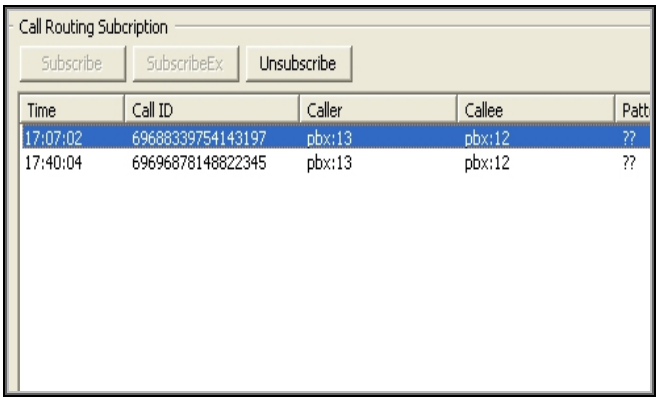

Figure 16. Displaying call detail records

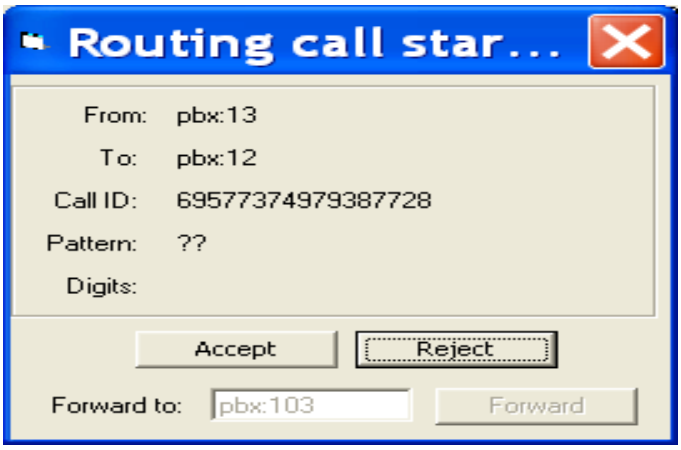

Figure 17. The CallControl is waiting for further actions

Subscribe to Call Split

Call Split subscription is used to separate an active call into two joined calls.

Get Active Calls button is used to get the list of active calls for a specified extension in the **Extension** text field.

Split Selected Call button is used to split a call from the list of active calls. The separate calls can be managed using **Close**, **Transfer**, **Play**, **Play Stream**, **Inject**, **Detect** buttons for the corresponding action.

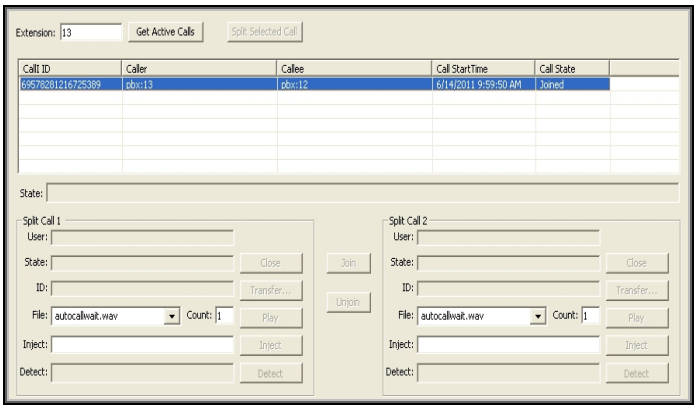

Figure 18. Displaying call detail records

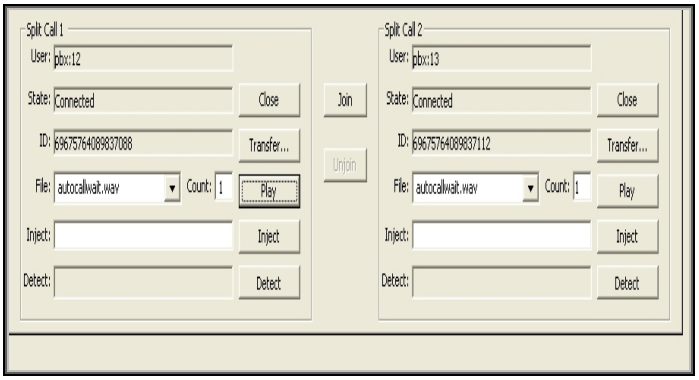

Figure 19. Call Split between two called parties pbx:12 and pbx:13

4.3 Extensions Watching

The Extensions Watching sample application allows the status of Quadro extensions to be viewed in a Windows-based application. The application subscribes to *ExtListArrived* and *DialogArrived* events and displays the list of the extensions, and the state of each extension (or the state of the call taking place on the extension) in a dialog box.

Configuration:

- Run the Extension Watching.
- On the Extensions Watching dialog box, choose **Connection→Connect** to specify the connection settings.
- Once the connection settings are specified, click the **Connect** button.

Use:

Once the Extensions Watching connects to the Quadro, it displays the list of the extensions available on the system with the following information:

- **Extension:** The extension number.
- **DisplayName:** The display name of the extension (if specified).
- **SipAddr:** The SIP address of the extension (if specified).
- **Type:** The extension type (user, attendant, call-park, etc.).
- **Line:** The line attached to the extension (if specified).
- **State:** The state of the extension (on-hook or off-hook) or the state of the call taking place on the extension.

Please Note: The extension list is updated automatically on catching the *ExtListArrived* event.

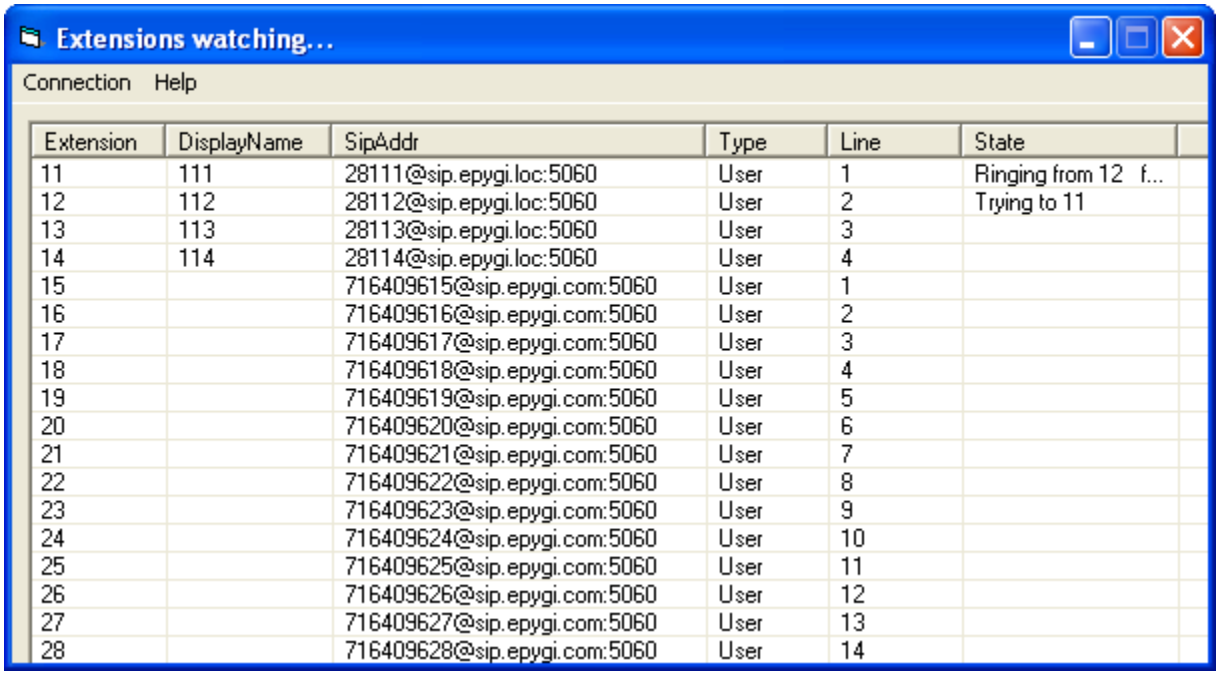

Figure 20. Dialog box of the Extension Watching

4.4 SubCDRs

The SubCDRs sample application subscribes to Quadro CDRs (Call Detail Records) and outputs the received CDRs into a file.

Configuration:

Run the SubCDRs and follow the steps below:

1. Click the ... button and choose or create a file for storing CDRs. When choosing an existing file, note that the SubCDRs will erase all its content. To create a file, choose a location with the file chooser and specify a file name.
2. Click the **Settings** button and specify the connection settings.
3. Click **OK**, then **Start**.

If the application sets up a connection with the Quadro, the **Start** button on the **Subscribe CDRs** dialog box will change to **Stop**. To minimize, the application to a tray icon, click the **Close** button in the upper right corner of the dialog box.

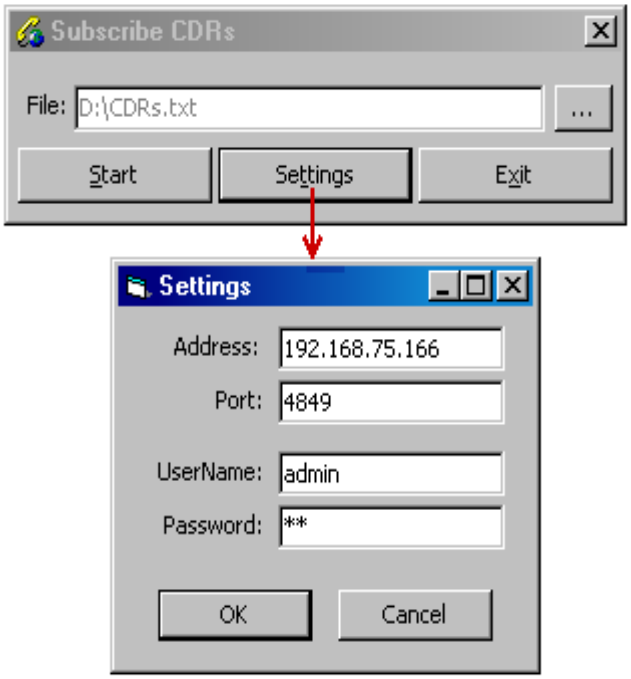

Figure 21. The Settings dialog box of the SubCDRs

Use:

Once the SubCDRs connects to the Quadro, it will start receiving the information about all the calls passing through the Quadro since

the connection was set up. The received CDRs will

be output into the specified file according to the following rules:

- The first line in the file contains the field names existing in each CDR delimited by a tab.
- The rows below the first line are CDRs delimited by a tab.

Example *(the Word Wrap feature is enabled)**:***

Type	SubID	Calling	Called	StartTime	Duration	Call GUID	Details	Clir Caller	RX/TX Packets
	RX/TX Codec		RX/TX PacketSize	RX Lost	RX Jitter	RX MaxDelay	Delay	Incr/Decr	
Missed	18027403793	14	14	7/2/2007 6:06:43 AM	0	28abb6ff-5fc1-4601-971b-c8708c2c3ad6			
	False								
Stated	18027403793	14	20232@192.168.75.215:5116	7/2/2007 6:06:50 AM	13	72caf5e0-cdb5-4cc7-ad48-ed3f307110d5			
	False	0/102	PCMU/PCMU	0/160	0	0	0	0/0	

4.5 HotCall

Description:

The HotCall sample application allows calls to be created by selecting a destination number/SIP URL from a computer application (for example, web-browsers, text editors, etc.) and pressing a predefined hot key. The application uses the Quadro's "CallControl" interface for call initiation.

The application consists of a pop-up window with the application settings that are initially set to their default values.

Configuration:

For the first launch of the application, the user should specify the connection settings and the following Dialing settings:

- **From:** The user's extension.
- **Dest. Prefix:** A prefix added to the beginning of a selected number prior to dialing it. This can be, for example, PSTN access code used on the Quadro.
- **To selected number: CTRL+C+*:** The hot key used for dialing a selected number. The "*" stands for any user-defined character.
- **Cancel call: CTRL+*:** The hot key used for canceling the dialing or closing a call in progress.

Once the required settings are specified, click the **Connect** button. To minimize the application to a tray icon, click the **Hide** button.

Use:

1. Select a number from a text-based application.
2. Press your specified hot key to make a call to the selected number.
3. Click **OK** when asked for confirmation.

The HotCall will first make a call to the predefined extension (see the **From** field in Figure 23). Once the call is answered, the call will be unconditionally transferred to a selected destination.

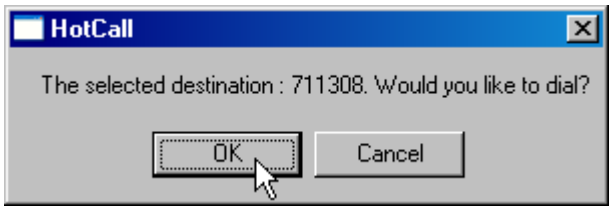

Figure 22. HotCall confirmation dialog box

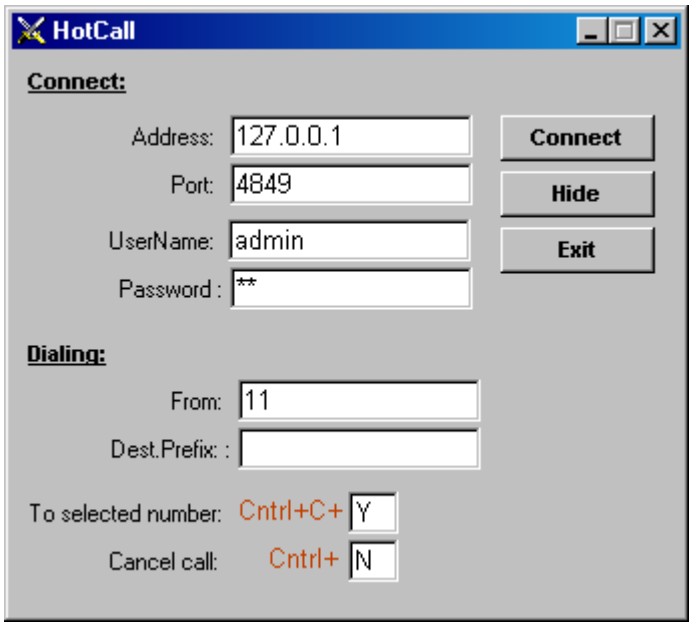

Figure 23. Configuring the HotCall

4.6 PHP Sample

Description:

The PHP Sample is a 3rd Party CallControl Interface sample based on PHP.

This sample provides the following options:

1. Create and transfer a call.
2. Create two calls and join them.
3. Upload legible configuration

Prerequisites:

Apache 2 and PHP 5 are installed and properly configured.

Installation:

In the *php.ini* file for PHP5, change the following settings:

1. Uncomment the following lines: *extension=php_xmlrpc.dll* and *extension=php_socket.dll*
2. Set *implicit_flush = On*

Copy the PHP Sample folder into the startup directory of Apache.

Configuration:

To set up the PHP Sample, specify the connection settings.

Use:

Open the *rcci.php* file placed in the PHP Sample folder of the startup directory of Apache with any web browser. The following instructions describe how to use some of the PHP Sample features.

Create and Transfer a Call

1. Specify the **From**, **To**, and **Transfer To** settings for "Call1".
2. Click the **Run Transfer** button.

The PHP Sample will first initiate a call to a destination specified in the **To** field using the settings of the extension specified in the **From** field. Once the call is answered, the PHP Sample will start dialing the number/SIP URL specified in the **Transfer to** field. As a result, the call will be unconditionally transferred to the destination specified in the **Transfer to** field.

Create and Join Calls

1. Specify the **From**, **To** settings for **Call1** and **Call2**.
2. Click the **Run Join** button.

To Upload Legible Configuration

1. Specify the file path of configuration file.
2. Click the "**Upload**" button.

It is also possible to play a voice message for **Call2** by selecting a file name from the **File to Play** drop-down list.

Specification

The RCCI based on PHP includes the following files:

1. Main page file "rcci.php".
2. Page file "rcci_updateconfig.php".
3. PHP class file "XMLCalls_inc.php".
4. CSS file "styles.css".

The class constructor should initialize objects with the connection and authentication parameters as shown below:

- $net = new XMLCalls ($ip_addr, $port, $user_name, $password)

XMLCalls_inc.php contains the class XMLCalls that has the following interface functions:

- Authenticate() authenticates the user on the Quadro with the "$user_name" and "$password" specified when creating the object.

- Join($from, $to, $from2, $to2, $play_filename) creates 2 calls, plays a message to the second called party, then joins the calls.

  What happens if executed:

  - The party "$to" rings, indicating the "$from" as a caller.
  - Once "$to" answers the call, "$to2" rings, indicating the "$from2" as a caller. The party "$to" hears silence.
  - Once "$to2" answers the call, the voice message, specified as $play_filename", is played. When the playback is complete, the parties "$to" and "$to2" are connected, and can talk to each other.

- Transfer($from, $to, $transfer_to) creates a call from the party "$from" to "$to", then transfers it to the party "$transfer_to".

  What happens if executed:

  - The party "$to" rings, indicating the "$from" as a caller.
  - Once "$to" answers the call, the party "$transfer_to" will ring. While the call is ringing at the party "$transfer_to"'s phone, "$to" listens ring-back tone.

- If the party "$transfer_to" answers the call, a two-way communication is established between "$to" and "$transfer_to".

- UpdateConfig($filePath) - uploads a legible configuration file specified by "$filepath" to Quadro.

There are some low-level interface functions, the main of which is the following:

- Call($from, $to) creates a simple call. After calling this function, the "$to" party will ring, indicating the "$from" as a caller. After "$to" answers the call, they hear silence. The call created by this function, should be handled further, using methods shown in the example.

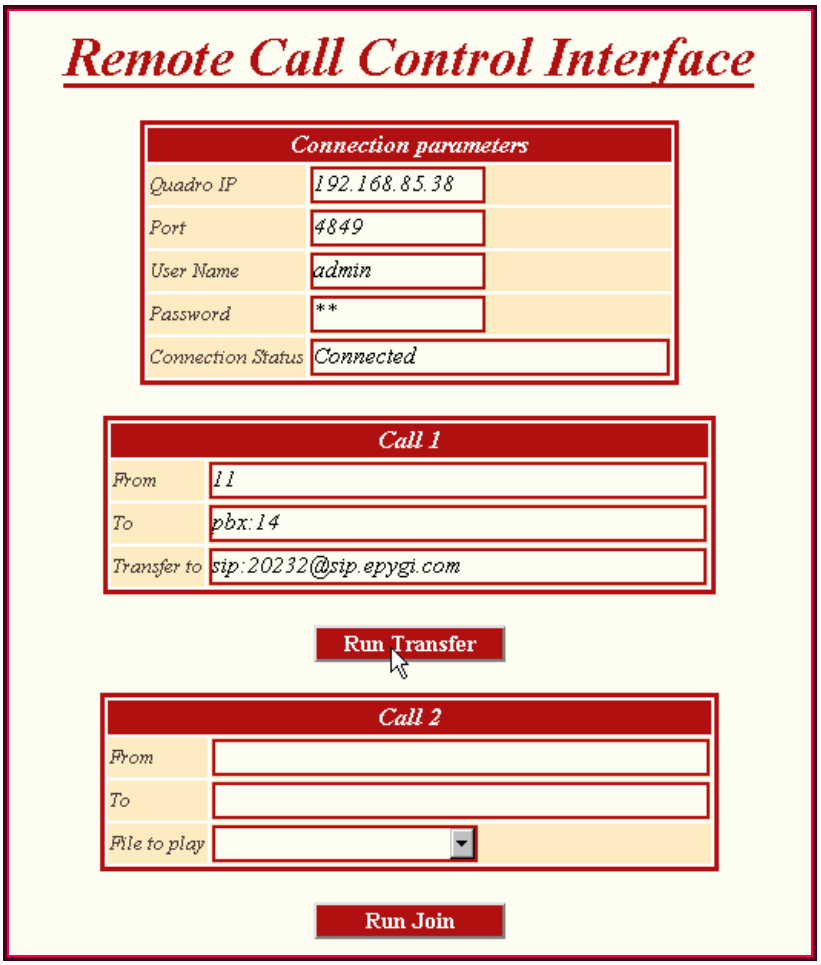

Figure 24. PHP Sample