PASSPORT Application Programming Interface Options

Client-based host application integration using screen information is low cost and low risk

With its low cost and low risk approach to host application integration, client-based TN3270, TN5250, VT100, VT220 and SCO ANSI terminal emulation for Microsoft Windows can be an ideal platform to integrate valuable processes found in legacy applications. For this reason, the Zephyr line of PASSPORT terminal emulation products offers up to four APIs to assist developers with options for client-based host integration.

Zephyr also offers two software development toolkits to ease programmatic application integration efforts: the 2004 versions of the PASSPORT HLLAPI Toolkit and PASSPORT Object Toolkit. Both are available at no cost to Zephyr customers under a Subscription License Agreement or to independent software vendors that license and support legacy applications.

Client Based Host Integration APIs

- HLLAPI Interface
- Object Interface
- Macro Interface
- Automation Interface

Using the host application screen display as an API, developers can quickly navigate through TN3270, TN5250, VT100/VT220 and SCO ANSI applications to locate specific screens, fields and text, and cut and paste data to and from the host session.

The first three APIs listed above and both toolkits can be used with either PASSPORT PC TO HOST™ or PASSPORT WEB TO HOST™. The automation interface can only be used with PASSPORT PC TO HOST. PASSPORT PC TO HOST is a desktop based terminal emulation product, whereas PASSPORT WEB TO HOST is a server deployed web-based terminal emulation product.

HLLAPI Interface

The HLLAPI (High Level Language Application Programming Interface) Interface was originally developed by IBM in the mid 1980's and first used with the MS DOS-based IBM PC 3270 Emulation Program. It has evolved over two decades to become the most widely used API to link thousands of desktop-based applications to IBM mainframe applications.

API OPTIONS

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SAMPLE PROJECTS

- *Microsoft Access macros can be written to update information in a host application using data from an Access database with PASSPORT terminal emulation for host access*
- *A PowerBuilder HLLAPI application originally written for the NetManage Rumba desktop based terminal emulator can be ported to the PASSPORT WEB TO HOST web-based terminal emulation program*
- *Complex Attachmate EXTRA!® macros and applications written specifically for Attachmate EXTRA! can be easily ported for use with PASSPORT terminal emulation*
- *A corporate desktop-based application that integrates multiple applications can embed and interface a complete terminal emulation program*
- *For more information, or to receive a copy of the Zephyr PASSPORT toolkits, please contact us at support@zephyrcorp.com.*

A library file (.LIB) is provided that must be linked into an application in order to use the HLLAPI interface. HLLAPI is not an ActiveX COM object and is not object oriented. HLLAPI provides a single function that has four parameters. The first parameter indicates which HLLAPI function to perform. PASSPORT uses either hllapi() or winhllapi () as the function name entry point. The IBM HLLAPI DLL name is PCSHLL.DLL whereas PASSPORT uses the PASSHLL.DLL file name. When migrating an HLLAPI application to PASSPORT it's important to check that (1) the name of the HLLAPI DLL being loaded is correct (normally needs to be changed) and (2) the HLLAPI function entry point is correct, either hllapi() or winhllapi () or something else (normally does not need to be changed). The HLLAPI short name, which ranges from the letter 'A' to the letter 'Z', is used to identify which host session is being used. The PASSPORT HLLAPI Toolkit has sample C++ and Visual Basic applications with source code.

When to Use: The HLLAPI Interface is recommended when PASSPORT is being used to replace an Attachmate, IBM or NetManage emulator and an existing PC HLLAPI application. Also, third party applications may require HLLAPI for host access.

Object Interface

The PASSPORT Object Interface was originally added to PASSPORT in version 2002 to provide the ability to convert Attachmate EXTRA!® macros to PASSPORT macros. It can also be used to run PC applications designed using the Attachmate EXTRA! Objects.

This interface is an ActiveX COM object called PASSOBJ.DLL. There is a hierarchy of objects used for host access which includes Sessions, Session, Screen, OIA, Area, Toolbars, Toolbar, QuickPads and QuickPad. The COM object can be used with any programming language that can use ActiveX COM objects, including C++, Visual Basic, VB Script and Java Script. The PASSPORT Object Toolkit provides a sample VB Script application and source code.

When migrating an existing Attachmate EXTRA! application to PASSPORT, the only change necessary is to change the name of the object used in the CreateObject () method. An Attachmate EXTRA!® application uses CreateObject ("EXTRA.SYSTEM"). For PASSPORT you would use CreateObject ("PASSPORT.SYSTEM"). The Area object can be used to select parts of the host screen, and the copy and paste methods can be used to copy data from one host session to another. The Object Interface does not have any event driven functions.

When to Use: The Object Interface is recommended in order to run existing Attachmate OLE automation applications, complex Attachmate EXTRA! macros that have been converted to PASSPORT, or new host access applications that require an object-oriented interface.

Macro Interface

The Zephyr Macro Interface, originally designed for MS DOS and later transitioned to a 32-bit platform, is used whenever a PASSPORT macro is run. The Zephyr PASSPORT macro scripting language uses the VBSCRIPT.DLL provided by Microsoft ®.

The PASSPORT PASSMAC.DLL provides the interface used for host access and is an ActiveX COM object. It is one single object and all methods and properties are accessed from this one object. The macro interface can be used by any application that can use an ActiveX COM object, including C++, VB, VB Script, Java Script., etc. Documentation and sample source code are provided with PASSPORT in the on-line Technical Reference. The macro interface contains special event methods that can be used to tell when host screens are received or when keystrokes have been initiated by the end-user.

When to Use: The Macro Interface is recommended when a lightweight screen scraping API is needed to access a single host session with simple event functions.

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Application Programming Interface Options

Automation Interface

The Automation Interface was added to PASSPORT PC TO HOST in version 2004 SP-1 and is a special interface that can be used to integrate terminal emulation inside a master desktop application. The master desktop application would typically be used to manage several host sessions concurrent with other desktop applications.

A light weight screen scraping API is provided, as well as methods to execute any PASSPORT menu command, action, macro or external program(s). This interface method provides seamless integration with the PASSPORT terminal emulator.

The PASSPORT Automation Interface provides the ability for PASSPORT PC TO HOST to run as an ActiveX Document inside of the Internet Explorer control. The IE control is hidden and then placed within an application. C++ or any programming language that can host the IE control can use this interface. The automation interface can only be used with PASSPORT PC TO HOST and cannot be used with PASSPORT WEB TO HOST.

When to Use: The Automation Interface is recommended when a terminal emulator needs to be integrated into a 'master' desktop application which controls host access and execution of other applications.

Zephyr Development Corporation specializes in advanced IP host access solutions for Microsoft Windows desktops and servers, including Windows 2003, XP and 2000. Using TN3270, TN5250, VT100, VT220, SCO ANSI and FTP standards, we offer PC and web terminal emulation, toolkits and programmatic API modules, allowing our customers to connect and integrate proven legacy applications with other PC, server and .NET or ActiveX applications.

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Application Programming Interface Options

FEATURE	HLLAPI	OBJECT INTERFACE	MACRO INTERFACE	AUTOMATION INTERFACE
BACKGROUND	Created by IBM in the mid 1980's as a MS DOS API	Object oriented interface used to port existing Attachmate EXTRA! ® macros and API applications to PASSPORT	A simple screen scraping API created by Zephyr and used in both 16-bit and 32-bit versions of PASSPORT	This is a special interface used to integrate a terminal emulator into a master desktop application
TYPE	Library File	ActiveX COM Object	ActiveX COM Object	Hidden IE Control with PASSPORT running as an ActiveX Document
LANGUAGES	C++, VB, others that can link in a library file	C++, VB, VBScript, JavaScript, any language that can access ActiveX COM Objects	C++, VB, VBScript, JavaScript, any language that can access ActiveX COM Objects	C++, VB, any programming language that can host the IE control
SAMPLE CODE AVAILABLE FROM ZEPHYR	C++, VB	VB Script	VBScript samples on how to use each method in documentation	C++
PROGRAMMING OVERVIEW INFORMATION	Single programming entry point: either hllapi(), or winhllapi(). Four parameters passed, the first parameter is the HLLAPI function number	Objects include: Sessions, Session, Screen, OIA, Area, Toolbars, Toolbar, QuickPads, QuickPad	One single object. All methods, properties and events are accessed from this one object	A light weight screen scraping API, but has methods to execute any PASSPORT menu command, action, macro or run external desktop programs
PASSPORT PC TO HOST	Yes	Yes	Yes	Yes
PASSPORT WEB TO HOST	Yes	Yes	Yes	No
TN3270	Yes	Yes	Yes	Yes
TN5250	Yes	Yes	Yes	Yes
VT100, VT220	Yes	Yes	Yes	Yes
SCO ANSI	Yes	Yes	Yes	Yes
WHY USE THIS INTERFACE?	PASSPORT needs to replace an existing Attachmate, IBM or NetManage emulator and PC HLLAPI application	To migrate existing Attachmate applications or complex macros to PASSPORT. Can be used to develop new object-oriented applications that require host access	When a lightweight API is needed with events	To integrate a terminal emulator into a master desktop application that manages host access and local applications
METHODS TO RUN, CONNECT, DISCONNECT, CLOSE SESSIONS	Yes, HLLAPI extensions similar to NetManage Rumba functions	Yes	Yes	Yes*
SCREEN AND CURSOR METHODS	Yes	Yes	Yes	Yes

* Yes, but special programming may be necessary

Application Programming Interface Options

FEATURE	HLLAPI	OBJECT INTERFACE	MACRO INTERFACE	AUTOMATION INTERFACE
OIA METHODS	Yes	Yes	Yes	Yes
WAIT METHODS	Yes, one simple wait function	Yes, many types of wait methods	Yes, many types of wait methods	No
EVENT FUNCTIONS	No true events, but does have Host Update Functions that allow programmer to use loops to determine if screen has been updated	No	Yes	Yes
KEYSTROKE INTERCEPT METHODS	Yes	No	Yes	No
IND$FILE SEND AND RECEIVE	Yes	No	Yes	Yes*
FTP SEND RECEIVE FUNCTIONS	No	Yes, but must use NavigateTo command to execute a macro that executes a DOS batch command that uses DOS FTP file transfer	Yes, but must execute a DOS batch file that uses DOS FTP file transfer	Yes
COPY AND PASTE METHODS	No	Yes	No	Yes
DIRECTORY AND FILE METHODS	No	No	Yes	No
PRINT SCREEN AND WRITE TO FILE METHODS	No	No	Yes	Yes*
EMULATION SCREEN CAN BE HIDDEN	Yes	Yes	Yes	No
ABILITY TO START EXTERNAL PROGRAMS LIKE NOTEPAD OR WORD	No	No	Yes	Yes*
MULTIPLE SESSIONS	Yes	Yes	Yes	Yes
PRINTER SESSION SUPPORT	No, but number of host sessions and type of sessions can be queried	No	No	Yes, but display session methods do not apply

* Yes, but special programming may be necessary