Internet Payment Gateway

Win32 API Developer Guide

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Disclaimer

Confidentiality

Document Purpose / Intended Audience

This guide is one component of the St. George Bank Transaction Server document set. It intended to act a reference point for developers seeking to implement the St. George Bank transaction functionality into merchant web applications. It provides specific technical information about the typical deployment of the St. George Bank Win32 API and delivers valuable insights into more user-specific deployments.

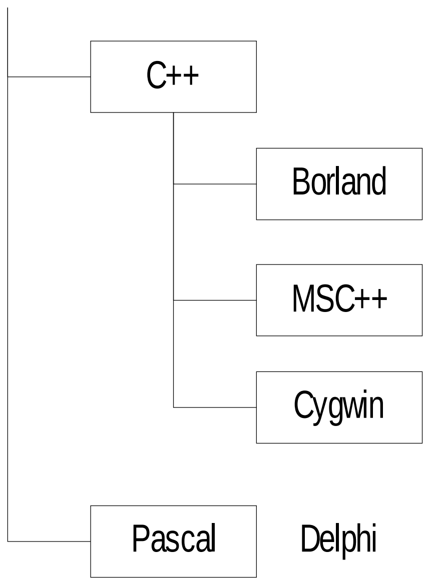
It is assumed that the parties implementing this API will be experienced in implementing web applications in a Win32 development environment, and this document is written principally toward parties with this expertise.

Related Documents

- **St. George Bank Generic API Developer Guide**
  - **St. George Bank .Net Developer Guide**
  - **St. George Bank Java Developer Guide**
  - **St. George Bank Perl Developer Guide**
  - **St. George Bank Linux Developer Guide**
  - **St. George Bank PHP Developer Guide**

1 Introduction

The St. George Bank Win32 API is a Windows-based dynamic link library containing methods for use with the *St. George Internet Payment Gateway*. The API enables web site and application developers to efficiently add credit card transaction processing capabilities to their products.



The St. George Bank Win32 API can be used in Windows-based applications in many programming environments including C/C++, Delphi, Visual Basic, Perl, and with a wide variety of applications like Progress, FoxPro, and many others. This can be done by writing a wrapper around the webpayclient.dll.

Additional Windows specialist development kits for OCX and ASP are also available. These kits utilise the core St. George Bank client libraries as a basis for deployment but provide specific development wrappers to suit each environment.

This document should be used in conjunction with the St. George Bank *Generic API Developer Guide* document, which includes details on parameters required for credit card transactions, implementation guidelines and a list of response codes.

This document also includes common configuration settings, test applications and protocols, and sample code that will assist developers in incorporating the API into their chosen application.

Communication between the St. George Bank API and St. George Bank Transaction Server Gateway uses SSL connectivity through server addresses and defined ports.

NOTE: If your application is located behind a firewall or proxy server, you should ensure that the relevant addresses and ports are not being filtered or blocked.

It is important to note that the St. George Bank Transaction Server utilises two distinct transaction processing environments. These environments are defined as **LIVE** and **TEST**. The **LIVE** environment connects directly to the live banking processing system and performs real-time transactions. The **TEST** environment is a simulated environment controlled within the transaction server that effectively mimics the live processing environment; **TEST** is principally used for integration testing and training.

Using the parameters provided by your St. George Bank representative you must define and test your application and API integration against the **TEST** environment to ensure compliance.

1.1 Minimum System Requirements

The following minimum system configuration is required for implementation of the St. George Win32 API.

Operating System	Windows NT 4.0, Service Pack 6.0a - Windows XP (SP2) – Windows 2000 (SP4)
Processor	Pentium III
Processor Speed	800Mhz
Memory	256 Mb

Please note:

- The Window C++ API has been certified for a machine built exactly as above and is not supported for any other configurations.
- It is assumed that the parties implementing this API will meet the above requirements and be experienced in implementing web applications in a Windows C++ development environment, and this document is written principally toward parties with this expertise

2 Installation

Before installing the API, please check that your system meets the minimum system requirements listed above.

Installation is delivered as an Installshield that contains all the necessary components including sample source code, documentation, and supporting libraries.

The Installshield provides a simple point-and-click process that installs all files into the appropriately specified locations and performs the requisite registration of dependencies and libraries.

2.1 API Dependencies

The following sections detailing the dependencies are provided for those parties who wish to tailor the installation to suit a specialised or non-standard implementation.

The St. George Bank Win32 API client library relies upon specific libraries to enable SSL connectivity and security; these are included in the standard St. George Bank Win32 API Development Kit.

All component libraries are registered by the Installshield.

2.1.1 Basic St. George Bank Client Library

The basic St. George Bank client library is named **webpayclient.dll** and is supplied with the development kit.

The files should be placed in an appropriate folder on your system. It is customary to place library files into the **<windows>\system32** folder (for example **c:\WinNT\System32**) but you can place the basic St. George Bank client library in any folder identified on the Windows path or into the folder from which the St. George Bank client software will run.

2.1.2 OpenSSL Libraries

All St. George Bank APIs except Java depend on the OpenSSL libraries. These libraries should be OpenSSL version 0.9.6, or greater, and must be correctly installed on your machine before the native St. George Bank client software will execute successfully.

The St. George Bank development kit contains OpenSSL library files for OpenSSL version 0.9.7a.

The OpenSSL libraries are named **libeay32.dll** and **ssleay32.dll**. These files often already exist on machines onto which communication or e-commerce software has previously been installed.

If you are certain your system already has OpenSSL files of version 0.9.6 or above, you may disregard the files delivered with the development kit. If you want to use the OpenSSL files supplied with the development kit. You must copy the **libeay32.dll** and **ssleay32.dll** files to your system. It is customary to place these files into the **<windows>\system32** folder (for example **c:\WinNT\System32**) but you can place these files in any folder identified on the Windows path, or into the folder from which the St. George Bank client software will run. The Installshield will place these files in the installation directory.

Alternatively, you may download pre-compiled versions of the OpenSSL libraries from a trusted site, or download the OpenSSL source and compile it on your machine. Eg. http://gnuwin32.sourceforge.net/packages/openssl.htm

NOTE

If you have older files on your system from a previous implementation, these files may prevent the current API version from operating correctly. To rectify this problem, we strongly recommend that you...

- Remove all occurrences of key library files (webpayclient.dll, ssleay32.dll and libeay32.dll) from your system (or, at least, from the Windows path) prior to installing the new library files included in this kit. Preferably, you should copy these older library files to a folder away from the Windows path or onto a floppy rather than deleting them.

2.2 St. George Bank Specific Information and Files

Your St. George Bank representative will supply you with information and files specific to the St. George Bank Gateway you will be using. This includes…

- St. George Bank Gateway address (www.gwipg.stgeorge.com.au)
- Gateway port numbers: Test (3007) and Live (3006)

  NOTE: If your application is located behind a firewall or proxy server, you should ensure that the relevant addresses and ports are not being filtered or blocked.
- Your St. George Bank Client ID
- A St. George Bank client certificate file (e.g., “client.cert”) appropriate for your St. George Bank gateway and the password protecting this certificate file

You must place the St. George Bank client certificate file somewhere on your machine so that the St. George Bank client software can access it. It is recommended that you place the file in the same folder with all your other St. George Bank client files or with other files that make up your own application.

2.3 The St. George Bank Base Test Program

Running the Installshield will install a test application (BaseTest.cpp) into the specified folder. Refer to appendix A for a description of all files included in the install.

You must compile and run the test program to ensure that:

- The OpenSSL libraries are correctly installed
- The basic St. George Bank Client library has been installed
- The necessary ports in your firewall are opened to allow communications
- There are no other basic connectivity problems with your machine

Instructions for compilation can be found in section 3.2.

The files required to compile and build the base test program are:

- BaseTest.cpp
- webpayclient.h
- webpayclient.dll

2.3.1 Supplying Input to the Test Program

The test program takes 7 possible command line arguments:

BaseTest.exe <gateway_address> <gateway_port> <client_id> <certificate_file> <certificate_password> <trusted_certificates_file> <number_of_transactions> <debug>

Argument	Description
<gateway_address>	The address of your St. George Bank gateway, “www.gwipg.stgeorge.com.au”. Multiple gateways may be separated by commas.
<gateway_port>	The port number provided to you. Ensure that you specify the correct port number for either the **test (3007)** or **live (3006)** environment.
<client_id>	The Client ID issued to you (1000…). Note: If you need to separate different business entities or income streams, your St. George Bank representative can set up multiple Client Ids under your IPG Customer ID (5000….) for you.

<certificate_file>	The name of your St. George Bank client certificate file, e.g. "c:\St. George Bank\client.cert". You can use the full path or a relative path, as long as the name resolves correctly.
<certificate_password>	The password protecting your St. George Bank client certificate file.
<trusted_certificates_file>	The name of a certificate file containing certificates for all certificate authorities that are to be trusted. If left blank (""), all certificate authorities are trusted.
<number_of_transactions>	The number of transactions to submit to the St. George Bank gateway before terminating the test.
<debug>	To enable API logging, set this paramater to "debug".

For example:

```
BaseTest.exe "www.gwipg.stgeorge.com.au" "3007" "10000000" "client.cert" "password" "" 2
```

2.3.2 Running the test program

The test may take some time to establish the first SSL connection but all subsequent transactions will occur within seconds.

The output of the test program should include some of the following or similar responses …

- Response Code = "00"
- Result = "0"
- Response Text = "Approved (TEST TRANSACTION ONLY)"
- Error Message = "(null)"
- Transaction Reference = 0301000000123469

If the output of the test program contains the word "APPROVED", the installation of the API has been successful.

The following gives a brief overview of the fields involved:

Field	**Explanation**
RESPONSECODE	A two digit code used to determine the outcome of the transaction. The code number matches the RESPONSETEXT field. "**00**", "**08**" or "**77**" designate an **approved** transaction. A complete list of response can be found in Appendix A of the Generic API Developer Guide.
RESPONSETEXT	A meaningful text message that explains the response code
ERROR	Any error additional messages received from the gateway.
TXNREFERENCE	A unique reference number generated for each transaction.
RESULT (deprecated)	The result field designates the success or failure of the execute() method itself. "0" designates success, a value <>"0" designates failure. NOTE: Do **not** use this field to determine whether the transaction has been approved or declined.

NOTE: Please follow the guidelines in the Generic API Developer Guide on how to determine the outcome of a transaction.

2.4 Troubleshooting

If your output does not look as expected, please review the steps you have taken so far. The following questions may assist in determining common API problems:

2.4.1 Installation

- Are the OpenSSL libraries somewhere on the Windows path?
- Is the basic St. George Bank client library somewhere on the Windows path?
- Are you using OpenSSL version 0.9.6 or higher?
- Have you removed any old versions of the API before installation? It might be necessary to manually unregister the webpayclient.dll using the windows command “regsvr32 /u”
- If you encounter an error “unable to register dll” or similar during install, proceed with the install and reboot the machine. The webpayclient.dll should have been registered despite this message.
- In some cases it might be necessary to register the webpayclient.dll using the windows command “regsvr32”.

2.4.2 SSL/Security

If you encounter the error “UNABLE TO INITIALISE SSL” or similar, please check the following:

- Do you have the correct certificate file?
- Are you using the correct certificate pass phrase?
- Path to certificate file: Have you specified the full path, eg. c:/myfolder/cert.cert
- Trusted certificate file: leave this parameter blank
- Do you have read access to the cert file?

2.4.3 Connectivity

- Do you have connectivity to the gateway? Launch Internet Explorer on the machine the API is installed on and type in the URL http://www.gwipg.stgeorge.com.au: 3006. If you can see 5 squares, you can reach the gateway.
- Are you behind a firewall? You may need to contact your Security Administrator to ensure the API ports are open for traffic in both directions.
- Are you using any packet shapers or bandwidth management products? If not configured properly, these might affect connectivity to the gateway.
- Commercial and freeware tools (eg. Packet Sniffers) can be found on the Internet, to assist you in testing your network connectivity to the St. George Bank Internet Payment Gateway.

2.4.4 System

- Are you using the latest drivers for you network interface card?
- Are your TCP/IP libraries up to date?
- Have you applied the latest patches to your Operating System?
- Do you have enough RAM on your machine to accommodate for concurrency and/or other applications running on that machine?
- Do you have any applications running that might interfere with the API?

2.4.5 Parameter values / Transaction data

- Is the right location of the St. George Bank certificate file specified? You may need to specify the file's full path.
- Is the password correct for the St. George Bank client certificate?
- Is the correct address and test port number specified for the St. George Bank gateway? You may want to use "nslookup" to ensure that the address resolves correctly. If it does resolve correctly, the IP address of the gateway will be displayed on the screen. If it does not, you will get an "unknown host" message.
- Are you using the correct Merchant ID and Client ID?
- Are you sending all the required fields for a transaction? Refer to the generic developer guide for required fields.
- Do all the fields in the transaction bundle contain valid data? Refer to the generic developer guide for field restrictions.

2.4.6 Response codes

- In some cases, the system may return errors when you are expecting an approved or other code during testing. Please check the response code you receive against those contained in the Generic API Developer Guide.
- In the Test environment, the response code is determined by the cents amount, eg. $1.51 = "51 INSUFFICIENT FUNDS"
- Some response codes may be generated at any time and this behaviour is perfectly normal, for example, the system may return the code 'IP' for 'In progress' if the transaction is still being processed.

2.4.7 Logging

To facilitate debugging, it is recommended to log the values of all fields in the transaction bundle prior to executing the transaction. The transaction response (including any errors that might occur) should be logged as well. Refer to section 4.3 for instructions on how to enable API logging.

If you are still unable to identify the problem, call your St. George Bank representative. Refer to chapter 6, "Getting Help" for contact details.

3 API Development/Integration

The following chapters deal with implementing your own solution using the St. George Bank API.

3.1 Implementation guidelines

- Please carefully read the **Generic API Developer Guide** document before implementing your solution. It contains useful instructions on how to avoid common mistakes when implementing the API.

3.2 Directions for compiling and linking

Here are directions for building the test program using Microsoft Visual C++. Other compilers may be used to perform this process however, if you use another, please refer to its documentation for instructions on how to build programs.

- For Visual C++ …
  - Start Visual C++, create a new empty Win32 console application project (File->New->Project->Win32 Console Application) and add the “BaseTest.cpp” source file to the project (Project->Add To Project->Files).
  - Ensure that the include files mentioned above (webpayclient.h, etc.) and the link library are in the appropriate folders (Tools->Options->Directories->Include Files/Library Files).
  - Ensure that the link library file is listed as a required library module (Project->Settings->Link).
  - Note that Visual C++ defines the parameter WIN32 for the pre-compiler by default so you don’t need to explicitly define this parameter.
  - Build the test application (Build->Build…).

If you are building a St. George Bank client component that directly relies upon the basic native St. George Bank client library, you can build your component by following the directions given above. Merely replace the “BaseTest.cpp” file with all your source files and place all your header files in an appropriate folder (such as the folder containing the “webpayclient.h” file).

4 Win32 API Reference

This section contains reference material, functions, methods and source code used to implement the Win32 API.

For information on Credit Card transactions and parameters refer to the *Generic API Developer Guide.*

4.1 *Available Functions/Methods*

4.1.1 init_client

Synopsis

```
BOOL init_client ( )
```

Parameters

There are no parameters for this method.

Return Type

This method returns true when the client is successfully initialised.

Usage

Initialise the St. George Bank client. This method can be called explicitly or it will be called automatically when other methods are invoked.

4.1.2 free_client

Synopsis

```
BOOL free_client ( )
```

Parameters

There are no parameters for this method.

Return Type

This method returns true when all system resources allocated to the client are cleared.

Usage

Free the resources of the St. George Bank client. This method should be called when use of the St. George Bank client is complete to ensure that all system resources are freed.

4.1.3 cleanup

Synopsis

```
void cleanup ( void * txn )
```

Parameters

The only parameter required for the cleanup method is the transaction context.

Return Type

The cleanup method returns void (no return value).

Usage

The cleanup method should be called at the end of a transaction in order to de-allocate memory and other resources used by St. George Bank Win32, to complete the transaction.

4.1.4 execute

Synopsis

```
BOOL execute ( void * txn )
```

Parameters

The only parameter needed by the execute method is a void pointer to the transaction context.

Return Type

Execute will return true if the transaction was processed successfully. This does not imply approval of the transaction. Execute returns false if the transaction request is incomplete for any reason.

Usage

Ordinarily, execute is called after all values have been set, and should only be called once per transaction. If execute fails, the application may call execute again, depending on the rules outlined in the section 'Determining the Outcome of a Transaction' in the Generic API Developer Guide accompanying this guide

4.1.5 flushBundle

Synopsis

```
void * flushBundle ( void * txn )
```

Parameters

The flushBundle requires only the transaction context.

Return Type

This method returns a cleared bundle that may be different from the original.

Usage

This method is used to re-create a context/bundle. All values, including server address, port, certificate password and path will need to be reset after calling this method.

4.1.6 get

Synopsis

```
char * get ( void * txn, LPCTSTR name )
```

Parameters

The get method requires the transaction context and a string containing the name of the value to be returned.

Return Type

The get method returns a character string containing the value requested.

Usage

The get method can be used at any time to return values from the transaction context. It is typically used after the execute method has been called. See the section ‘Transaction Responses’ in the Generic API Developer Guide document accompanying this guide for a full listing of values available for the transaction type being used.

4.1.7 newBundle

Synopsis

```
void * newBundle ( void );
```

Parameters

newBundle has no required parameters.

Return Type

A void pointer is returned to the application.

Usage

newBundle is used to create a new transaction context. The application must maintain reference to this pointer, and should not attempt to modify it in any way, except through the library’s methods. This method should be the first library method called by the application, as the transaction context or bundle is required for nearly all of the library’s methods.

4.1.8 put

Synopsis

```
void put ( void * txn, LPCTSTR name, LPCTSTR value )
```

Parameters

The put method requires the transaction context, a string containing the name of the parameter to be set, and a string containing the value of the parameter.

Return Type

There is no return value for this method.

Usage

This method sets values in the transaction context. For a full list of the parameters that can be set, see the ‘Transaction Requests’ section in the Generic API Developer Guide accompanying this guide.

4.1.9 put_ClientID

Synopsis

```
void put_ClientID ( void * txn, LPCTSTR newVal )
```

Parameters

The put_ClientID method requires the transaction context and a string containing the ClientID.

Return Type

There is no return value for this method.

Usage

This method sets the ClientID in the transaction context/bundle.

4.1.10 put_CertificatePassword

Synopsis

```
void put_CertificatePassword ( void * txn, LPCTSTR newVal )
```

Parameters

The put_CertificatePassword method requires the transaction context and a string containing the Certificate Password.

Return Type

There is no return value for this method.

Usage

This method sets password for the Certificate in the transaction context/bundle.

4.1.11 put_CertificatePath

Synopsis

```
void put_CertificatePath ( void * txn, LPCTSTR newVal )
```

Parameters

The put_CertificatePath method requires the transaction context and a string containing the Certificate Path.

Return Type

There is no return value for this method.

Usage

This method sets path and location for the Certificate in the transaction context/bundle.

4.1.12 setPort

Synopsis

```
void setPort ( void * txn, LPCTSTR Port )
```

Parameters

The setPort method requires the transaction context and a string containing the server port.

Return Type

There is no return value for this method.

Usage

This method sets Port through which the Servers communicate in the transaction context/bundle.

4.1.13 setServers

Synopsis

```
void setServers ( void * txn, LPCTSTR ServerList, LPCTSTR Port )
```

Parameters

This method takes the transaction context as a void pointer, a string containing a comma separated list of server names or IP addresses, and a string containing the TCP Port number to connect on.

Return Type

This method has no return type.

Usage

This method must always be used to set the names or IP addresses and the port number of the servers with which to communicate. Multiple servers may be specified, but they may only use the one port.

4.2 Error/Exception Handling

The St. George Bank Win32 API handles all errors internally. Any errors encountered during processing, cause the transaction to fail. Error messages are viewed by investigating the ERROR field.

If a transaction attempt fails and a Transaction Reference has been returned by the St. George Bank Servers, the execute method will automatically query the status up to three more times. Beyond this, execute fails, and the transaction reference is available to the application. The merchant's application should be enabled to query the status of such a transaction, and be able to do so at any time.

4.3 API Logging

The St. George Bank Win32 libraries have comprehensive inbuilt debugging features. To enable debugging, use the put( ) method to set the parameters 'DEBUG' and 'LOGFILE'.

The parameter 'DEBUG' can be set to 'ON' or 'OFF', with a default value of "'OFF'.

'LOGFILE' defaults to the program's stdout (Standard Output file), and can be pointed to any filename. If the file does not already exist, it will be created. A valid directory must exist for the output file.

```
put (bundle,"DEBUG", "ON")
put (bundle, "LOGFILE", "log.txt")
```

You can use the use the get() method and the 'THEWORKS' parameter to obtain a dump of all values contained in the transaction bundle.

get (bundle, "THEWORKS")

5 Sample Application

The sample included here is C++ code for the most basic **creditcard** implementation possible and contains hard-coded values. It simply displays the responses to the user. It is intended only to demonstrate the basic concepts involved in using the St. George Bank Win32 API. Your production application will need to collect user or other input, and log the transaction responses to a database and/or display them to users.

```
#include "include\webpayclient.h"

#define THE_CLIENT_TYPE   "webpayC++ (Win 32)"
#define THE_VERSION       "1.12"

// prototypes
void sendTransaction( int argc, char *argv[] );
boolean doStatusCheck(void * bundle);
boolean approvedTransaction(char * responseCode);
void displayResults(void * bundle);

int main( int argc, char *argv[] )
{
        int status = 0;
        if( argc < 8 )
        {
                printf( "\r\nNative Webpay Client Test\r\n" );
                printf( "=========================\r\n" );
                printf( "usage: BaseTest.exe <serverlist> <port> <clientid> <cert path> " );
                printf( "<cert pass> <ca_file> <num_iters> {\"debug\" or \"no debug\"}>\r\n" );
                status = 1;
        }
        else
        {
                printf( "===============================================================\r\n" );
                printf( " TEST APPLICATION ONLY: Do not use in a production environment.\r\n" );
                printf( "===============================================================\r\n" );
                // send a repeated number of transactions
                int i, numIters = atoi( argv[7] );
                for ( i = 0; i < numIters; i++ )
                {
                        sendTransaction( argc, argv );
                }

                // free the webpay client resources
                free_client( );
        }

        return 0;
}

// send a transaction given the specified parameters
void sendTransaction( int argc, char *argv[] )
{
        // Create a new context/bundle
        // A void pointer is used here as this application only needs to hold a reference,
        // and does not need to know any of it's specifics.
        void *bundle = newBundle();

        //Add the client type and the version to the bundle
        put(bundle, "CLIENTTYPE", THE_CLIENT_TYPE);
        put(bundle, "VERSION", THE_VERSION);

        printf( "Arguments: %d\r\n", argc );

        if ( argc == 9 )
        {
                printf( "Debug set to: [%s]\r\n", argv[8] );
                if ( stricmp( argv[8], "debug" ) == 0 )
                {
                        printf( "Debug ON\r\n" );
                        put ( bundle, "DEBUG", "ON" );
                        put ( bundle, "LOGFILE", "webpay.log" );
                }
                else
                {
                        printf( "Debug OFF\r\n" );
                        put ( bundle, "DEBUG", "OFF" );
                }
        }
        else
        {
                printf( "Debug OFF\r\n" );
                put ( bundle, "DEBUG", "OFF" );
        }

        // Set security related parameters
        put_CertificatePath( bundle, argv[4] );
        put_CertificatePassword( bundle, argv[5] );
        put( bundle, "_CAFILE", argv[6] );

        // Set the server address and port number
        setServers ( bundle, argv[1] );
        setPort ( bundle, argv[2] );

        // Set the transaction's parameters.
        // These vary between transaction types and are subject
        // to change with notice, as new types are added.
        put ( bundle, "CLIENTID", argv[3] );
        put ( bundle, "CARDDATA", "4564456445644564" );
        put ( bundle, "CARDEXPIRYDATE", "0205" );
        put ( bundle, "DATA", "Example Transaction" );

        put ( bundle, "INTERFACE", "CREDITCARD" );
        put ( bundle, "TRANSACTIONTYPE", "PURCHASE" );

        put ( bundle, "TOTALAMOUNT", "10.00" );
        put ( bundle, "TAXAMOUNT", "1.00" );

        // Attempt to execute the transaction request...
        if ( execute ( bundle ) ) {
                // If the execute method returns successfully this indicates
                // that communication with the Payment Gateway has been successful.
                // A further test of the Response Code and Response Text will be
                // required to determine if the Payment has been successfully
                // Authorised. Please see the developers guide for more details.

                printf ( "Successfully communicated with the WTS.\r\n" );

        } else {
                // There has been a problem during the execute call.

                // Log message.
                printf ( "Unable to communicate with the WTS.\r\n" );

                //Try transaction recovery
                char *transactionRef = get( bundle, "TXNREFERENCE" );
                if (transactionRef)
                {
                        //We have a transaction reference so attempt a status transaction.
                        printf("Performing status check with Transaction Ref = [%s]\n",
transactionRef);
                        if(doStatusCheck(bundle))
                        {
                           printf ( "Status Check Successful - Details are displayed below.\r\n" );
                        } else {
                                printf ( "Status check failed: Unknown transaction status.\nPlease
wait a short while and try status check again using Transaction Ref [%s].\r\n", transactionRef );
                        }
                }
                else
                {
                        // There is no transaction reference number so the transaction has failed
completely.
                        // It can be safely reprocessed.
                        printf("The transaction can be safely reprocessed as no Transaction Reference
Number exists.\n");
                }

        }
        // Get the responses and display them...
        displayResults(bundle);

        cleanup ( bundle );
}

boolean doStatusCheck(void * bundle)
{
        char *transactionRef = get( bundle, "TXNREFERENCE" );
        if (transactionRef)
        {
                //We have a transaction reference so attempt a status transaction.
                put ( bundle, "TRANSACTIONTYPE", "STATUS" );
                return execute ( bundle );
        }
        else
        {
                //No txnref number so we can not do a status check.
                return false;
        }

}

void displayResults(void * bundle)
{

        printf ( "************************************************\n" );

        if(approvedTransaction(get( bundle, "RESPONSECODE")))
        {
                printf("************* TRANSACTION APPROVED *************\n");
        }
        else
        {
                printf("********** TRANSACTION NOT APPROVED ************\n");
        }

        printf ( "************************************************\n" );
        printf ( "Transaction Reference\t : [%s]\r\n", get( bundle, "TXNREFERENCE") );
        printf ( "Result\t\t\t : [%s]\r\n", get( bundle, "RESULT") );
        printf ( "Auth Code\t\t : [%s]\r\n", get( bundle, "AUTHCODE") );
        printf ( "Response Text\t\t : [%s]\r\n", get( bundle, "RESPONSETEXT") );
        printf ( "Response Code\t\t : [%s]\r\n", get( bundle, "RESPONSECODE") );
        printf ( "Error Message\t\t : [%s]\r\n\n", get( bundle, "ERROR") );
        printf ( "OpenSSL Version\t\t : [%s]\r\n", get( bundle, "_OPENSSL_VERSION") );
        printf ( "************************************************\n" );
}

boolean approvedTransaction(char * responseCode)
{
        //
        // Check the returned response Code against the list of known Approved Response Codes
        //
        // Please check the documentation to ensure that you have the
        // latest list of approved response codes.
        //

        if (responseCode)
        {
                #define ARRAY_SIZE 3
                char * listOfApprovedResponseCodes[ARRAY_SIZE];
                listOfApprovedResponseCodes[0] = "00";       // Transaction Approved
                listOfApprovedResponseCodes[1] = "08";       // Approved Signature
                listOfApprovedResponseCodes[2] = "77";       // Approved

                for(int i=0; i < ARRAY_SIZE;i++)
                {
                        if( strcmpi ( responseCode ,  listOfApprovedResponseCodes[i]) == 0)
                        {
                                //we have a match
                                return true;
                        }
                }
        }
        return false;
}
```

6 Getting Help

6.1 IPG Web Site

The complete API documentation and software is available from **https://www.ipg.stgeorge.com.au**.

6.2 Contacting St. George Bank

Before reporting errors, **ensure that you are able to replicate them**, so that we are able to diagnose properly.

Be prepared to have available for the Helpdesk or e-mail the following information:

- Operating system + API type (i.e. – XP (SP2) + C++I)
- Basic Hardware description (i.e. – P3 800 + 512 meg RAM)
- Debug logs & Log file containing the values of all fields in the transaction
- Description of the error (when and how it happened)
- Error code and Error message

The St. George Bank Technical Support Team can be contacted in the following ways:

- Telephone via the St. George EFTPOS Helpdesk 1300 650 977
- Email to: ipgsupport@stgeorge.com.au
- On-Line at https://www.ipg.stgeorge.com.au

Appendix A – Files included in this Developer Kit

NOTE: The certificate file (eg. client.cert) is not included in the kit. For security purposes, this file will be supplied separately.

Documentation

St. George Bank Win32 API Developer Guide	This document.

Base libraries

Ssleay32.dll, Libeay32.dll	Dynamic link libraries, containg public key implementation.
Ssleay32.lib, Libeay32.lib	Library files for the Ssleay32.dll and Libeay32.dll described above.
Webpayclient.dll	St. George Bank library file consisting of the base functions, and the file is required dependency during the compile time for the test program.
Webpayclient.lib	Stub needed for compilation
Webpayclient.h	Header file for the St. George Bank client library

Base Test

Basetest.cpp	The C++ source code for the base test. You need to compile and run this program to execute the base test.