Virtual Sniffing

Live Import

Reference & User Guide

Revision Date: 12/16/2016

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Chapter 1 Introduction to Live Import

The Live Import capability of the Frontline software provides an open interface that allows any application to feed data into the analyzer so that it can be analyzed ,processed, and displayed in the software Frame Display and Event Display. When used in conjunction with DecoderScript, the protocol decoding environment, Live Import can be applied to just about any data communications analysis need.

Common data communications and protocol analyzers acquire their data from a specific piece of hardware. Live Import is hardware independent—if a Windows application program, or device driver, can be written to acquire data from a particular device, then that data can also be sent to Frontline software via Live Import.

The key to Live Import is having access to the data stream. Many embedded systems have “logging ports” that will send raw data and/or other diagnostic information to a “logging device”. The logging device may be connected by serial-data lines, Ethernet, whatever. A Windows application program could be written to act as the receiver for this logging information; the application could then forward the data into Frontline software via Live Import.

In some cases there is no need for “sniffing” hardware at all. In a data communications system, various pieces of software will be “carrying” messages to and from applications—independent of any actual hardware. Live Import allows such messaging to be “tapped” and captured at the software level, eliminating the need to tap and capture the data at the actual physical transmission medium.

When used in this way, Live Import is referred to as “Virtual Sniffing.” Virtual Sniffing can be added to just about any Windows application or device driver. Once added, the full power of the Frontline protocol decoding environment is available to assist in diagnostics, troubleshooting, or data analysis.

1.1 Virtual Sniffing Example

Microsoft Windows provides a number of different ways to tap into the flow of messages between applications, or between applications and external devices. For example, at the device driver level, “filter drivers” can be inserted between an application and the real driver for a certain device. The filter driver passes everything that it gets from an application to a device; and everything that it gets from a device to an application. While the driver has the data “in its hands”, it can use Live Import to pass the data into Frontline software for analysis.

Virtual Sniffing is also applied to areas beyond the realm of data communications. Many communications protocols are nothing more than starting at the first byte of a data structure and transmitting each successive byte until the end of the structure. Because Live Import is not tied to a specific piece of hardware, an application program, such as a payroll system, could have a field-troubleshooting mode where it writes the data structures it uses into a disk file. Virtual Sniffing could then be used to read the disk file and forward the data into Frontline software, where the “protocol” decoding system could break down the fields of the data and display them for detailed analysis.

1.2 Adding Live Import to an Application

At it’s simplest, Live Import can be added to an existing application by adding five function calls to the Live Import API and one function call to the Windows API.

- Live Import API
    - Load
    - Initialize
    - Send
    - Close
    - Clean
- Windows API
    - Free

1.2.1 Load Live Import API

Before the Live Import API functions can be called, the API dll and functions need to be loaded. Place a copy of liveimportapi.dll or liveimportapi_x64.dll, depending on the target platform, in the same directory as your Datasource executable.

To load the API or 32-bit applications use code like

```
if(!LoadLiveImportAPIFunctions())
    return (false);
```

For a 64-bit application use code like

```
if(!LoadLiveImportAPIFunctions_x64())
    return (false);
```

Upon success, a global HMODULE object, g_hLiveImportAPI, will be initialized.

1.2.2 Initialize Live Import

Before data can be sent to the Frontline software, the client side of Live Import needs to be initialized with a call like

```
g_pInitializeLiveImport(
    szMemoryName,
    szConfiguration,
    &boolSuccess)
```

The memory name should be read from the file liveimport.ini file found in the topmost directory of the product installation. It is the value of the “ConnectionString” key in the “General” section.

1.2.3 Send Data to Frontline Software

Live Import provides a number of function calls for sending information into Frontline software. The most commonly used one is g_pSendFrame(), which is used to send a self contained block of data such as a message in a communications protocol.

```
g_pSendFrame(
    dataLength, // Original size of the frame
    dataLength, // "Sliced" size of the frame
    abytFrameData,
    flags,
    side,
    timestamp);
```

1.2.4 Close Live Import

When done, the client side of Live Import disconnects allowing shared resources to be freed and other cleanup to occur.

```
dwStatus = g_pReleaseLiveImport();
```

1.2.5 Clean Up Live Import

After the API is released, the function pointers need to be reset to NULL.

```
NullLiveImportFunctionPointers();
```

1.2.6 Free LiveImportAPI.dll

Prior to exit from the Datasource, the global handle to LiveImportAPI.dll should be freed.

```
FreeLibrary(g_hLiveImportAPI);
```

1.3 Reporting Data Statistical Information

Another commonly used Live Import API feature allows the application program to generate customized statistical information (See Custom Statistics on page 10). The application defines the additional statistical tables that it wants to use, and then sends updated values to them as needed. The tables appear automatically on the Frontline software Statistics View.

1.4 Live Import Samples

There are five Live Import Samples provided with the Live Import Development Kit. Your Datasource will likely be similar to one or a mixture of these samples. The easiest way to begin is to start with one of these samples and make modifications to it.

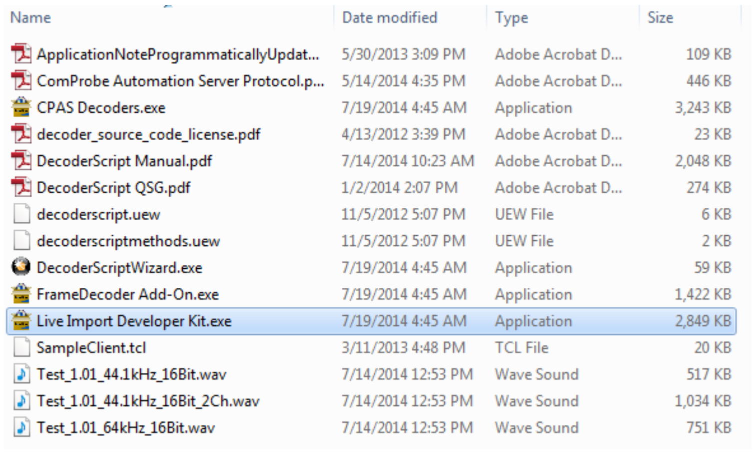
Table 1.1 - Live Import Development Kit Datasource Samples

Name	Language	Frame or Byte
GUI Sample	C++ with MFC	Frame with comments
GUI Sample Byte Oriented	C++ with MFC	Byte
Wrapper Sample	C with C++ wrapper	Frame
Straight C Sample	C	Frame
Straight C Sample Byte Oriented	C	Byte

Chapter 2 Installing Live Import Developer Kit

The Live Import Developer Kit is delivered with your ComProbe software that you installed on your computer. Installation of the developer kit is an automatic process.

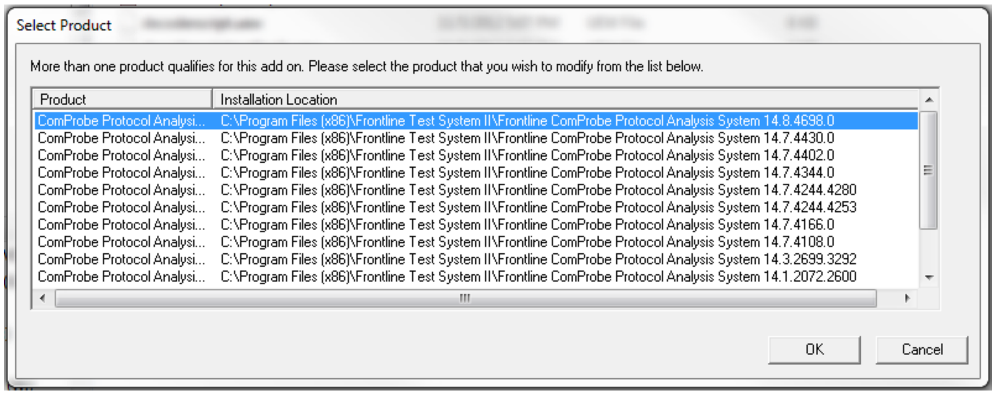
Navigate to C://Program Files (x86)/Frontline Test System II/Frontline <*version #*>/Development Tools/Live Import Developer Kit.exe.



Name	Date modified	Type	Size
ApplicationNoteProgrammaticallyUpdat...	5/30/2013 3:09 PM	Adobe Acrobat D...	109 KB
ComProbe Automation Server Protocol.p...	5/14/2014 4:35 PM	Adobe Acrobat D...	446 KB
CPAS Decoders.exe	7/19/2014 4:45 AM	Application	3,243 KB
decoder_source_code_license.pdf	4/13/2012 3:39 PM	Adobe Acrobat D...	23 KB
DecoderScript Manual.pdf	7/14/2014 10:23 AM	Adobe Acrobat D...	2,048 KB
DecoderScript QSG.pdf	1/2/2014 2:07 PM	Adobe Acrobat D...	274 KB
decoderscript.uew	11/5/2012 5:07 PM	UEW File	6 KB
decoderscriptmethods.uew	11/5/2012 5:07 PM	UEW File	2 KB
DecoderScriptWizard.exe	7/19/2014 4:45 AM	Application	59 KB
FrameDecoder Add-On.exe	7/19/2014 4:45 AM	Application	1,422 KB
Live Import Developer Kit.exe	7/19/2014 4:45 AM	Application	2,849 KB
SampleClient.tcl	3/11/2013 4:48 PM	TCL File	20 KB
Test_1.01_44.1kHz_16Bit.wav	7/14/2014 12:53 PM	Wave Sound	517 KB
Test_1.01_44.1kHz_16Bit_2Ch.wav	7/14/2014 12:53 PM	Wave Sound	1,034 KB
Test_1.01_64kHz_16Bit.wav	7/14/2014 12:53 PM	Wave Sound	751 KB

Figure 2.1 - Frontline Development Tools Directory

Double click on the Live Import Developer Kit.exe file and the installation will begin. If you have multiple installations of Frontline software the following window will appear.



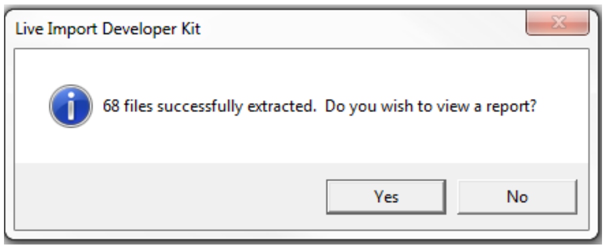
Select Product

More than one product qualifies for this add on. Please select the product that you wish to modify from the list below.

Product	Installation Location
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.8.4698.0
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.7.4430.0
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.7.4402.0
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.7.4344.0
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.7.4244.4280
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.7.4244.4253
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.7.4166.0
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.7.4108.0
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.3.2699.3292
ComProbe Protocol Analysi...	C:\Program Files (x86)\Frontline Test System II\Frontline ComProbe Protocol Analysis System 14.1.2072.2600

Figure 2.2 - Select Location to Install Live Import Developers Kit

Upon successful installation a notice will appear. Select **No** and the window will close. Installation is complete.



Live Import Developer Kit

68 files successfully extracted. Do you wish to view a report?

Figure 2.3 - Successful Installation Notice

Chapter 3 Overview - Creating Live Import Datasource

As the writer of the Datasource you will have to perform the following steps. Additional details follow. The term "Datasource" refers to the software that you as the user provide to move data from your application or hardware into Frontline software.

1. The Datasource should read the Connection String and the Configuration from liveimport.ini, which is located in the top directory of the product installation. The Connection String is in the ‘General’ section; the Configuration String makes up the ‘Configuration’ section.
2. You may modify the Configuration String as needed; do not alter the Connection String. The format and contents of the Configuration String are covered in the next topic See The Configuration String on the next page.
3. The Datasource creates a shared-memory connection to the Frontline software by using LiveImportAPI.dll or LiveImportAPI_x64.dll.
4. The Datasource reads Liveimport.ini and sends the Connection and Configuration data during initialization.
5. After initialization the Datasource checks connection and sends data either as frame or a byte at a time.
6. When the Datasource shuts down it releases the connection.

Note: Redistribution of an application that uses Live Import to transmit data to ComProbe Software requires LiveImportAPI.dll must be part of the distribution package. LiveImportAPI.dll must be in the same directory as the executable file

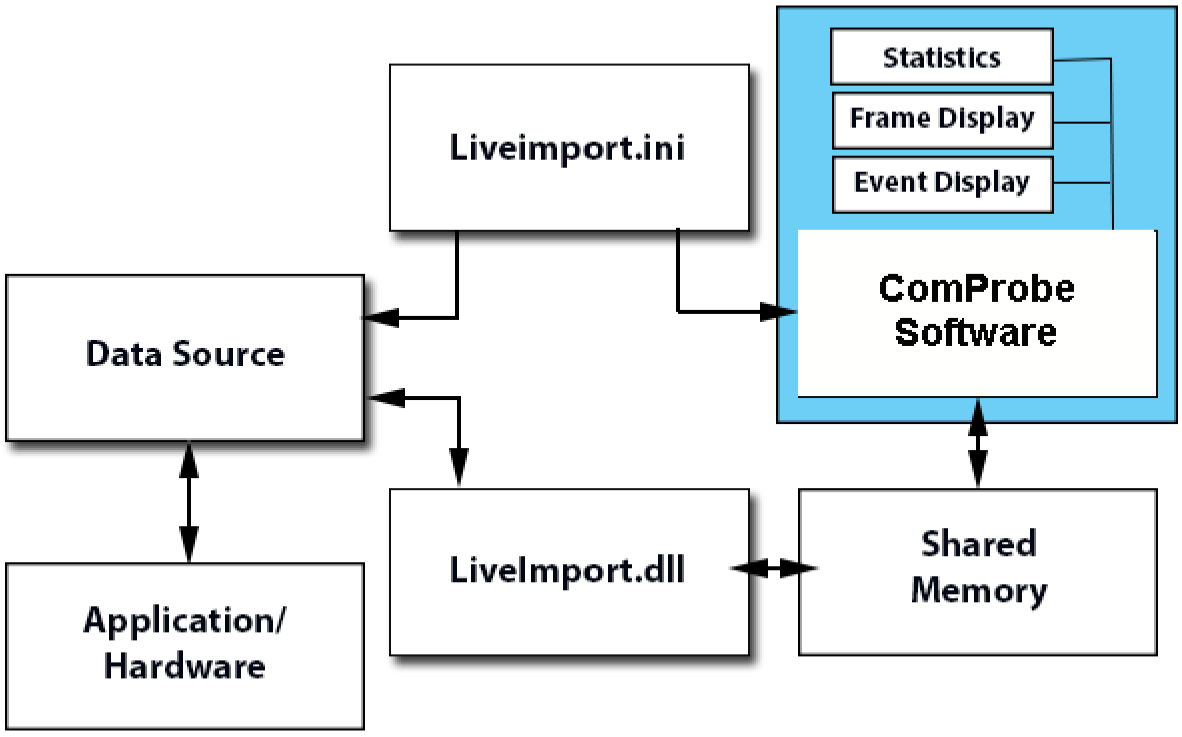


Figure 3.1 - Liveimport Component Relationships to Frontline Software

3.1 The Configuration String

The configuration string is a long string of text containing lines of descriptive information that specifies the communications environment for Frontline software. The format is the Windows .INI file format.

3.1.1 General Rules

- The string is in single-byte ASCII format.
- Each item in the string must be terminated with a newline character (0x0A) ("\n" in C)
- The format of the string is similar to a section in an INI file. That is, the first line may be a section header starting and ending with square brackets (a section header is optional), and the rest of the lines have the format "item=value"
- All numbers can be expressed either in decimal or in hex by using the prefix "0x"
- All strings that contain a comma or a semicolon must be enclosed in double quotes. Double quote characters are not legal values for strings.
- Semi-colons separate all of the items in a list, and if there is more than one field in an item, the fields are separated by commas.
- Unrecognizable items will be assumed to be future expansions, so will be ignored. Be sure that the items you use are spelled correctly. Upper/lower case is ignored to the left of the equal sign.

Example

```
char* pszConfig =
“Version=6\n”
```

```
“WindowTitle=CPAS Virtual Sniffer\n”
“DriverInfo=Bluetooth Virtual Sniffer\n”
“Sides=Host,1000000;Controller,1000000\n”
“SdeName=Octets\n”
“StackAuto=true\n”
“Stack=0x7f008034\n”
“Drf=Command;ACL;SCO;Event\n”
```

List of Elements

- If a list of items is required, they must be separated by a semicolon.
- If there is a compound item requested, the item must be separated by a comma.
- If a string contains a semicolon or a comma, it must be enclosed in quotes.

3.1.2 Required Configuration String Elements

The configuration string elements in this section are required or highly recommended.

3.1.2.1 Version and Section Header

For backwards compatibility, a version number is part of the configuration string. The version allows Frontline software to use older versions of the information, defaulting new information that is not present. If the current version is "6", and the header will look like,

```
Version=6
```

If the configuration string does not begin with the version, it will be rejected. This is the only reason a configuration string is rejected.

3.1.2.2 Title Bar and Driver Info

You can control two Frontline software **Control** window elements. WindowTitle string is displayed at the top of the **Control** window title bar, and DriverInfo string is displayed in the **Control** window **Configuration** field.

```
WindowTitle=Sample Window Title
Driverinfo=Sample Configuration String
```

If you skip these items, the **Control** window fields will be blank.

3.1.2.3 Sides and Utilization

Data may be received from more than one device at a time. This occurs, for example, in normal two-way serial communication where you have a DTE device (computer, terminal, etc.) and a DCE device (modem, Palm Pilot, digital camera, etc.). Each direction of communication is a "side." Frontline software supports either one or two "sides." These "sides" must be given names that the Frontline software can display.

In addition, if you want Frontline software to calculate and display utilization information, you need to tell it what the maximum possible data rate is, per side. There are two forms of the side statement:

```
Sides=First side name,115200;Second side name,115200
Sides=First side name;Second side name
```

The first form sets each side to a maximum of 115200 bits per second. The second form indicates that Frontline software should not calculate and display utilization information.

If there is only one side, a logical name is not necessary. The statement must still be present, though, with an empty string for the name, if Frontline software is to calculate throughput. For instance, a 10-megabit Ethernet connection may be expressed like this:

```
Sides=””,10000000
```

If this statement is omitted, then Frontline software will use one side, unnamed, with no throughput.

If more than two sides are declared, only the first two will be used.

3.1.3 Optional Elements

The Configuration string optional elements provides the ability to set data units, flags , protocol stacks, and to create statistics. These elements are not required and if omitted will be set to a default value.

3.1.3.1 Basic Unit of Data - Single Data Event

The basic unit of data -- bytes, octets, etc -- is referred to in Frontline software as a Single Data Event (SDE). This can be given any name for display purposes:

```
SdeName=Octets
```

If this statement is omitted, Frontline software will default to “Chars”

3.1.3.2 Data Related Flags and Errors

Each data event can have up to 32 flags associated with it. These are called Data Related Flags (DRFs). The flags can be used for just about anything and indicate additional information about the event. In serial communications, the flags are used to indicate the error status reported by the serial communications controller: Parity, Overrun, Framing, etc.

A handy use for DRFs is to communicate status or type information to Frontline software without having to embed indicator bytes into the data stream. The sample applications for example send the type of the message to the software via DRFs. The DRFs are available to the protocol decoders; so, a decoder can be written to learn about the type of a message without your needing to insert a type indicator into the “wire data”.

The names you give the DRFs are used in the **Event Display**. They will appear in the Errors section of the status lines at the bottom of the window for each byte that the flag is attached to. In order to see the flags, however, you must not only define them, but specify that they be tagged as Errors as well.

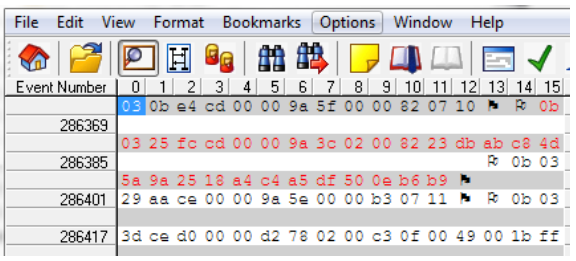
The DRFs are stored with each event as a low order justified bit map. That is, the first one defined is stored as 0x00000001, the second is stored as 0x00000002, the third, 0x00000004, etc.

For a framed data event, where an entire frame of "bytes" is delivered as a single unit, the entire frame gets one set of DRFs. In the example below, Overrun is stored as 0x00000001, Framing is stored as 0x00000002, and Parity as 0x00000004.

```
DRF=Overrun;Framing;Parity
```

The default is to have no DRFs.

In addition, Frontline software needs to know whether the flags you have defined are considered errors. Errors are displayed in red in the Event Display and Frame Display and can be searched for. This item is a bit mask with a bit = "1" setting the DRF as an error-bit. In the example below, all three of the DRFs—Overrun, Framing, and Parity—we defined above are errors.



```
Event Number  0  1  2  3  4  5  6  7  8  9 10 11 12 13 14 15
             03 0b e4 cd 00 00 9a 5f 00 00 82 07 10       0b
      286369
             03 25 fc cd 00 00 9a 3c 02 00 82 23 db ab c8 4d
      286385                                           0b 03
             5a 9a 25 18 a4 c4 a5 df 50 0e b6 b9
      286401 29 aa ce 00 00 9a 5e 00 00 b3 07 11       0b 03

      286417 3d ce d0 00 00 d2 78 02 00 c3 0f 00 49 00 1b ff
```

```
DrfErrorMask=0x07
```

The default mask is 0x0.

3.1.3.3 Non-Data Related Flags

In addition to the Data Related Flags, Frontline software supports up to 32 Non Data Related Flags (NDRFs). These flags are configured similar to the DRFs, but they are not associated with a data event.

These flags appear in the status lines of the **Event Display**. There is a maximum size specified in pixels that each box can be. You will need to experiment with NDRF names to ensure that the entire name is displayed on the window. Also, if you specify too many NDRFs, they will go off the edge of the window, and as there is no scroll bar, you will never be able to see them. If you have a lot of NDRFs, try to give them names as short as possible. These names also appear in the **Breakout Box** and **Find Signals** windows in serial products.

In serial type communication circuits, these are used to store the states of the control signals. NDRFs are declared in the same way as DRFs. They are stored as a low order justified bit map. That is, the first one defined is stored as 0x00000001, the second is stored as 0x00000002, the third, 0x00000004, etc.

```
NDRF=RTS;CTS;DSR;CD;DTR;RI
```

The default is no NDRFs.

3.1.3.4 Protocol Stack

The Datasource can suggest a protocol stack to be used. Doing so makes life easier on the end user since they will not have to select a stack before starting data capture.

There are two components to setting the protocol stack: The predefined part of the stack, and whether Frontline software should try to discover other layers on the fly (autotraversal).

If Frontline software should try to autotraverse, then include the following:

```
StackAuto=true
```

If you are setting the entire stack in advance for each frame that is received, use this:

```
StackAuto=false
```

The default is "false".

The decoders are indicated by their unique Decoder ID numbers. These numbers are found at the top of each DecoderScript source file.

```
Stack=0x7f000408;0x7f000409
```

The example above defines a stack of two decoders, where the first decoder listed is the lower layer on the stack. The default Stack setting is an empty string.

3.1.3.5 Custom Statistics

The Statistics window displays statistics grouped by general type. The groupings are called "tables" You can add items to existing Statistics tables, or create new tables.

Each table is assigned a number. The tables can be accessed with these values:

Table 3.1 - Table Numbers

Number	Table
0	Utilization
1	FramesPerSecond
2	ChactersPerSecond
3	Data

Table 3.1 - Table Numbers(continued)

Number	Table
4	Errors
5	FrameSizes
6	BufferInfo
7	FirstExtraTable

The table numbers are used in determining the row order when updating the statistics you've created. See the section Updating the Driver Statistics on page 12 for information.

You can set stylistic elements for each table you create and for the rows in the table. The styles are enumerated in a bit mask as defined In Table Styles on page 11.

3.1.3.5.1 Table Styles

Table 3.2 - Statistics Table Styles

Style Code	Description
HAS_SIDES (0x0001)	This table should have a column for each side. This has no effect if there is only one side.
HAS_TOTAL (0x0002)	Only valid if HAS_SIDES is also set and the number of sides is greater than one. This adds a total column to the left of the side columns.
ROWS_HAVE_ PERCENT (0x0004)	If HAS_TOTAL is also set, then the percents for each side appear next to the side's total.

3.1.3.5.2 Row Styles

Table 3.3 - Statistics Table Row Styles

Style Code	Description
SUPPRESS_TOTALS (0x0002)	On tables that have totals, this row does not.
MAKE_NON_ZERO_ STANDOUT (0x0020)	This row will have non-zero items stand out. "Stand out" usually means appear in red.
ADD_PERCENT (0x0040)	On tables without percents, this row has a percent.

3.1.3.5.3 Adding Items to a Standard Statistics Table

Extra rows can be appended to the bottom of a statistic table with the following line:

```
ExtraStatRows2=First New Row Title,32;Second Row Title
```

The “2” at the end of ExtraStatRows2 represents the table that we should add to, in this case the table “Characters Per Second”, according to the enumeration of tables given above.

The “32” after the "First New Row Title" is a row style bit flag given in decimal. All applicable style bits are OR-ed together. The values for the style bit flags for rows are given in Row Styles on page 11. In this case, the “32” refers to the MAKE_NON_ZERO_STANDOUT item. The style bit flags can be given in either decimal or hex. If using hex, the above line would read:

```
ExtraStatRows2=First New Row Title,0x0020;Second Row Title
```

Note: In the example above that there is no style flag for the second row. This will assume a style flag of zero.

If you have no statistics to add to a table, do not include this line. There is a practical limit to how many rows may be added before the display becomes unmanageable.

3.1.3.5.4 Creating New Statistics Tables

The driver can also create brand new statistics tables similarly to the way it creates new rows. The first part of the definition is the title for the whole table, and the rest has the same format as the extra row definition.

```
ExtraStatTable0=Table Title,3;First Row,2;Second Row,2
```

The “0” represents the new table number. The extra tables must begin at 0 and be sequential or they will be ignored. Tables can be defined in any order, as they will be sorted by Frontline software on loading, but the resulting list must be sequential.

The “3” after "Table Title" indicates the table style, and is composed of the table-style enumeration values OR-ed together. In this case, the table specified the HAS_SIDES and HAS_TOTAL styles. If no style is needed, the style bits can be omitted. As with row styles, the style bits can be represented in either decimal or hex.

The “2”s following the "First Row" and "Second Row" labels refer to the style for the row.

3.1.3.5.5 Updating the Driver Statistics

Once you have specified the new statistics to display, you need a way to update them. The extra statistics are given an enumeration beginning at zero. Remember that each table in the table list is given a number (see Creating New Statistics Tables on page 12) The first extra row of the lowest numbered standard table is first, followed by each of the other extra rows on that table, then all the extra rows on other standard tables, then all the rows on the driver created tables.

The values in the row are changed with

```
UpdateStat(row_number, value)
```

where row_number is the enumeration described inCreating New Statistics Tables on page 12.

For example, if you had added an extra row to the Data table (Table #3), two extra rows to the Errors table (Table #4), and defined a new table with 2 rows in it, the rows would be enumerated as follows:

0 = Data table extra row

1 = Errors table first extra row

2 = Errors table second extra row

3 = New Table first row

4 = New Table second row

Note: While the tables are numbered such that the first extra table is number 7, when you define a new table, you define it as table 0. This ensures that if we add additional standard tables, your configuration will not need to change.

3.1.3.6 Miscellaneous Driver Items

The following items describe various behaviors of the driver:

```
DeviceHasPowerIndicator=true
```

This indicates whether the driver will send power messages to ComProbe software. It causes the software to put the power indicator on the **Control** window. The default is false.

SyncHuntIsMeaningful=true

This command causes the Sync Hunt button to appear, and to cause an "Enter Sync Hunt" message to be sent to the driver when it is pushed. The default is false.

DriverSupportsBpfFiltering=true

This tells ComProbe software that the driver can accept Filter messages, and that it will filter out frames before they are received by the ComProbe software. The default is false.

RateStringLabel=Baud

This command sets the name of the rate string in the statistics display. The default is "Speed".

SmallestPossibleFrame=64

This is the smallest frame that the driver will ever send ComProbe software in any circumstance. This affects the ranges on the frame sizes in the statistics display. The default is 1.

LargestPossibleFrame=1518

This is the largest frame that the driver will ever send ComProbe software in any circumstance. This affects the ranges on the frame sizes in the statistics display. The default is –1, which means "no limit".

Chapter 4 Function Quick Reference

There are a many functions defined in the Live Import interface. They are all defined in C://Program Files (x64)/Frontline Test System II/Frontline <*version #*>/Live Import Developers Kit/h/LiveImportAPI.h. Additionally, there are some enumerations and types defined in DriverNotifications.h, but not all of them will be presented in this manual.

The following list describes the functions that are likely to be most useful. If you have questions on any of the functions that are not described, or if it is unclear whether or not Live Import can provide the functionality you need, please contact Technical Support.

4.1 From DriverNotification.h

Table 4.1 - NotificationType Function

NotificationType		
typedef void (*NotificationType) (void* pThis);		
Return Value	None	
Parameters	**Parameter**	**Description**
	pThis	Pointer to context object, cast to void*.
Remarks	Type for function to be used in a callback from the Live Import interface. The context object will be sent in the callback as an argument.	

Table 4.2 - NotificationType2 Function

NotificationType	
typedef void (*NotificationType2) (void* pThis, int iDatasourceId);	
Return Value	None

Table 4.2 - NotificationType2 Function(continued)

Parameters	**Parameter**	**Description**
	pThis	Pointer to context object, cast to void*.
	iDatasourceId	Often the ID of the datasource that initiated the even, however in some cases used as a status indicator.
Remarks	Type for function to be used in a callback from the Live Import interface. The context object will be sent in the callback as an argument.	

4.2 From LiveImportAPI.h

Table 4.3 - API Handle Function

API Handle		
HMODULE g_hLiveImportAPI		
Return Value	None	
Parameters	**Parameter**	**Description**
	None	
Remarks	This handle is defined in LiveImportAPI.h, and is a global object accessible in any module that includes that file. It is the handle to the API.	

Table 4.4 - Library Module Function

Library Module		
TCHAR* g_pszLibraryName		
Return Value	None	
Parameters	**Parameter**	**Description**
	None	
Remarks	Path to LiveImportAPI.dll. Generally should be in “Executables\Core’ directory of Frontline software installation.	

Table 4.5 - Library Module Function for 64-bit

Library Module for 64-bit		
TCHAR* g_pszLibraryName_x64		
Return Value	None	
Parameters	**Parameter**	**Description**
	None	
Remarks	Path to LiveImportAPI_x64.dll. Generally should be in “Executables\Core’ directory.	

Table 4.6 - Load Function

Load		
bool LoadLiveImportAPIFunctions(void)		
Return Value	bool	
Parameters	**Parameter**	**Description**
	none	
Remarks	This function must be called before any Live Import API functions are called. It loads LiveImportAPI.dll and the API functions. This function initializes g_hLiveImportAPI, which is the handle to LiveImportAPI.dll. An alternate method of accessing the functions of the API would be to extract the LoadLibrary call in LoadLiveImportAPIFunctions that explicitly loads the dll, and only call GetProcAddress for the desired functions.	

Table 4.7 - Load for 64-bitFunction

Load for 64-bit		
bool LoadLiveImportAPIFunctions_x64(void)		
Return Value	bool	
Parameters	**Parameter**	**Description**
	none	
Remarks	This function must be called before any Live Import API functions are called. It loads LiveImportAPI_x64.dll and the API functions. This function initializes g_ hLiveImportAPI, which is the handle to LiveImportAPI_x64.dll. An alternate method of accessing the functions of the API would be to extract the LoadLibrary call in LoadLiveImportAPIFunctions that explicitly loads the dll, and only call GetProcAddress for the desired functions.	

Table 4.8 - Initialize Function

Initialize		
HRESULT g_pInitializeLiveImport(const TCHAR* szMemoryName, const TCHAR* szConfiguration, bool* pboolSuccess);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	szMemoryName	The connection string.
	szConfiguration	The configuration string. Please see The Configuration String on page 7.
	pboolSuccess	Returns whether the initialization was a success
Remarks	This function must be called before any data is sent to Frontline software. The data that is passed to Frontline software through this function should have been read from Liveimport.ini.	

Table 4.9 - IsAppReady Function

IsAppReady		
HRESULT g_pIsAppReady (bool* pboolIsAppReady);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	pbIsAppReady	Returns whether Frontline software is ready to accept data.
Remarks	This function should be called to see if Frontline software is ready to accept data. If Frontline software is not ready and data is sent, the data will be not be received.	

Table 4.10 - SendFrame Function

SendFrame		
HRESULT g_pSendFrame(int iOriginalLength, int iIncludedLength, const BYTE* pbytFrame, int iDrf, int iStream, __int64 i64Timestamp);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	iOriginalLength	The "real" length of a frame. Some frames may be truncated, so this may not be the same as included length.
	iIncludedLength	The size of the data passed in this call.
	pbytFrame	The actual bytes of the frame.
	iDrf	Any errors or other data related flag.
	iStream	Which side these data come from.
	i64TimeStamp	The timestamp that should be placed on this frame.
Remarks	Call this function to send a frame to Frontline software.	

Table 4.11 - SendFrameWithComment Function

SendFrameWithComment	
HRESULT g_pSendFrameWithComment(int iOriginalLength, int iIncludedLength, const BYTE* pbytFrame, int iDrf, int iStream, __int64 i64Timestamp, const TCHAR* ptcComment, unsigned int uiCommentLength);	
Return Value	A Standard HRESULT value.

Table 4.11 - SendFrameWithComment Function(continued)

Parameters	Parameter	Description
	iOriginalLength	The "real" length of a frame. Some frames may be truncated, so this may not be the same as included length.
	iIncludedLength	The size of the data passed in this call.
	pbytFrame	The actual bytes of the frame.
	iDrf	Any errors or other data related flag.
	iStream	Which side these data come from.
	i64TimeStamp	The timestamp that should be placed on this frame.
	ptcComment	A pointer to an array of characters that holds the desired comment.
	uiCommentLength	The length of the comment passed in this call.
Remarks	Call this function to send a frame and an accompanying comment to Frontline software.	

Table 4.12 - SendFrameWithCommentFromDatasource Function

SendFrameWithCommentFromDatasource		
HRESULT g_pSendFrameWithCommentFromDatasource(int iDatasourceId, int iOriginalLength, int iIncludedLength, const BYTE* pbytFrame, int iDrf, int iStream, __int64 i64Timestamp, const TCHAR* ptcComment, unsigned int uiCommentLength);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	iDatasourceId	Index of datasource sending the frame; 0 if only one datasource.
	iOriginalLength	The "real" length of a frame. Some frames may be truncated, so this may not be the same as included length.
	iIncludedLength	The size of the data passed in this call.
	pbytFrame	The actual bytes of the frame.
	iDrf	Any errors or other data related flag.
	iStream	Which side these data come from.
	i64TimeStamp	The timestamp that should be placed on this frame.
	ptcComment	A pointer to an array of characters that holds the desired comment.
	uiCommentLength	The length of the comment passed in this call.
Remarks	Call this function to send a frame and an accompanying comment to Frontline software.	

Table 4.13 - SendEvent Function

SendEvent		
HRESULT g_pSendEvent (BYTE bytData, int iDrf, int iStream, __int64 i64Timestamp);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	bytData	The actual event (BYTE) to be sent to Frontline software.
	iDrf	Any errors or other data related flag.
	iStream	Which side these data come from.
	i64TimeStamp	The timestamp that should be placed on this byte.
Remarks	Call this function to send a single byte event to Frontline software.	

Table 4.14 - UpdateStat Function

UpdateStat		
HRESULT g_pUpdateStat (int iStream, int iStatNumber, __int64 i64IncrementAmount);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	iStream	Which side these data come from.
	iStatNumber	A number that indicates which statistic to update.
	I64IncrementAmount	A number that indicates how much to increment the statistic. To decrement, the number should be negative.
Remarks	Call this function to increment or decrement a statistic on the statistics screen of Frontline software.	

Table 4.15 - Save Path Function

Save Path		
HRESULT g_pGetDriverSavePath (TCHAR** pszDriverSavePath, int* piSize);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	pszDriverSavePath	A pointer to the path specified by Frontline software for the datasource to save data to.
	piSize	A pointer to an integer to receive the size of the save path.
Remarks	Call this function to determine the path Frontline software has requested data be saved to if data are to be saved. Used with the driver save name. To take advantage of this functionality, a datasource should generally register a NotificationType callback for eSaveDriverData and send a notification eSaveDriverDataComplete when the save process is complete.	

Table 4.16 - Save Name Function

Save Name		
HRESULT g_pGetDriverSaveName (TCHAR** pszDriverSaveName, int* piSize);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	pszDriverSaveName	A pointer to the file name specified by Frontline software for the datasource to save data to.
	piSize	A pointer to an integer to receive the size of the save name.
Remarks	Call this function to determine the file name Frontline software has requested data be saved to if data are to be saved. Used with the driver save path. To take advantage of this functionality, a datasource should generally register a NotificationType callback for eSaveDriverData and send a notification eSaveDriverDataComplete when the save process is complete.	

Table 4.17 - Register Notification Function

Register Notification		
HRESULT g_pRegisterNotification (eNotificationTypes eType, NotificationType pNotification, void* pThis);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	eType	Type of notification to register a callback for. eNotificationTypes is defined in “DriverNotifications.h”
	pNotification	A pointer to a callback function of NotificationType.
	pThis	A pointer to a context object to send as an argument for the callback function.
Remarks	Call this function to register a callback function and context for a notification type.	

Table 4.18 - Register Notification 2 Function

Register Notification 2	
HRESULT g_pRegisterNotification2 (eNotificationTypes eType, NotificationType2 pNotification, void* pThis);	
Return Value	A Standard HRESULT value.

Table 4.18 - Register Notification 2 Function(continued)

Parameters	Parameter	Description
	eType	Type of notification to register a callback for. eNotificationTypes is defined in “DriverNotifications.h”
	pNotification	A pointer to a callback function of NotificationType2.
	pThis	A pointer to a context object to send as an argument for the callback function.
Remarks	Call this function to register a callback function and context for a notification type.	

Table 4.19 - Save and Clear Capture Function

Save and Clear Capture		
HRESULT g_pSaveAndClear (const TCHAR* szSavePath);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	szSavePath	The path for Frontline software to save data to.
Remarks	Call this function to request Frontline software to save the current capture data to the specified path and clear the capture. Prior to calling this function, register a NotificationType2 callback for eLiveImportOperationComplete.	

Table 4.20 - Save Capture Function

Save Capture		
HRESULT g_pSaveCapture (const TCHAR* szSavePath);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	szSavePath	The path for Frontline software to save data to.
Remarks	Call this function to request Frontline software to save the current capture data to the specified path. Prior to calling this function, register a NotificationType2 callback for eLiveImportOperationComplete.	

Table 4.21 - Clear Capture Function

Clear Capture		
HRESULT g_pClearCapture (void);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	None	
Remarks	Call this function to request Frontline software to clear the current capture. Prior to calling this function, register a NotificationType2 callback for eLiveImportOperationComplete.	

Table 4.22 - Export Frames to HTML Function

Export Frames to HTML		
HRESULT g_pExportHtmlToPath (const TCHAR* htmlPath);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	htmlPath	The path for Frontline software to export frames to.
Remarks	Call this function to request ComProbe Software to export the current frame set to the specified path. Prior to calling this function, register a NotificationType2 callback for eLiveImportOperationComplete.	

Table 4.23 - Get Initialization Status Function

Get Initialization Status		
HRESULT g_pGetLiveImportInitializationStatus (long* pliveImportInitializationStatus);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	pliveImportInitializationStatus	A pointer to receive the status of LiveImportAPI intialization.
Remarks	Call this function to get the detailed status of LiveImportAPI initialization in the event g_pInitializeLiveImport or g_pInitializeLiveImportEx fails.	

Table 4.24 - Check for Messages from Frontline Software Function

Check for Messages from Frontline software		
HRESULT g_pCheckForMessages ();		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	None	
Remarks	Call this function to process messages from the Frontline software. The return value will be S_OK If the ComProbe Software is still running, S_ FALSE if it has exited.	

Table 4.25 - Release Function

Release		
HRESULT g_pReleaseLiveImport (void);		
Return Value	A Standard HRESULT value.	
Parameters	**Parameter**	**Description**
	none	
Remarks	Call this function when you are closing the Datasource to release the connection	

Table 4.26 - Cleanup Function

Cleanup		
void NullLiveImportFunctionPointers(void);		
Return Value	none	
Parameters	**Parameter**	**Description**
	none	
Remarks	Call this function when you are closing the Datasource to release the Live Import API function pointers.	

Table 4.27 - Unload Function

Unload		
BOOL FreeLibrary(HMODULE hModule);		
Return Value	A standard BOOL value.	
Parameters	**Parameter**	**Description**
	A standard HMODULE value	should be g_hLiveImportAPI.
Remarks	This function must be called just prior to exiting the Datasource with g_ hLiveImportAPI as the argument.	

Technical Support

Technical support is available in several ways. The online help system provides answers to many user related questions. Frontline's website has documentation on common problems, as well as software upgrades and utilities to use with our products.

Web: http://www.fte.com, click Support

Email: tech_support@fte.com

If you need to talk to a technical support representative, support is available between 9am and 5pm, U.S. Eastern time, Monday through Friday. Technical support is not available on U.S. national holidays.

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