iteloffice

computer telephony software

5 Enmore Gardens
London
SW14 8RF

w: **www.iteloffice.com**
e: **support@iteloffice.com**

Tel: +44 (0) 20 8878 7367

Cuba for Panasonic CSTA3 Manual
Cuba Version 1.0

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0. PRELIMINARIES

0.1 PUBLISHED BY

Itel Office Software Limited, 5 Enmore Gardens, London, SW14 8RF Tel: +44(0)20 8878 7367

0.2 COPYRIGHT

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0.3 DOCUMENT HISTORY

Issued @ revision A, on 2015-01-06, by A. Comber

0.4 BIBLIOGRAPHY

0.4.1 Referenced Documents

[1]   CSTA III Specification, http://www.ecma-international.org/activities/Communications/TG11/cstaIII.htm

Glossary

PBX	PBX or Private Branch Exchange is the telephone system which handles incoming and outgoing calls.
CTI	CTI or Computer Telephony Integration is the integration of the telephone switching domain with the computing domain. Typical applications are screenpop and softphone and many others.

Table of Contents

1. INTRODUCTION

This manual provides a complete guide to preparing, installing and configuring your telephone system, Cuba and integrating with a web or executable application for computer telephony integration. For best results follow the manual in chronological order. No specific skills are required but some knowledge of IT can be useful. This manual attempts to make all the necessary steps as painless as possible.

2. OVERVIEW

Cuba software enables Computer Telephony Integration (CTI) between most business grade telecom systems, PBX's, and a business application.

Cuba consists of two compoents: Cuba Server and Cuba Client. The Cuba Server communicates with your Panasonic KX series PBX via the CSTA III protocol. The Cuba client communicates with both the Cuba Server and your business application. Cuba Client connects directly to Cuba Server to exchange telephony messages. Cuba Client communicates with your business application either by passing parameters to a local executable program on the command line or via sending an HTTP request to a web application.

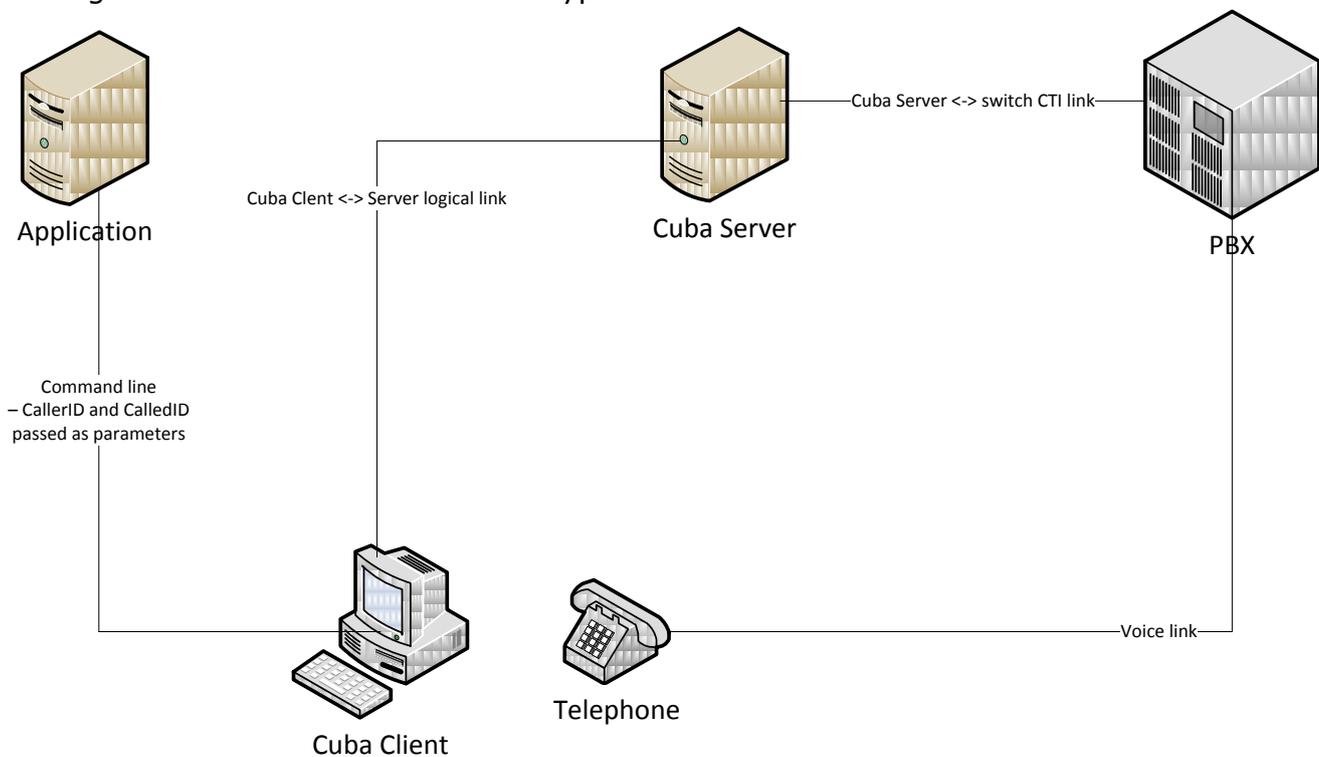The diagram below illustrates the two types of installation.

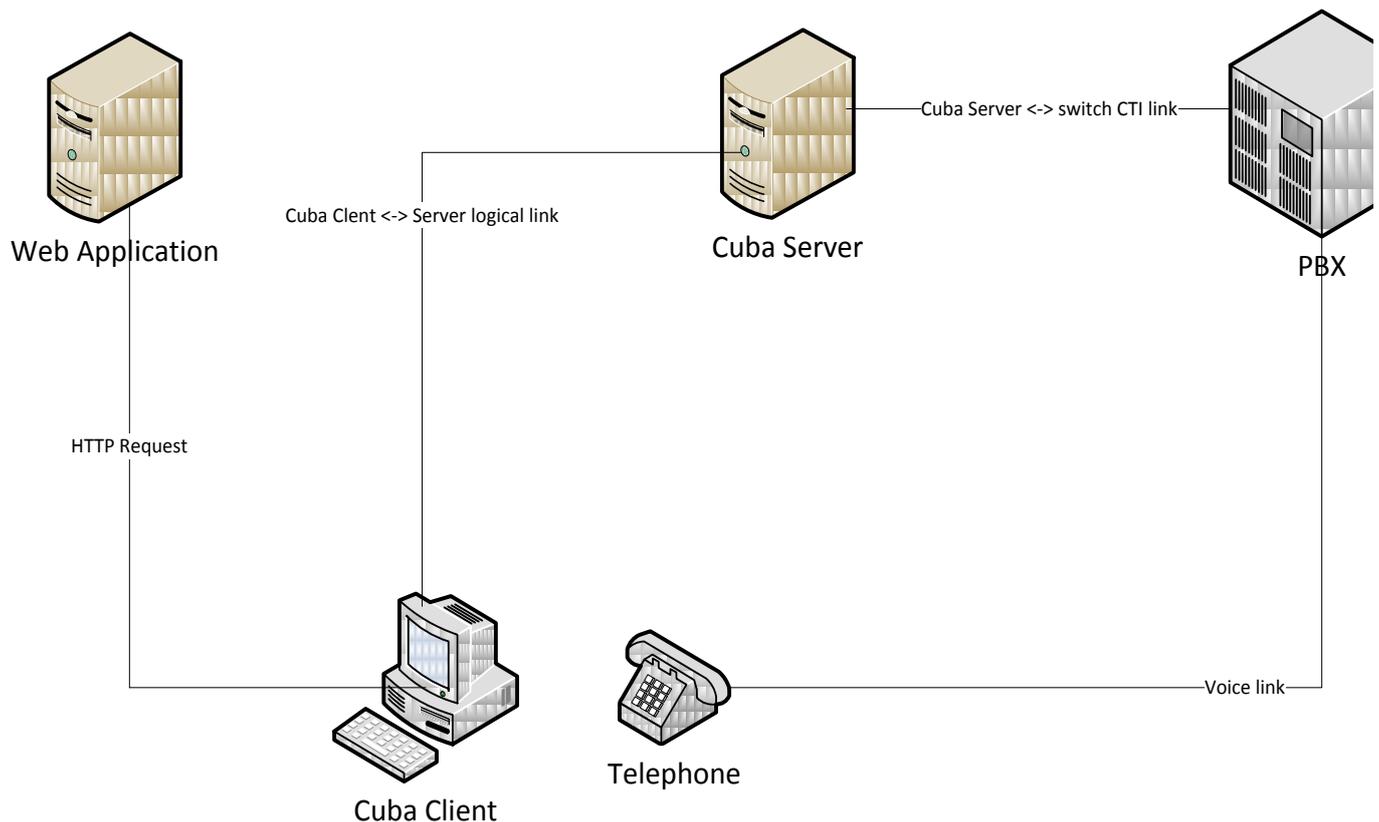Figure 1: Command line interface to Executable Application

Figure 2: HTTP Request to Web Application

The Panasonic switch sends CSTA telephony events to Cuba Server and receives CSTA request from Cuba Server. In this way, Cuba Server receives these CSTA messages and can send this data to Cuba Client to create a screenpop. In addition, Cuba Client may request telephony services such as makecall from Cuba Server which converts the Cuba Client makecall request into a CSTA III Makecall protocol message which the Panasonic switch can 'understand'.

2.1 USER DATA
Cuba has the capability to associate custom data to a call. In this way custom data can be transported with a call. The custom data could for example be a database record ID so that a user answering a call can lookup or create a record, attach the record ID to the call and have the information transferred to an agent with the necessary skills to resolve the call. This application of attaching user data is sometimes referred to as 'screen passing'.
This ability means that if the first recipient of a customer call adds the caller details to a networked business application but later realises that a different person should handle this call, then that user can attach an application database ID (unique form reference) to the call and transfer to another agent. Processing on the end recipient can check for user data and if found use the data to screenpop the requisite web/application form instance previously worked on by the first call recipient. This means that the caller does not have to re-iterate everything just explained to the last agent they talked to and can dramatically improve customer service as a result.

3. PREPARATION
3.1 OPERATING SYSTEM REQUIREMENTS
The Cuba Server should be installed on an 'always on' PC on the network.
System Requirements are:
512MB RAM (Approx 52Kb per monitored call)
1.2GHz CPU

Ethernet Port
Operating System – Microsoft Windows: Vista, XP, 2000, 2003, 2008, 2012, NT, 7, 8

Cuba Server is currently a 32 bit application but will run on 64 bit Windows platforms.

Cuba client can run on any Microsoft Windows platform from Windows 95+.

Administering Cuba Settings
Cuba's settings are configured in the Cuba Web Administrator - a web interface to Cuba
Server. Your web browser must support Java Script.

3.2 CONFIGURING TELEPHONY INTERFACE
The Cuba Server communicates with the Panasonic switch via the CSTA port. This is usually
port 33333. Note that by default the Panasonic switch IP address is 192.168.1.101 - but this
should of course be checked with your telephony system maintainer.
Email support@iteloffice.com should you require assistance in switch configuration.
The following information is required:
IP address of Panasonic switch.
CSTA Port.
This information is required to configure the CTI Link section of the configuration in the Cuba
Server web administrator discussed later in this document.

3.3 CONFIGURING YOUR APPLICATION
Cuba for Panasonic can screenpop web applications and also Windows application programs.

3.3.1 Integration with Web Applications
A web application is 'screenpopped' when a rule is configured via the Cuba web administrator.
An example rule might be to generate a new HTTP GET request on a ringing inbound call.
Cuba Server would receive a delivered event from the switch which would generate a Cuba
specific Alerting message and send to any interested Cuba Clients. Any Cuba Clients which
had registered the ringing extension would then receive the Cuba Alerting event. Cuba Client
would lookup the rule for alerting calls and if the rules were met then a HTTP GET request
would be generated, passing the specified url to the users web browser. In this way, a
'screenpop' is generated.

The CallerID and CalledID of the telephony event is passed in the GET request.

If for example, the web application url specified in the Cuba web admin was:
http://www.mybusinessapp.com/cti/ and a caller with callerid 01234567890 called the
number: 0222444444 then the GET request generated by Cuba client would be:
http://www.mybusinessapp.com/cti/?callerid=01234567890&calledid=0222444444.
Performing these configurations is explained in detail in the following sections.

3.3.2 Integration with Executable Applications on Command Line
The configuration is almost identical to integration with web applications except that the web
pop option is not selected.

If for example, the application path was specified in the Cuba web admin was: C:\Program
Files\MyApp\ctiapp.exe and a caller with callerid 01234567890 called the number:
0222444444 then the command generated by Cuba client would be:
C:\Program Files\MyApp\ctiapp.exe callerid=01234567890 calledid=0222444444

3.4 NETWORK CONFIGURATION

Your Cuba Server communicates on ports 6090 and 8080. Port 6090 is used for communication of telephony data and port 8080 is used for web administration. So you should make sure that these ports are not used by other applications. Port 8080 could possibly be used by another web application and if so you should stop that application, (re)start cuba Server, reconfigure the web port to be port 8081 (for example) then restart Cuba Server.

Also, ensure that any firewalls configured between the Cuba Server and Cuba Windows Clients / Cuba servlet do not block port 6090.

3.5 CUBA WINDOWS CLIENT

The Cuba Client communicates with the Cuba Server on port 6090* so this (tcp) port must be open.

* This can be edited in the 'Telephony Server Port' field under 'Server Settings' in the Cuba Web Administrator.

4. INSTALLATION

This section covers the basics of downloading and installing your Cuba software and introduces you to the Cuba Web Administrator - the web administration panel where you can modify your settings. The Web Administrator is covered in depth in Section 4.6.

Download and installation of Cuba is fast and intuitive but we've covered it here anyway in a step-by step guide.

4.1 TRIAL PERIOD & LICENCING

During the trial period your Cuba Server software restricts your operation of Cuba Server to three hours of continuous use at a time. Restart the Cuba Server to resume operation.

You are free to install the Cuba Client on as many workstations as you have available.

You can apply for a licence by filling in the application form under 'Unlock you Trial' in the Cuba **Web Administrator** – or contact us direct: support@iteloffice.com

4.2 DOWNLOADING CUBA

Download your Cuba Software at: **www.iteloffice.com**

To get going with Cuba you need to first download the software. The download operates intuitively and takes just a couple of minutes – but just for the record here's a simple visual overview – using Firefox as the web browser…
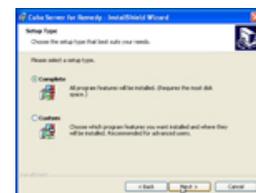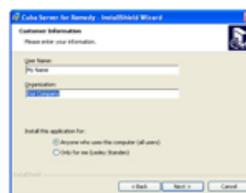
Log onto the designated Windows NT/2000/XP/Vista/2003/2008/7/8 PC as an administrator.
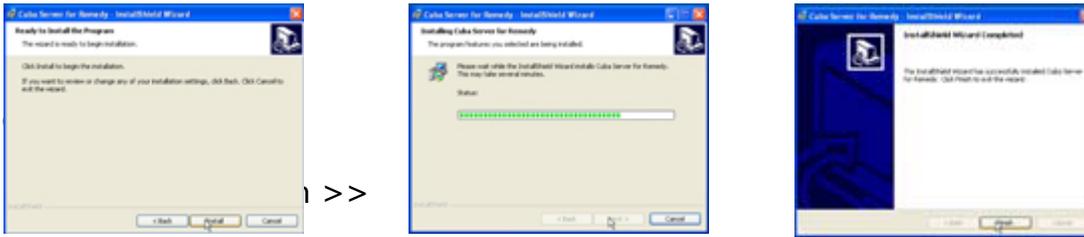

click 'Save File ' >> double click on details >> click 'OK' >>
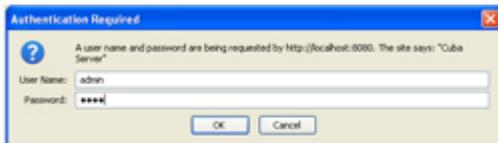
4.3 INSTALLING CUBA SERVER

Then the InstallShield Wizard will launch - this will first install the Cuba Server. In this section we will first install the Cuba Server then return to install the Cuba Client.

accept licence >>   enter name >>   click Next >>

A dialog box will appear…

User Name: admin
Password: cuba

Click 'OK' and the Cuba Web Administrator launches automatically on the 'Settings' page. You can start entering your settings immediately but for the purpose of this tutorial we'll return to install the Cuba Client and deal with settings in the next Section.

4.4 INSTALLING THE CUBA WINDOWS CLIENT
To install your Cuba Client,
Click: 'Start' > 'All Programs' > 'Cuba' > 'Install Cuba Client' >
As previously, the InstallShield Wizard will launch… again, work through the wizard until you reach 'Finish'.
Once you have completed the wizard you will notice that the Cuba Telephone Icon…
appears in your System Tray.

Double Click on the Telephone Icon and a dialog box with a drop down menu will appear - click on the down arrow to reveal a drop down box that displays your extensions.

Choose your extension and Click 'Select'. You'll see that the Cuba Telephone Icon has turned green to indicate you have successfully connected Cuba to your telephone extension.

4.5 INSTALLING CUBA CLIENT ON A TARGET WORKSTATION
You'll find the Cuba Client installation program in your Cuba Server installation folder - which by default is: C:\Program Files\Ioffice\Cubastandard.
The Cuba Client installation file is: cubapana_client_setup.exe.
If you want to install the Cuba client on other workstations, copy the
cubapana_client_setup.exe file to a shared network location - accessible from other workstations - then run the Setup Program on as many workstations as you require.

Note: You can install the Cuba Clients on as many workstations as you like. Your licence will determine how many concurrent Cuba Clients can connect to a Cuba Server.
Our free trial allows unlimited concurrent Cuba Clients but the Cuba Server shuts down after 3 hours operation. Restart the Cuba Server to resume operation.

4.6 THE CUBA WEB ADMINISTRATOR
You can control Cuba's Application Settings in the Cuba Web Administrator.
This is a web front end that allows quick and easy configuration of your Cuba Server.
The Web Administrator launches automatically during initial installation and opens on the 'Settings' tab. This gives you a series of simple form fields where you can enter configuration details.

4.6.1 NAVIGATING TO THE WEB ADMINISTRATOR
You'll be able to return here to review and edit all of your settings whenever you need to.
You'll find the Cuba Web Administrator alongside the Cuba Software Files in your Program File - simply click on:
Start > All Programs > Cuba > Cuba Web Administrator > or
If your Cuba Server is installed on your local machine you can use the address 127.0.0.1.
If your Cuba Server is installed elsewhere on your network, launch your web browser and navigate to the hostname or IP address of the computer where your Cuba Server is installed.
Append : 8080 to the hostname, for example: **http://MyComputerName:8080**
This is because the Cuba web server uses the non standard port 8080 so as not to conflict with alternative web servers which may be configured on the Cuba Server computer.

4.6.2 PASSWORD PROTECTION
Each time you open it a dialogue box will appear…
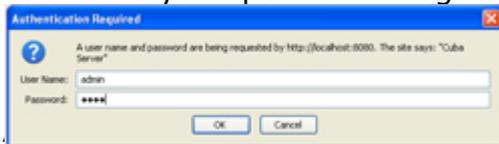
User Name: admin
Password: cuba
Click 'OK' and the Cuba Web Administrator launches automatically on the 'Settings' page.
If you get a Page Load Error then either the Cuba Server is not hosted on your machine or your trial version needs to be restarted.
Go to:
Start > Control Panel > Administrative Tools > Services >
Scroll Down to 'Cuba Server' > Click 'Start'
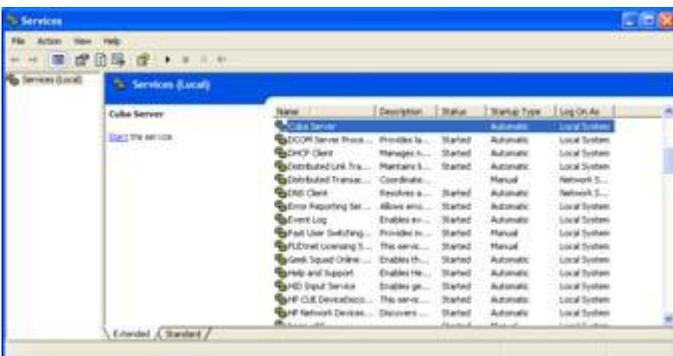
The Cuba Server will restart. You may need to restart your browser in order to access the Cuba Web Administrator.

5. HOW IT WORKS

This section explains how the Cuba solution interacts with both your telephone switch and your business application to provide a detailed technical overview of the architecture. Feel free to skip this section.

A PBX, or private branch exchange, and its related hardware has historically been separated from premise data networks. Telephone handsets have typically been wired directly into PBX interfaces. A telephone on a call centre agent's desk can be used to send requests to the PBX via entering digits on the telephone. The PBX itself generates events, for example, when a customer calls, the pbx routes the call according to a defined dial plan and the end result is that an endpoint, a telephone handset rings. So the telephone can be used to send requests and also can receive events. So we have a request - event based system.

By connecting the data network to the PBX via Cuba Server, this request-event facility can be extended to PC users.
Therefore, Cuba provides two sets of facilities:
A) Ability to send requests via a computer to the PBX.
B) Ability to be notified of events from the PBX.

This request-event facility is often referred to as computer telephony integration or CTI. CTI and the traditional telephone handset work in tandem.

Various editions of Cuba Server are available which communicate with a PBX via a switch protocol. Cuba server for Panasonic uses the CSTA III protocol as the interface. So Cuba Server provides the glue between a software application and the PBX. Cuba Client communicates with Cuba Server but also with your application to provide CTI features.
The Cuba client components are specialised to communicate seamlessly with web applications or executable programs.

 The Cuba windows Client communicates directly with Cuba Server using a proprietary Cuba protocol. It generates a screenpop with a web application by generating an HTTP GET request on the client which is monitoring the extension which is causing the telephony event. The HTTP GET request causes a web browser to send the request to the web application. The returned web page from this HTTP GET request causes the screenpop.

As of Cuba for Panasonic version 1.0, there is no support for sending requests from a web application to Cuba Server. A planned version 1.1 will provide the ability to embed a javascript softphone into a web application.

Cuba also provides the facility to screenpop a Windows executable program. The mechanism is similar for a web screenpop but instead Cuba Server generates a Windows command and passes arguments which are the CallerID and CalledID.

A third party application can send telephony requests to Cuba Server by writing text commands to the Windows APPDATA path. (echo %APPDATA% on command line to get this path). See following configuration section for details on the commands available.

6. CUBA CONFIGURATION

As described above, CTI functionality can be split into configuring requests and configuring telephony event handling.

6.1 CUBA REQUEST CONFIGURATION
To create a telephony request a text file with contents of the form: <Command>
<Parameters> should be placed in the Windows APPDATA\Itel folder. Thie file must have the
.cub extension. To find this folder you can use: echo %APPDATA%. This folder is user
specific so will vary dependent on the user logged into Windows. Check the Microsoft MSDN
for how to locate this folder from an application.

6.1.1.1 The commands
Optional parameters are in italics.

Command	Parameters	Notes
DIAL	<Number> <Userdata>	Make a call. <Number> is destination number to dial. <Userdata> is string data which can be attached to the call.
ANSR		Answer a call.
HGUP		Hangup a call.
HOLD		Hold current active call.
RETR		Retrieve held call.
ITFR	<Number> <Userdata>	Initiate transfer. Creates consult call so caller can consult with other called party. <Number> is destination number to dial. <Userdata> is string data which can be attached to the call.
CTFR		Complete transfer. Connects parties and disconnects transferor.
ICFR	<Number> <Userdata>	Initiate conference. Creates consult call so caller can consult with other called party. <Number> is destination number to dial. <Userdata> is string data which can be attached to the call.
CCFR		Complete conference. Connects new party to conference.
FWDA	<Number>	Forward all calls. Only forward ALL calls is supported. <Number> is destination number to forward to.
CFWD		Cancel forwarding.
UDAT	<UserData>	Attach user data. <Userdata> is string data which can be attached to the currently active call.
SSTF	<Number> <Userdata>	Single step transfer. Also

		known as blind transfer. Transfers call without consultation with destination party. <Number> is destination number to dial. <Userdata> is string data which can be attached to the call.
REDR	<Number>	Redirect call. Redirect an alerting call to another destination (without answering). <Number> is destination number to dial.
RCON		Reconnect Call. Drop active consult call and retrieve previously held (main) call. Used in conjunction with initiate transfer or initiate conference. If an initiate is not answered, reconnect reverts to previous state.
DTMF	<digits>	SendDTMF. The specified digits (or string) will be send as DTMF tones on the active call.

Many of the functions above require no parameters. For example the Answer function just answers an alerting call. Required parameters must be passed otherwise the function will fail. Optionally information such as user data to attach to a call can be passed for some functions.
No notification of function failure is provided to the user. However, the failure is logged to the Cuba client log file.

To use these functions create a text file (Cuba command file) in a location on the users workstation that the Cuba client periodically polls. The command files are intercepted by Cuba client and actioned against the currently registered extension.

Example commands:
echo <Function> <Parameters> >
"%APPDATA%\Itel\cubacmd%date:/=%_%time::=%_%RANDOM%.cub"

Here is a DIAL example where 02077773333 is the number dialled. The number will be dialled from the extension registered by the user:
echo DIAL 02077773333 >
%APPDATA%\Itel\cubacmd%date:/=%_%time::=%_%RANDOM%.cub

Technical Notes: It's not really necessary to understand how this works but here are some details in case this might be useful.
echo is the command to simply print some text. Variables enclosed by % symbols are substituted. For example, echo %date% displays todays date.

echo %date:/=% does the same thing except the date separator characters are removed. [The date separator characters will be interpreted as directory symbols which is not what you want.

echo %time::=% prints the current time and removes the time delimitters.

echo %random% generates a random number. This is so that each file generated will have a unique filename and so will NOT result in an existing cub file being over-written.

The > redirect the output from the console to a file. In this way, echo DIAL 123 > myfile.txt places the text DIAL 123 into a textfile named myfile.txt

So, putting this altogether, echo DIAL 02077773333 > %APPDATA%\Itel\cubacmd%date:/=%_%time::=%_%RANDOM%.cub

generates a newfilename with the .cub extension and places the text DIAL 020777333 into this file.

%COMSPEC% is the path variable for the Command Interpreter. So if your application needs to find it, you can use:

%COMSPEC% /c echo DIAL 02077773333 > %APPDATA%\Itel\cubacmd%date:/=%_%time::=%_%RANDOM%.cub

APPDATA is the Windows Application Data path and on Windows XP for example might be: C:\Documents and Settings\John\Application Data if the currently logged on user logged into Windows as username John.
Itel is the hard-coded Itel subdirectory of this APPDATA path.
The date time and RANDOM processing are used to ensure that each command will create a unique file name as previously mentioned. The Cuba (Client) will pick up these commands in the file.

6.2 CUBA EVENT HANDLING CONFIGURATION
How Cuba passes event data from the PBX to your application is configured by setting rules in the Cuba Web Admin.

Here is a screenshot of the rules configuration page.

Cuba client downloads this configuration at startup from Cuba Server. In the configuration above, Cuba client would generate an HTTP GET request, because Path is HTTP URL is selected.

The fields above are now described.

6.2.1 Cuba Web Admin Configuration Options

6.2.1.1 Screenpop Rules

Configuration Item	Description
Minipop on event	Present a small (size dependent on screen resolution) unobtrusive window in the bottom right of the screen to indicate event. This gives the user the option to ignore the event and so not generate a screenpop. The minipop window displays the CallerID and CalledID.
Screenpop internal calls	By default, Cuba client will not generate a screenpop for internal calls. Selecting this option will result in a screenpop for both external inbound AND internal calls.
Screenpop outbound calls	By default, Cuba client will not generate a screenpop for originated external / outbound calls. Selecting this option will result in a screenpop for both this call type.
Screenpop on ringing event	Selecting this option will generate a screenpop for the ringing event (Cuba alerting event). This event is the event where a telephone extension starts ringing due usually to an incoming call. [Note that to generate ANY type of screenpop either Screenpop on ringing or Screenpop on answered should be selected].

Screenpop on call answered	Selecting this option will generate a screenpop for the call established event (Cuba connected event). This event is the event where a telephone extension answers a ringing call OR for an originated call where the remote end answers the call. [Note that to generate ANY type of screenpop either Screenpop on ringing or Screenpop on answered should be selected].
Screenpop third party application	Select this option to screenpop a third party application. generally, this option should always be selected. This affects both web application and Windows command screenpop.
Third party program path	This is the web application url or executable program path.
Path is HTTP URL	Select this option for web application screenpop
Bypass minipop	Selecting this option bypasses minipop and the third party (web) application is immediately screenpopped.
Strip DDI Name from CalledID	This is a Panasonic KX series telephone system specific feature. In the Panasonic switch configuration it is possible to enter a DDI name in the DDI/DID Table in the CO and incoming line section. If for example Sales Line is entered here, the CalledID is presented by the switch as <123456>Sales Line where 123456 is the dialled digits. to strip off the < and >Sales Line to leave just the digits select this option.

7. CUBA SERVER GENERAL CONFIGURATION

This section describes the general Cuba Server options some of which are essential for the cuba solution to function. Others are purely for maintenance and troubleshooting.

7.1 CUBA LOGS

Select the Logs section to view or delete Cuba Server logs. The log file provides a history of what is happening on the Cuba Server and can be used for troubleshooting.

7.2 DEVICES

In this section you need to enter all the call centre agents extension numbers. Not the agent ID, the actual telephone hardware/handset extension number. The Cuba client extension logon dialog is populated with the contents of the list defined here.

7.3 CTI LINK

Enter the Panasonic switch IP address and CTI port. By default the CTI port is 33333.

7.4 SERVER SETTINGS

Web Server Port	This is the port that the Cuba web server listens on and is 8080 by default. If you wish to communicate on another port enter the port no. here. Remember to restart the Cuba (Server) after editing this value.
Telephone Server Port	This is the port that the Cuba telephony server listens on and is 6090 by default. If you wish to communicate on another port enter the port no. here. Remember to restart Cuba (Server) after editing this value.

7.5 HELP

Help on configuring Cuba Server.

7.6 UNLOCK TRIAL
To get a full user licence you will need to purchase an Activation Key. Enter your contact details here and click 'Send Registration Request'. We will contact you to discuss payment options and the registration process.

7.7 REGISTER
Once you have received your Activation Key copy and paste it here and click 'Save'. You will then get unrestricted use of Cuba for the number of seats that you have purchased.

8. TROUBLESHOOTING

8.1 LOGGING
Cuba Server writes logging information to a log file, of the form: Cuba<date>.log, in the Itel subdirectory of the common application data folder. The location of this folder varies dependent on Windows version. On Windows XP this folder is likely to be C:\Documents and Settings\All Users\Application Data\Itel. Type ECHO %ALLUSERSPROFILE% <ENTER> at a command prompt to find this folder on your system. Prepend \Application Data\Itel to the returned string.

To enable full logging select Full in the Logging level dropdown in the server section of Cuba web administrator.

Now debug level errors and informational messages will be logged to cubasvr.txt which can provide very useful troubleshooting information.

For any queries please contact support@iteloffice.com