

TranScan Viewer[™]
&
TranScan/LAN[™]

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Preface

This document contains procedures for use of the TranScan Viewer¹ and TranScan/LAN.

TranScan Viewer will take a message formatted according to ISO/8583 standards, parse it, and display it in an easily readable format. ISO/8583 is the ISO standard for message formats for Bankcard interfaces. The major international, and many regional, ATM and POS switches, use ISO/8583.

TranScan/LAN monitors and analyses financial transactions on a Bank Card local area network (LAN). TranScan/LAN provides a rich set of layered functions, addressing the needs of such varied groups as Network Technicians running Bank Card Networks, Software Developers implementing new functions for those networks and Network Certifiers ensuring the capability of Network participants. TranScan/LAN currently utilizes the FTS Ethertest or Wireshark product for “sniffing” the low level LAN communication packets which contain these financial transactions.

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Table of Contents

1. INTRODUCTION..... 1

1.1 TRANSCAN VIEWER™ 1

1.2 TRANSCAN/LAN™ 1

 1.2.1 *TranScan/LAN as a Network Analyzer for LANs* 1

 1.2.2 *Operational Principles* 2

2. SYSTEM CONFIGURATION AND SOFTWARE INSTALLATION 3

2.1 SYSTEM REQUIREMENTS 3

2.2 INSTALLATION OF TRANSCAN VIEWER™ 3

2.3 INSTALLATION FOR FTS™ ETHERTEST 4

 2.3.1 *Frontline Test System™ Installation* 4

 2.3.2 *Installation of TranScan/LAN Hooks for FTS Ethertest* 5

 2.3.3 *FTS Configuration* 5

2.4 INSTALLATION OF WIRESHARK..... 5

 2.4.1 *Installation of Wireshark* 5

 2.4.2 *Installation of TranScan Wireshark Plugin* 6

 2.4.3 *Wireshark Configuration* 6

3. STARTING THE PROGRAMS 6

4. RETRIEVING A MESSAGE FOR FORMATTED DISPLAY 8

4.1 GRAB THE MESSAGE FROM A HOST CONSOLE 8

4.2 PASTE MESSAGE FROM THE CLIPBOARD 10

4.3 RETRIEVE A MESSAGE IN A BINARY FILE 10

4.4 RETRIEVE A CHARACTER MESSAGE IN A TEXT FILE..... 10

4.5 RETRIEVE A MESSAGE FROM TRANSCAN/LAN™ WITH FTS™ COMPONENT 11

 4.5.1 *Filtering Traffic in FTS*..... 11

 4.5.1.1 *FTS Single Address Filter*..... 11

 4.5.1.2 *Filter Frames Between Two Endpoints in FTS* 11

4.6 RETRIEVE A MESSAGE FROM TRANSCAN/LAN™ WITH WIRESHARK COMPONENT..... 11

 4.6.1 *Filtering Traffic in Wireshark*..... 12

 4.6.1.1 *Wireshark Single Address Filter* 12

 4.6.1.2 *Wireshark Filter on TCP Ports*..... 12

 4.6.1.3 *Wireshark Filter on IP Address and TCP Ports* 13

4.7 AUTOMATION SERVER CALLS 13

4.8 FEATURES FOR MESSAGES RECEIVED FROM TRANSCAN/LAN AND AUTOMATION 13

 4.8.1 *Capture versus Examine Mode* 14

 4.8.2 *TCP Application Message Headers and Advanced TCP/IP Options*..... 14

5. DISPLAY OPTIONS 16

5.1 SUPPRESSING DISPLAY OF STAY-ALIVE AND VISA HEART BEAT MESSAGES 16

5.2 CHANGING MESSAGE FORMATS (DIALECTS)..... 16

5.3 CHANGING FIELD LEVEL DISPLAY 17

5.4 CHANGING BETWEEN DESCRIPTIVE LABELS AND BIT NUMBER LABELS 17

5.5 PARSED FIELD HIGHLIGHTING 17

5.6 DISPLAY ONE FIELD PER LINE 19

5.7 SHOW BLANKS AS NON-BLANKS 19

5.8 MOVING THROUGH MESSAGES IN DISPLAY..... 19

5.9 FINDING MATCHING REQUEST/RESPONSE MESSAGES 19

TranScan Viewer & TranScan/LAN

5.10	FINDING MESSAGES WITH PARSING ERRORS	19
5.11	OPENING A SECOND DISPLAY WINDOW.....	20
5.12	FILTERING BY MESSAGE FIELD	21
6.	PRINTING FORMATTED MESSAGES	23
7.	SAVING MESSAGES TO FILE.....	23
7.1	SAVING A MESSAGE IN BINARY	23
7.2	SAVING CHARACTER DISPLAY OF MESSAGES FOR LATER VIEWING	23
7.3	SAVING PARSED MESSAGE DISPLAY TO AN RTF OR HTML DOCUMENT	24
7.4	AUTOMATIC SAVING OF PARSED MESSAGE DISPLAY TO HTML DOCUMENTS	24
8.	COPYING A PARSED MESSAGE TO THE CLIPBOARD	25
9.	CLEAR MESSAGES FROM DISPLAY BUFFERS.....	25
10.	PRIVACY MASKING.....	25
11.	MISCELLANEOUS OPTIONS.....	26
11.1	TUNING	26
11.2	FOLDERS	28
12.	TROUBLE SHOOTING.....	29
12.1	KNOWN ISSUES WITH WIRESHARK.....	29
12.2	TROUBLE SHOOTING TRANSCAN VIEWER	30
13.	TRANSCAN VIEWER CHARACTER MESSAGE FILE FORMAT	37
14.	SPECIFICATIONS FOR AUTOMATION SERVER CALLS	38
14.1	CLEAR TRANSCAN VIEWER DISPLAY BUFFERS	38
14.2	FORMAT AND DISPLAY ISO MESSAGE.....	38
14.3	GET DISPLAY MODE (REALTIME/EXAMINE).....	39
14.4	SET DISPLAY MODE (REALTIME/EXAMINE).....	40
14.5	GET DISPLAY FREEZE SETTING.....	40
14.6	SET DISPLAY FREEZE/UNFREEZE.....	41
14.7	GET MESSAGE NUMBER OF FIRST MESSAGE IN TRANSCAN VIEWER DISPLAY BUFFER.....	41
14.8	GET MESSAGE NUMBER OF LAST MESSAGE IN TRANSCAN VIEWER DISPLAY BUFFER	42
14.9	GET MESSAGES FORMATTED IN HTML.....	42
14.10	GET MESSAGES FORMATTED IN RTF	43
15.	EXAMPLE CODE FOR CALLS TO TRANSCAN VIEWER.....	44
15.1	EXAMPLE MFC VISUAL C++ CODE.....	44
15.2	EXAMPLE VISUAL BASIC CODE	47

1. Introduction

1.1 TranScan Viewer™

The TranScan Viewer supports input from different sources:

1. Paste the message from the clipboard.
2. "Grab" an ISO format message from a TPF console display. Access to the TPF console must be via the 3270 emulation program Extra². A request is made to Extra for a copy of the screen by TranScan Viewer.
3. Read a file containing the binary image of the message. The file must contain the actual binary image of the message.
4. Read a text file containing the hexadecimal character representation of one or more messages.
5. Read a file previously saved by TranScan Viewer containing one or more messages.
6. ActiveX Automation (formerly known as OLE Automation) client³
7. TranScan/LAN with the Frontline Test System™ (FTS)⁴ or Wireshark network analyzer component.

TranScan Viewer will format the ISO messages and display them in an easily readable form.

This version of TranScan Viewer runs on Windows XP, Windows Vista, and Windows 7, Windows 8, and Windows 2008 Server⁵. FTS Ethertest requires 32-bit version of Windows, so will not run on Windows 8.

1.2 TranScan/LAN™

TranScan/LAN uses the TranScan Viewer working in conjunction with either Frontline Test Equipment's Ethertest or Wireshark, and is designed to support the monitoring and analysis of communications messages on a Bank Card local area network (LAN). TranScan/LAN provides a rich set of layered functions, addressing the needs of such varied groups as Network Technicians running Bank Card Networks, Software Developers implementing new functions for those networks and Network Certifiers ensuring the capability of Network participants.

1.2.1 TranScan/LAN as a Network Analyzer for LANs

TranScan/LAN with FTS Ethertest or Wireshark component can perform a range of functions from displaying and capturing non-interpreted data on local area networks, to performing such functions as calculating network utilization and collecting network statistics. When displaying complex communications protocols, such as TCP/IP, FTS Ethertest and Wireshark offer higher level mnemonic decoding functions. The "non-ISO"

² Extra is a trademark of Attachmate, Inc.

³ Includes Microsoft Excel and Access using Visual Basic for Applications

⁴ Frontline Test System includes Ethertest, SerialTest, SerialSpy, and/or CommProbe.

⁵ The Windows OS names are trademarks of Microsoft Corporation.

set of functions for FTS Ethertest and Wireshark are described in detail in the FTS and Wireshark documentation.

This manual will provide more detail on those functions pertaining to the higher level analysis of communications messages. Originally, TranScan™ was designed to parse and display various dialects of the ISO/8583 Message Format for BankCard Processors on wide area networks, WANs (using Bisync, X.25, Frame Relay, and SNA). The ISO/8583 standard has had a number of different transmission implementations, which are referred to as dialects by TranScan. TranScan has added support for many of these dialects to support the user base that gateway into the different Bank Card Networks. TranScan has grown in function and now handles a number of different "higher level" or application level message formats that are not ISO/8583, yet are can be specified in our table driven format. We encourage our users to send us specifications for their message formats for inclusion in their system as a new dialect. So, as on the various screens you see the word "ISO", please substitute "application message" in your mind, as the TranScan now handles much more than the ISO/8583 formats.

FTS, Wireshark and TranScan/LAN supports over 60 different Ethernet and WAN protocols. Currently, the application messages are extracted and parsed (according to the individual networks ISO/8583 format) for TCP and SNA LU0 and LU2. Contact Ontrac for any needs concerning additional protocols.

1.2.2 Operational Principles

As you use TranScan/LAN and TranScan Viewer, please remember the following general operational principles:

- There are two forms of capturing data to file for later analysis. An FTS Ethertest or Wireshark capture file, and a TranScan Viewer ISO message file. For details on the FTS and Wireshark dump file, see the FTS and Wireshark documentation. Description of the ISO message file is contained later in this document.
- Ethertest and Wireshark capture files, when viewed with TranScan/LAN, will display parsed protocol information and application message data.
- ISO message files can then be viewed and printed with the TranScan Viewer™. ISO files, when viewed, will display only the application message, without the accompanying protocol.
- LANs, by design, are shared by many computers. There may be a huge amount of traffic between computers in which you are not interested. The simplest way to limit the traffic to that in which you are interested, is to use FTS and Wireshark capture filters. Especially helpful is the address filter. Later, this manual will discuss the address filter.

2. System Configuration and Software Installation

The instructions below are for generic installation. If Ontrac is providing any custom configuration, please refer to the installation guide provided by Ontrac.

When you receive your system, if you have also purchased TranScan/LAN, you will also have received installation instructions for Frontline Test System (FTS) or Wireshark. Please contact Ontrac for support (support@transcan.com) for problems with installation of the FTS, Wireshark or TranScan Viewer product.

During the install process for TranScan/LAN; you will have selected which hard drive and which starting sub-directory to use when the system is installed. The defaults are "C:" for the hard drive, and directory "\Program Files\TranScan Viewer". In this manual, we will refer to those defaults, so please mentally substitute your choices if you did not use the defaults.

2.1 System Requirements

Minimum system requirements

- 32-bit version of Windows 7 and Windows Server 2008. Ask about TranSan/LAN with Wireshark support on Windows 8, 8.1, Windows Sever 2008 R2, and Windows Server 2012.
- 512 megabytes of memory⁶ (recommend 4GB for monitor LAN networks with heavy traffic)
- 300 megabytes of disk drive space
- For the TranScan/LAN with Ethertest or Wireshark component, an Ethernet card. The interface must support promiscuous mode (also known as "catch all" or CAF, capture all frames).

2.2 Installation of TranScan Viewer™

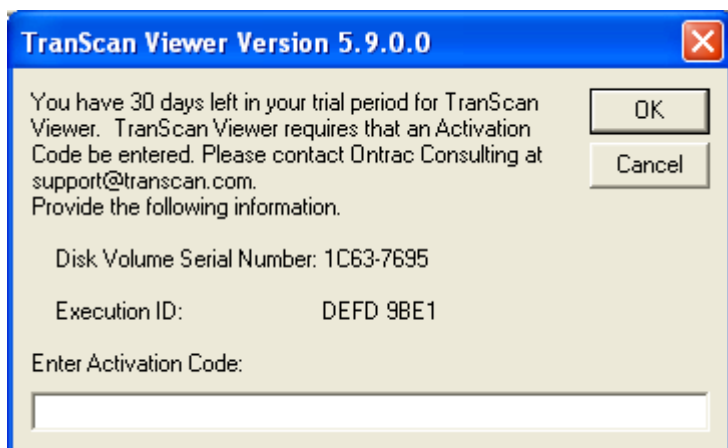
To install TranScan Viewer,

1. unzip the installation files into a temporary folder,
2. execute "setup.exe",
3. follow the setup program directions on the program.

The installation will add "TranScan Viewer" to the Windows Start menu, under "Programs", then "TranScan".

Each copy of TranScan Viewer requires an Activation Code beyond the trial period. For each license, you are given a grace period between the time the software is installed, and the time an Activation Code must be entered. Contact Ontrac Consulting via e-mail at support@transcan.com or by phone at 707-935-8238, after the installation, to receive your Activation Code specific to the installed copy of TranScan Viewer. You will need to provide the Disk Volume Serial Number and the Execution ID, which appears when you first start TranScan Viewer:

⁶ On Windows Server, it is recommended to have at least 4 gigabytes, plus 2 gigabytes of memory for each additional concurrent user.



You may continue to use TranScan Viewer without a Activation Code, until the trial period is over. Just click the “Cancel” button. Once the Activation Code is entered, the above dialog box will no longer appear. After entering the Activation Code, TranScan Viewer will ask you to create a password for turning off Privacy Masking. See section 10. Privacy Masking, for more information.

2.3 Installation for FTS™ Ethertest

If you have purchased the TranScan/LAN with the optional component of Frontline Test System (FTS), install the following components in the order specified below:

1. TranScan Viewer
2. FTS Ethertest software
3. TranScan/LAN “hooks” for FTS

2.3.1 Frontline Test System™ Installation

Note: For TranScan/LAN you will be installing only FTS Ethertest or Wireshark, not both. To install FTS Ethertest, execute the FTS installation program (webinstallnn.nn.nn.nn.exe, where nn.nn.nn.nn represents the latest version of FTS). When prompted, enter the FTS Ethertest serial number provided to you by Ontrac. If prompted, under “General Purpose Analyzers”, select “Install Ethertest”.

Set Ethertest to run as administrator. From the Windows Start menu, click “All Programs”, and then click on the Ethertest folder. Then right click on Ethertest, choose properties.

1. On “Compatibility” tab, click "Show settings for all users".
2. Then check "run as administrator" and under "run this program in compatibility mode", select "Windows XP (Service Pack 3)". Then click “OK”, then "OK" again.

After installation, run FTS to verify that installation was successful. Test that the installation was successful by starting FTS and monitoring network traffic.

2.3.2 Installation of TranScan/LAN Hooks for FTS Ethertest

There are TranScan/LAN “hooks” for FTS software which are to be extracted into the FTS program directory. The files are contained in an installation file “FileSetTS_yyyymmdd.exe”.

- For Windows Server, open a command prompt (right click to run as administrator) and enter the command “change user /install”
- Execute FileSetTS_yyyymmdd.exe (right click and click “run as administrator”). Then follow the on-screen instructions.
- If given a choice of FTS installations, choose the one you installed above.
- For Windows Server, open a command prompt (right click to run as administrator) and enter the command “change user /execute”

2.3.3 FTS Configuration

Options to consider setting for FTS include buffer wrapping and whether FTS is to start capturing live data when it is started. From the FTS Control Menu, select “Options”, then “System Settings...”

- “Wrap Buffer” option: When enabled, FTS will wrap the buffer when it becomes full. The oldest data will be moved out of the buffer to make room for new data. Any data moved out of the buffer will be lost. This option also applies to capture files. When disabled, FTS will pause capture when the buffer becomes full. Either reset the buffer or close your capture file to continue.
- “Start up...” option: Start up options determine whether to start data capture immediately (to buffer and optionally to file) on starting FTS.

2.4 Installation of Wireshark

Note: For TranScan/LAN you will be installing FTS Ethertest or Wireshark, not both.

If you have purchased the TranScan/LAN with the optional component of Wireshark, install the following components in the order specified below:

1. TranScan Viewer
2. Wireshark (current supported version: 2.0.1)
3. The TranScan Wireshark plugin.

2.4.1 Installation of Wireshark

For detail installation instruction on Windows Server or a PC used by multiple users, please refer to the TranScan/LAN Installation on Windows Server manual.

To install Wireshark, download the Wireshark Windows 32-bit installation program. Currently only Wireshark version 2.0.1 is supported. Follow the onscreen prompts. Included in the Wireshark installation is the installation of WinPcap.

- On the “Select Additional Tasks” screen, uncheck the shortcuts for “Wireshark 1”. (Leave the Wireshark component checked.)

- It is recommended, but not a requirement that you choose to have WinPcap loaded on boot.

Set Wireshark to run as administrator. From the Windows Start menu, click “All Programs”, and then click on the Wireshark folder. Then right click on Wireshark, choose properties.

1. On “Compatibility” tab, click "Show settings for all users".
2. Then check "run as administrator". Then click “OK”, then "OK" again.

2.4.2 Installation of TranScan Wireshark Plugin

The TranScan Wireshark plugin zip file contains the following files contains various files to implement the TranScan plugin for Wireshark.

Unzip the file, and copy transcan.lua into the plugins*(Wireshark version)* sub-folder of the folder where Wireshark was installed. (The default for Wireshark version 2.0.4 is “C:\Program Files\Wireshark\plugins\2.0.4\”)

Copy the remainder of the files to the folder where Wireshark was installed. (The default is “C:\Program Files\Wireshark\”)

2.4.3 Wireshark Configuration

If Wireshark will be used for monitoring a large amount of traffic, over 1 million Ethernet packets, it is recommended to set the following option to reduce the amount of memory Wireshark uses. From the “Edit” menu item, select “Preferences...” Expand “Protocols” and scroll down and click “TCP”. Uncheck:

- Analyze TCP sequence numbers
- Track number of bytes in flight

3. Starting the Programs

Windows 7, Windows Server 2008

To start FTS Ethertest:

- From Windows “Start”, select “Program”, then “Ethertest”.

Or to start Wireshark:

- If there is a “Wireshark” folder on the desktop, open the folder and click on the “StartWireshark” script, otherwise;
- From Windows “Start”, select “Program”, then “Wireshark”.

TranScan Viewer should be started automatically if Ethertest or Wireshark are started. To start TranScan Viewer by itself:

- From Windows “Start”, select “Program”, then “TranScan”, then “TranScan Viewer” (Note, if messages are to be retrieved from a host, Extra may be started prior to, or after starting the TranScan Viewer.)

TranScan Viewer & TranScan/LAN

Windows 8, 8.1, 10, Windows Server 2012

To start Wireshark:

- If there is a “Wireshark” folder on the desktop, open the folder and click on the “StartWireshark” script, otherwise;
- From Windows “Start”, click on the “Wireshark” tile, or search for “Wireshark” and click on the tile for Wireshark.

TranScan Viewer should be started automatically when Ethertest or Wireshark are started. To start TranScan Viewer by itself:

- From Windows “Start”, click the “TranScan Viewer” tile, or search for “TranScan Viewer” and click on the result tile. (Note, if messages are to be retrieved from a host, Extra may be started prior to, or after starting the TranScan Viewer.)

When monitoring for an extended period of time with Wireshark, it is recommended that capture files are saved in ring buffers. This option is set when using the “StartWireshark” script. The ring buffer option is under the menu item “Capture”, then “Options...”, under the “Output” tab. The following will need to be set:

- “Capture to permanent file” checked and file name specified.
- “Create a new file automatically after” checked, with either file size or time specified. It is recommended to set the file size between 50 to 500 megabytes.
- “Use ring buffer with” checked and set number of files to either 2 or 3.

Note that these files remain on the system until they are manually deleted. Since the files can get quite large, it is recommended that unneeded capture files are routinely delete and removed from the Recycle Bin.

4. Retrieving a Message for Formatted Display

This section describes how to retrieve an ISO message from FTS Ethertest, Wireshark, a file, clipboard, TPF console or other host console, and display a formatted output of the message.


4.1 **Grab the Message from a Host Console**

For a message displayed on a host console, first, display the ISO message on the host console. TranScan Viewer supports the following TPF console displays:

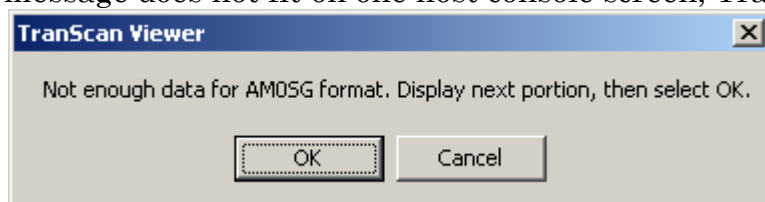
- ZUODF LEV Dn (display of dump)
- ZUODF SNAP /tag_name (display of SNAPC)
- ZKTRP DATA TRAP=mm SLOT=nn (Online Trap data display)
- ZDLEV Dn (SST level display)

The output of the display must not wrap on the screen. The best way to insure this is to clear the screen before entering the host command to display the message.

Next, switch over to the TranScan Viewer and either

- click on the button "Grab Message from Host". 
- or from the Edit menu, select "Grab Msg from Host Console"

If the entire message does not fit on one host console screen, TranScan Viewer will display:



To grab the rest of the message:

1. Switch to Extra and the host console screen.
2. Display the remainder of the output from the host command.
3. Switch back to TranScan Viewer.
4. Click "OK"

TranScan Viewer & TranScan/LAN

TranScan Viewer will put the raw screen display in the lower text box, and the parsed, formatted message in the upper text box.

The screenshot shows the TranScan Viewer application window. The title bar reads "TranScan Viewer:". The menu bar includes "File", "Edit", "Filter", "View", "Options", and "Help". The toolbar contains icons for file operations and navigation. Below the toolbar, there are several status indicators: "VISA Msg Fmt" with a dropdown menu set to "spaces display as ~", "Complete Message" with a green "Transmitted" label, "PRIVACY" with "Time Diff (", "Direction" with a dropdown menu set to "OFF", and "Message Display Level" with a dropdown menu set to "2".

The main display area is divided into two sections. The upper section shows a parsed message in green text on a white background. The message starts with "(2002/01/11 00:04:39.000,MSG# 60, 188, VISA)". A callout box labeled "Message Format (dialect)" points to the "VISA Msg Fmt" dropdown. Another callout box labeled "Spaces to be displayed as non-blank character" points to the "spaces display as ~" dropdown. A third callout box labeled "Message Display Level" points to the "2" dropdown. A fourth callout box labeled "Spaces shown as non-blank character" points to the "00000000" field in the message text. A fifth callout box labeled "Label" points to the "ACPT NAM IFUN" field in the message text.

The lower section is titled "Hexadecimal Character Representation of Message:" and contains a list of hexadecimal values in two columns. At the bottom of the window, there is a status bar with the text "Examine Response Time, : Off. C:\Program Files (x86)\TranScan Viewer\svdata\VisaF123b.tgs".

4.2 Paste Message from the Clipboard

TranScan Viewer can “paste” an ISO 8583 message from the clipboard. The clipboard must contain ASCII character text. The message in the clipboard may be formatted in:

- one of the host console formats supported by TranScan Viewer,
- hexadecimal character text representation of a message⁷, or
- the message itself, if the message encoding only uses ASCII.

To tell TranScan Viewer, which of the above to use during paste from the clipboard:

1. from the Options menu, select “Clipboard contains:”
2. then select the desired clipboard option

To paste from the clipboard, from the Edit menu, select “Paste msg from clipboard”, or use the “Paste Message from Clipboard” button on the toolbar.

To see an example, copy the following message into the clipboard.

```
30323030 0000000000010000 303531 496620796F752063616E
207265616420 74686973 2C2074686520
6D65737361676520 70617273656420636F72726563746C792E
```

In TranScan Viewer,

1. set the “dialect” (from the “View” menu) to “ASCII/1993” with “Header Bytes to Skip” set to 0,
2. set the clipboard paste option to “Hex Character Representation of Msg”
3. then “paste” from the clipboard.

4.3 Retrieve a Message in a Binary File

TranScan Viewer has the capability to read a binary file containing the exact binary image of a message. No added spaces, carriage returns, or line feeds. No character code conversion (i.e. EBDCIC to ASCII). TranScan Viewer will show the hexadecimal character display in the lower box, and the parsed message display in the upper box.

To open a binary message file:

1. From the File menu, select “Open binary msg file...”
2. Select the file using the Open File dialog box (the default file extension is .bim).
3. Click “Open”

4.4 Retrieve a Character Message in a Text File

TranScan Viewer can read and parse a character representation of a message in a text file that was previously saved by TranScan Viewer. (See section 7, Saving Messages to File.)

1. From the File menu, select “Open character msg file...”
2. Select the file from the Open File dialog box (the default file extension is .tgs).
3. Click “Open”

⁷ For example: F0F2F0F07204..., for a message format which contains the message type (0200) in EBDCIC and the bitmap (7204...) in binary. Space, carriage return, and line feed (paragraph) characters are not considered part of the message and are skipped.

4.5 Retrieve a Message from TranScan/LAN™ with FTS™ Component

TranScan/LAN with FTS component, purchased separately from TranScan Viewer, will automatically send application messages to the TranScan Viewer during:

- Live Capture mode (realtime display)
- Examining a Capture (.cfa) file (already captured frames).

Note that FTS Ethertest can read Sniffer type 1 captured files (.enc).

4.5.1 Filtering Traffic in FTS

If the network you are monitoring has a lot of traffic that you are not interested in seeing, then use FTS's filtering capability. Creating and applying filters is performed from the "Frame Display" window. (The Frame Display window can be opened from the main window via the menu by clicking "Window"/"Frame Display".)

4.5.1.1 FTS Single Address Filter

If you are only interested in messages flowing from or to a specific endpoint, specify an address filter.

- From the Frame Display menu, select "Filter", then "Create/Apply Filter..."
- Click on the "Define Conditions" tab
- In the left box, click on the line "Node and Conversation"
- Under "Node A", select "IP Address"
- Enter the IP address in the text box below the radial buttons
- Click the "Add" button
- If asked, enter a filename to save this filter configuration and click Save.

4.5.1.2 Filter Frames Between Two Endpoints in FTS

You may specify multiple filters with logical AND or logical OR conditions.

For example, if you are only interested in messages flowing between two IP addresses on an Ethernet, follow the procedure below:

- From the Frame Display menu, select "Filter", then "Create/Apply Filter..."
- Click on the "Define Conditions" tab
- In the left box, click on the line "Node and Conversation"
- Under "Node A", select "IP Address"
- Enter the IP address in the text box below the radial buttons
- Under "Node B", select "IP Address"
- Enter the IP address in the text box below the radial buttons
- Click the "Add" button

4.6 Retrieve a Message from TranScan/LAN™ with Wireshark Component

TranScan/LAN with Wireshark component will automatically send application messages to the TranScan Viewer during:

- Capture mode (realtime display)
- Examining a Capture (.pcap) file (already captured frames).

4.6.1 Filtering Traffic in Wireshark

If the network you are monitoring has a lot of traffic that you are not interested in seeing, then use Wireshark's filtering capability. Creating and applying filters is performed from the Capture Options menu or on the initial Wireshark screen. Before entering the filter, click on the NIC which is to be monitored. (Note: Wireshark has a bug that will clear the filter if you enter the filter first, then click on a NIC.)

4.6.1.1 Wireshark Single Address Filter

If you are only interested in messages flowing from or to a specific endpoint, specify an IP address capture filter.

- From the menu, select "Capture", then "Options..." (Note: The "Capture filters..." menu item under the "Capture" main menu item is for defining and changing saved filters, not for applying filters to the capture.)
- Select the Network Interface Card to monitor. (It is important to select the NIC before entering the capture filter, as Wireshark may ignore any changes to the filter made before the selection of the NIC.)
- In the "Capture Filter for selected Interfaces" box, enter ip host nnn.nnn.nnn.nnn (where nnn.nnn.nnn.nnn is the IP address, for example: ip host 192.168.61.152)
- Select/set other options as desired.
- Click "start"

To capture traffic between two specific IP addresses, specify using the 'and' condition. For example: ip host 192.168.61.100 and ip host 192.168.61.104

Notes:

- You can click on the "Capture Filter:" button to select from a set of previously defined capture filters. (This option has disappeared from Wireshark version 2.0.1. Hopefully it will return in an upcoming release.)
- When capturing data for long periods of time, more than a couple of hours, it is recommended that you use the "Use multiple files" options. Specifying "Next file every" of at least 10 megabytes and at most 500 megabytes. Also select "Ring buffer with" option. You will also need to specify a capture filename.

4.6.1.2 Wireshark Filter on TCP Ports

You can filter on TCP ports. From the Capture Options menu (see above), you can use the 'tcp', 'port' and 'portrange' keywords. Examples:

```
tcp port 50011
tcp portrange 1501-1549
tcp port (1032 or 50011 or 50013)
tcp portrange 1501-1549 or tcp port (1032 or 50011 or 50013)
```


4.6.1.3 Wireshark Filter on IP Address and TCP Ports

You can filter on a combination of IP address and TCP ports. From the Capture Options menu (see above), you can use the 'ip host' and 'tcp', 'port' and 'portrange' keywords. Examples:

```
ip host 192.168.61.100 and tcp port (3011 or 3012)
ip host (192.168.61.100 or 192.168.61.114) and tcp portrange 3011-3015
```

4.7 Automation Server Calls

TranScan Viewer is an ActiveX Code Component (COM), Automation Server (formerly known as OLE Automation). Automation is one of the Microsoft standards for calling applications in Windows. Messages can be sent to TranScan Viewer from an Automation client.

The TranScan Viewer contains the class "TranScanViewer", with functions:

- ClearISOdisplayBuffers
- DisplayISOMsg
- GetDisplayMode
- SetDisplayMode
- GetFreeze
- SetFreeze
- GetFirstMsgNumber
- GetLastMsgNumber
- GetFormattedHTMLMsgs
- GetFormattedRTFMsgs

See section 14 Specifications for Automation Server Calls, for details specifications of these server calls.

4.8 Features for Messages Received from TranScan/LAN and Automation

Messages received via Automation


- are identified as either being received during a realtime "capture" mode, or a playback "examine" mode.
- can have a "protocol" associated with the message.


TranScan Viewer has additional features which can be utilized for messages received as an Automation server:

- freezing/unfreezing display during "capture" mode
- support for TCP application header for TCP/IP protocol

4.8.1 Capture versus Examine Mode


Note that TranScan Viewer must be in Realtime Capture mode in order to accept messages from FTS or Wireshark during live capture, or to accept messages via the “DisplayISOMsg” function call when the call is identified as “capture” mode.

Either click the Realtime Capture mode button  or from the “View” menu, select “Realtime Capture mode”, to enter Realtime Capture mode.

To enter Examine mode, either click the Examine mode button  or from the “View” menu, select “Examine mode”.

Use the Freeze option to freeze the TranScan Viewer display during realtime capture. While in freeze mode, TranScan Viewer will still accept realtime capture messages from FTS, Wireshark or via the “DisplayISOMsg” function, storing them in buffers.

To freeze, either click the freeze button  or from the “View” menu, select “Freeze”

To unfreeze, either click the unfreeze button  or from the “View” menu, select “Unfreeze”

While in examine mode, the Freeze and Unfreeze options are not in effect.

4.8.2 TCP Application Message Headers and Advanced TCP/IP Options

When used a part of the TranScan/LAN package or via the “DisplayISOMsg” function call, TranScan Viewer supports application message headers for the TCP protocol. Current supported headers include:

- no header
- Standard Header (2 byte length), where the length is inclusive of the header
- Standard Header (2 byte length), where the length is exclusive of the header
- Visa Header (2 byte length, plus 2 bytes reserved)
- Hyvee (4 byte ASCII length)

The number of bytes to skip before the TCP Application header can also be set. Normally this would be set to 0.

TranScan/LAN can be set up to support extracting application message from (Data Link Switch) DLSw encapsulated SNA data. DLSw uses TCP ports 2065 and 2067. When monitoring a LAN which is not using DLSw, and there is the possibility of ports 2065 or 2067 being used for non-DLSw data, it is recommended that the DLSw support be turned off.

To set the desired TCP message header, or to set the DLSw support option: from the “Options” menu, select “TCP...”. The TCP message header option window will also be

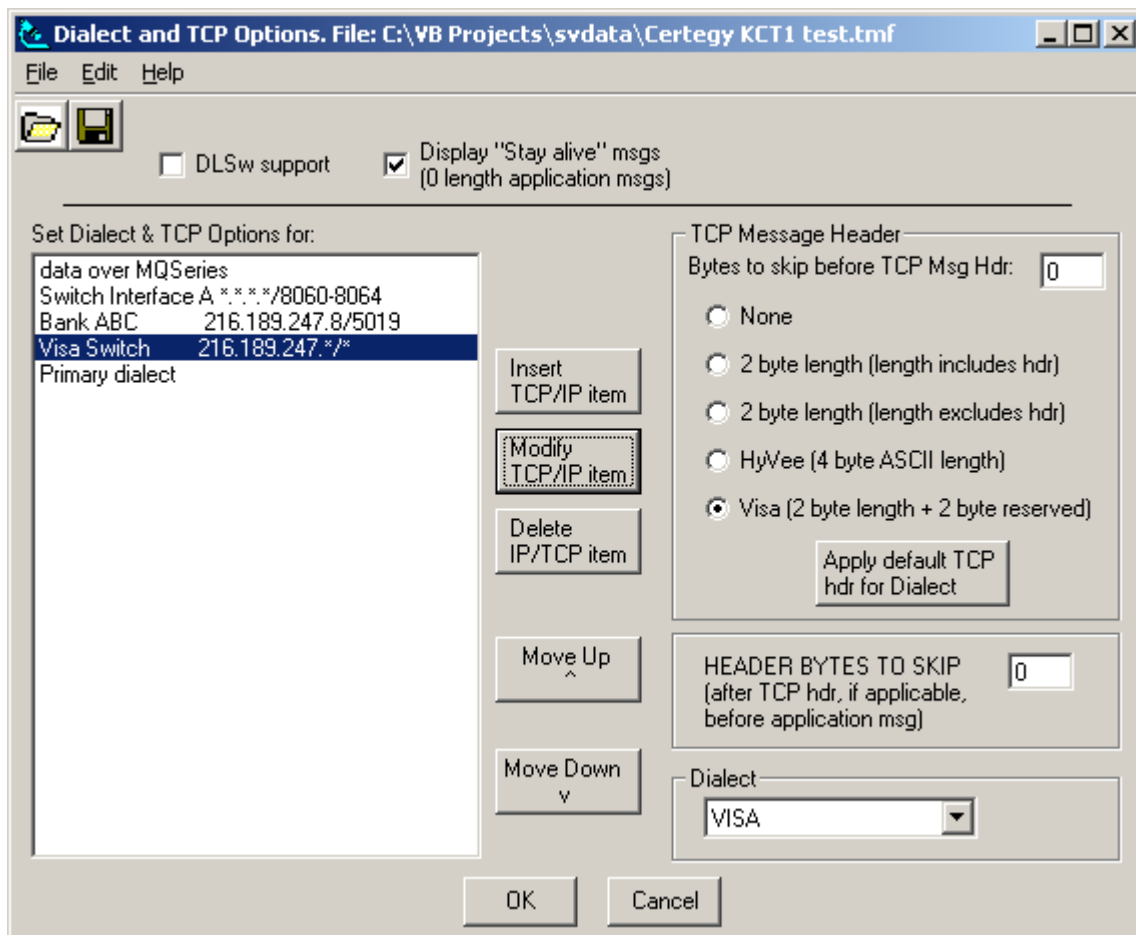
TranScan Viewer & TranScan/LAN

displayed by clicking on the “Advanced” tab of the Dialect Option window via the “View/Dialect...” menu.

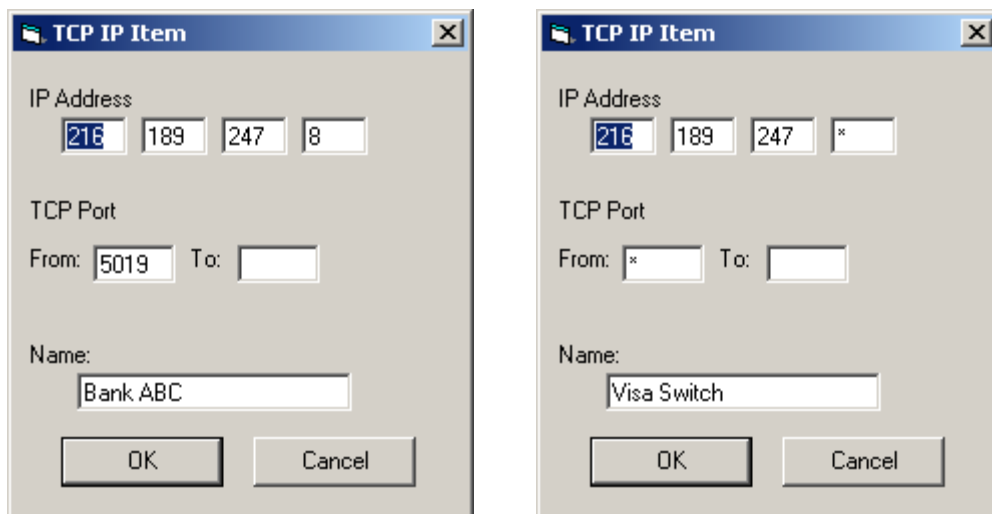
Separate TCP message header options can be chosen for messages over MQSeries versus those not over MQSeries. To set the TCP message header options for data over MQSeries, in the list “Set Dialect and TCP Options for:” chose “data over MQSeries”.

TranScan/LAN also supports TCP options and message dialect per defined TCP/IP port/address range. The order of selection for TCP defined options are:

1. MQSeries
2. First matching TCP/IP port/address range defined in the list, top-down.
3. The Primary Dialect.



An * for an IP address or TCP port specifies that any value will match.



TCP/IP message formatting rules can be saved in .tmf files. When the TranScan Viewer is started, the last .tmf file previously loaded will be loaded.

5. Display Options

5.1 Suppressing Display of Stay-Alive and Visa Heart Beat Messages

“Stay-Alive” messages are used over TCP/IP to keep sessions active, and do not contain any application message. They can have an application message length of either 0 or 1. Since there is no application message, the TranScan Viewer will display just the date, time and message number in the parsed output display. To suppress the displaying and printing of these zero or one byte length application messages:

1. From the Options menu, select “TCP...”, the “TCP Options” window will appear.
2. Uncheck the “Display Stay alive msgs (0 length application msgs)” check box.
3. If the “Stay-Alive” messages are 1 byte in length, check the “1-byte stay-alive” checkbox.
4. Click “OK”

Visa Heart Beat messages server the same purpose as “Stay Alive” messages, however they are usually 22 bytes long and start with “HB” in EBCDIC. To suppress the display and printing of Visa Heart Beat messages:

1. From the Options menu, select “TCP...”, the “TCP Options” window will appear.
2. Uncheck the “Display Visa Heart Beat Msgs” check box.
3. Click “OK”

5.2 Changing message formats (dialects)

For a simplified screen to change which format (or dialect of ISO 8583) is used for parsing of a message:

1. From the View menu, select “dialect...”, the “Chose dialect” window will appear.
2. Separate dialect can be chosen for messages over MQSeries versus those not over MQSeries. To set the dialect for messages over MQSeries, in the drop down list “Set

- Dialect Options for:” chose “data over MQSeries”. Otherwise, select “primary Dialect”
3. Select the dialect from the list.
 4. Set header bytes to skip. These are usually set to zeroes⁸.
 5. Click “OK”

Note that for NVFO (Non-Visa Format Option) formats, all messages have a VisaNet header. TranScan Viewer parsing automatically detects the message format based on information in the VisaNet header. So, for NVFO MasterCard, NVFO AS2805, etc., select Visa format from the dialect list.

For advance message formatting options for data received over TCP/IP, from the “View” menu, choose “Dialect - advanced...”, or go to the TCP options screen via the “Options”, “TCP Options...” menu item.

5.3 Changing field level display

To change how many of the parsed fields and sub-fields are displayed:

1. From the View menu, select “Field Display Level”.
2. Select the desired display level.

The options for display level are:

- Complete Msg - displays all fields and sub-fields
- Msg Overview - displays a sub-set of fields and sub-fields
- Hdr/Routing - displays the minimal number of fields, header, plus fields used for routing

5.4 Changing between Descriptive Labels and Bit Number Labels

To toggle between descriptive labels and bit number for labels:

1. From the View menu, select “Labels”.
2. Select the desired label format.

Example of descriptive label: PRI ACCT

Example of bit number label: BIT 002

5.5 Parsed Field Highlighting

In the parsed output display, up to 25 fields may be highlighted in individually specified colors. A specified default color is used if a field does not have an individual color specified.

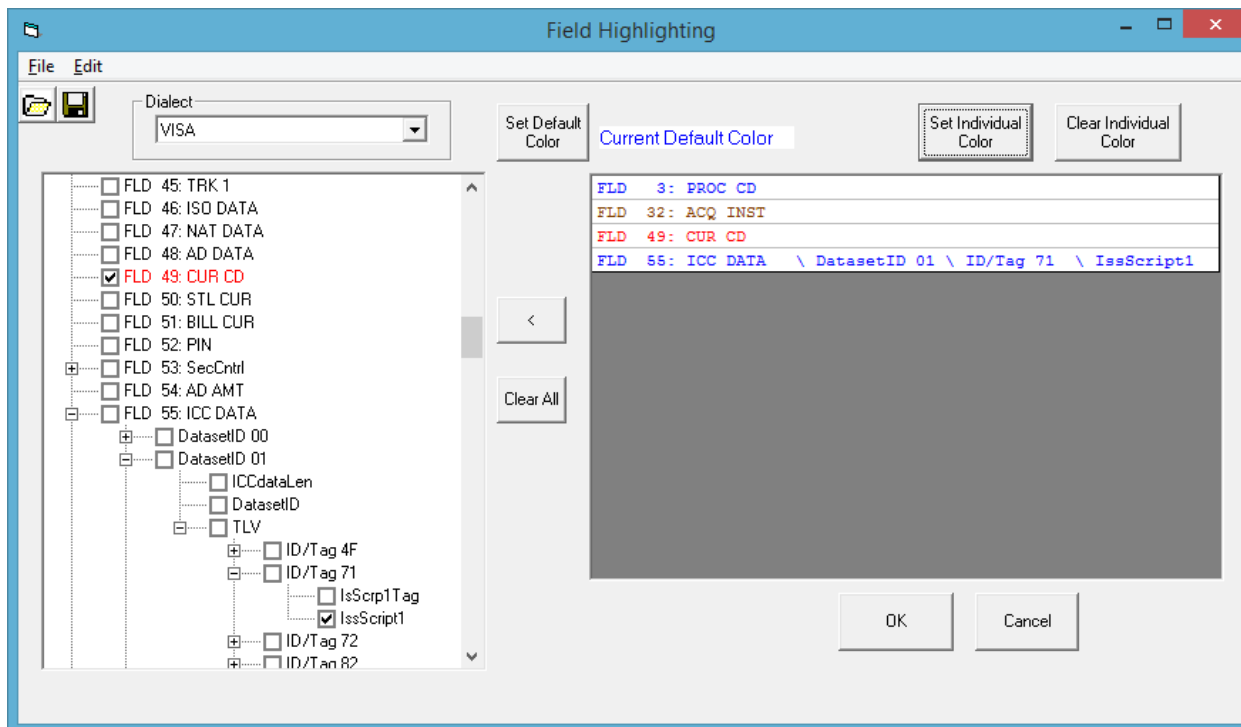
Under Menu item “View”, select “Field Highlighting...” A list of fields will be displayed. The list is bit number order and any sub-fields defined in TranScan will be included.

Only the fields at the lowest sub-field level defined in the TranScan tables can be selected. For example, the individual tag in a TLV field, not the dataset ID or field as a

⁸ Some protocols and payment system message formats, have additional protocol bytes that must be skipped over to get to the message. For Visa format, TranScan supports automatic skip over; thus, the skip over values can be set to 0.

TranScan Viewer & TranScan/LAN

whole, would be selected. Click on the Check Box to select/deselect fields to be highlighted.



Click the “Set Default Color” button to change the default color choice to be used to highlight the fields. No validation will be made as to the color viability. For example, if white is chosen, the field will not be visible because the background is white.

To set individual colors, select one or more of the fields to be highlighted in the grid on the right side of the screen. Click the “Set Individual Color” button. Chose the desired color, then click “OK”.

The list of fields and the selected colors can be saved to and subsequently loaded from a file. The last list used and saved to file, if one is active, will be saved in the configuration file and loaded, including color choices, when TranScan Viewer is started.

The default location for the field list files will be in the Data Folder as specified in Menu item Options/Options, “Folders” tab⁹. The Data Folder defaults to the user’s Documents folder, if another folder has not been selected.

Click the “Clear” button to clear the list of chosen fields. Click the “<” button to clear selected fields from the chosen list.

Click OK to make the highlighting choices active.

⁹ See section 11.2 Folders for a discussion on the TranScan Viewer folder.

5.6 Display One Field Per Line

From the View menu, select “One Field Per Line” to toggle between showing one field per line and showing multiple fields per line.

5.7 Show blanks as non-blanks

From the View menu, select “Blanks as non-blank” to toggle between showing blanks as spaces, to showing blanks as the non-blank character ~.

5.8 Moving Through Messages in Display

TranScan Viewer keeps displayed messages in buffers. To move from one message to another, from the “Edit” menu, select “Go to...”. The following menu options are then available:

- First Message
- Previous Message
- Next Message
- Last Message
- Message Number... (go to a specified message number)



The message movement buttons can also be used:

5.9 Finding Matching Request/Response Messages

TranScan Viewer has a feature to find a matching request/response for the currently displayed message. This feature is limited to the messages in the TranScan Viewer display buffer. To find a matching Request or Response for the message that is currently displayed, from the “Edit” menu, select “Find Message...”, then select either

- “Forward, Matching Request/Response” (This is good for finding a subsequent response for a request.)
- “Backward, Matching Request/Response” (This is good for finding a previous a request for a response.)

The key message fields for matching requests to responses is in the file “msgkey.ini” which resides in the “\Program Files\TranScan Viewer\System” directory. This file is also used by the Response Time Calculator add-in. Be sure to create a backup copy of msgkey.ini prior to making any changes to it.


5.10 Finding Messages with Parsing Errors

TranScan Viewer has a feature to find a messages with parse errors detected by the TranScan parsing. This feature is limited to the messages in the TranScan Viewer display buffer. To find a messages with parse errors, from the “Edit” menu, select “Find Message...”, then select either

- “Forward, Message with Parse Error”
- “Backward, Message with Parse Error”

5.11 Opening a Second Display Window

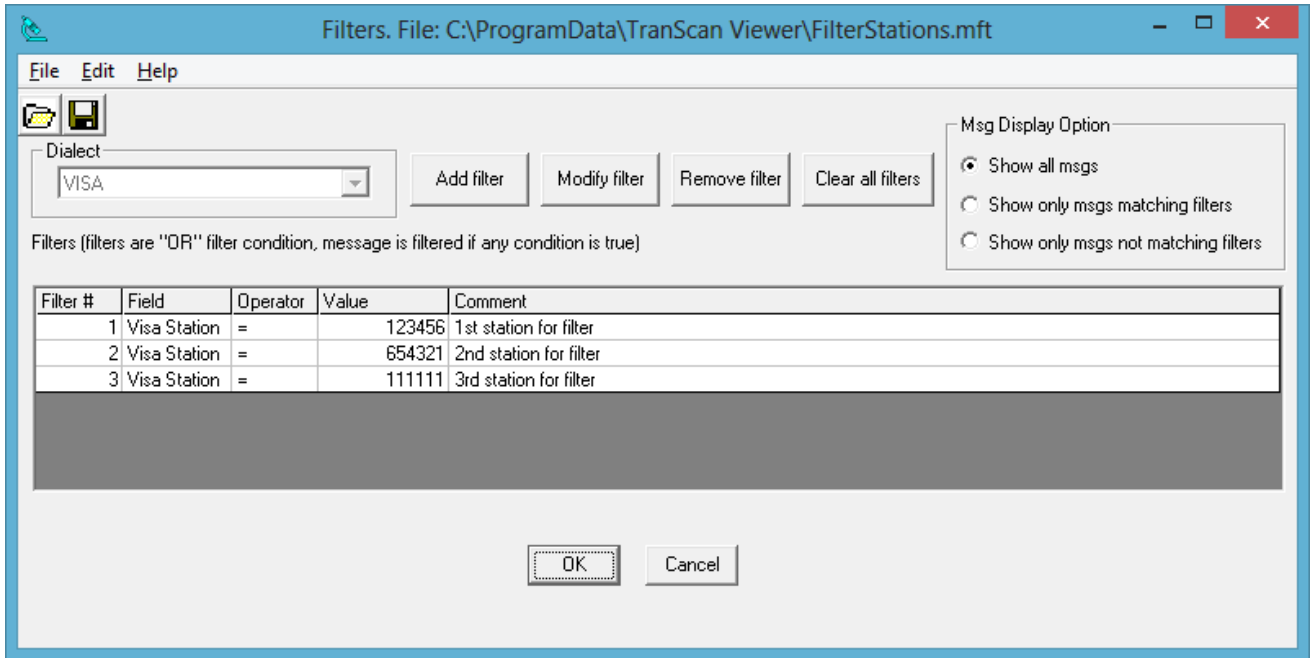
To open a second message display window, from the “View” menu, select “2ndWindow”. A subset of the main window menu items are available in the second window. The second window is useful for viewer both a request message and its response at the same time.

The second window can also be opened by clicking on the “2” button: 

5.12 Filtering by Message Field

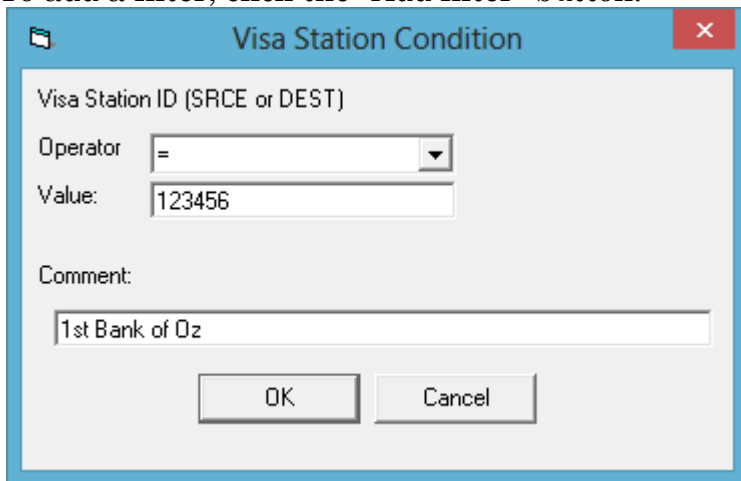
Message field filtering is only supported for the Visa dialect. The TranScan Viewer supports filtering by Visa Station ID. Both source and destination station ID in the VisaNet header are tested for a match.

To specify the filters, from the main TranScan Viewer window, select “Filter” from the menu. The filter window opens. Below is an example with filters specified:



When multiple filters are specified, the message is considered to match filters, if any of the filters’ conditions are true.

To add a filter, click the “Add filter” button.



TranScan Viewer & TranScan/LAN

Filters can be added, modified or removed from the current filter group. After entering the filters, click “OK” to activate filters. To turn off all filters, click the “Clear all filters” button, then click “OK”.

The “Message Display Option” can be set to

- Show all messages,
- Show only messages containing fields which match any of the filters.
- Show only messages which do not match any filter.

The filters can be saved to file and later loaded from file. The file extension is “.mft”.

When a message matches one or more of the filters, it is identified with (**MSGF**) instead of **MSG#** in the parsed display. The fields matching the filter are highlighted.

```
(2002/01/11 00:01:53.000,MSGF 22, 99, VISA)
HDR LN 16 HDR FMT 01 TXT FMT 02 MSG LEN 0063 DEST 284009 SRCE 857905
RND TRIP 04 BI FLG 0000 MSG FLG 000000 BATCH# 00 RESERV 80BA01 USER INF 00
MSG TYPE 0110 BITMAP 722000010E408000 PRI ACCT 999999|*****8968
PROC CD 000000 AMT 000000003195 TRNS DT 0110235850 TRACE# 003279
ACQ INST 406418 RET REF# 000000003279 AUTH ID RS 016445 RSP CD 00
ACPT ID 554261000156182 CUR CD 978
```

Note: if messages are already displayed, and if either the show only messages which match a filter or show only messages which do not match any filter option is selected, and the currently displayed message would now not be eligible for display, an attempt is made to find a displayable message. However, if none are available the message display is cleared.

Note: TranScan Viewer message filtering is not a substitute for FTS and Wireshark filters, but should be used to further filter for desired messages. For high volumes of communications traffic, where much of the traffic is on IP addresses which is desired to be filtered out, it is more efficient to include the use FTS and Wireshark IP address filters. See section 4.5.1 Filtering Traffic in FTS or section 4.6.1 Filtering Traffic in Wireshark.

6. Printing Formatted Messages

To print the parsed message as displayed:

1. From the File menu, select “Print...”, or use the Print messages button on the toolbar. The Print Options window will appear.
2. The default printer is shown at the top in a drop-down list box. To change printers, select the desired printer from the drop-down list.
3. In the comment box, enter any text you wish to appear as a comment on the printed output.
4. Use the check box to include the raw, unparsed message if desired.
5. Color or Black and White output can be selected.
6. Select the Print Range; all messages, selected range of messages, or current displayed message only.
7. Enter the number of copies desired.
8. Click “OK”.

7. Saving Messages to File

This section describes the various file formats to which messages can be saved.

7.1 Saving a Message in Binary

To save messages to file, from the “File” menu, select “Save As...”, or use the “Save Messages” button on the toolbar. The Save Message(s) window will display.

To save the unparsed message in its binary form:

1. Select the “Binary Message” option.
2. Select the message to be saved; selected message number, or current displayed message.
3. Click “OK”. The Save As window will display.
4. If needed, change the path to the desired folder.
5. Enter the filename (the file extension will be .bim).
6. Click “Save”.

7.2 Saving Character Display of Messages for Later Viewing

To save messages to file, from the “File” menu, select “Save As...”, or use the “Save Messages” button on the toolbar. The Save Message(s) window will display.

To save the unparsed screen display (as displayed in the lower text box) for later viewing with the TranScan Viewer:

1. Select the “TranScan Viewer Character Display” option.
2. Select the messages to be saved; all messages, selected message range, or current displayed message.
3. Click “OK”. The Save As window will display.
4. If needed, change the path to the desired folder.
5. Enter the filename (the file extension will be .tgs).
6. Click “Save”.

7.3 Saving Parsed Message Display to an RTF or HTML Document

To save messages to file, from the “File” menu, select “Save As...”, or use the “Save Messages” button on the toolbar. The Save Message(s) window will display.

To save the parsed message screen display (as displayed in the upper text box) into a document, either Rich Text Format (RTF) or HTML:

1. Select the “Parsed Display (Rich Text Format)” or “Parsed Display (HTML)” option.
2. In the comment box, enter any text you wish to appear as a comment at the top of the document.
3. Use the check box to include the raw, unparsed message if desired.
4. Select the messages to be saved; all messages, selected message range, or current displayed message.
5. For Rich Text Format, Color or Black and White output can be selected. (HTML will be in color.)
6. Click “OK”. The Save As window will display.
7. If needed, change the path to the desired folder.
8. Enter the filename (the file extension will be .rtf for Rich Text Format).
9. Click “Save”.

7.4 Automatic Saving of Parsed Message Display to HTML Documents

The parsed messages can automatically be logged by checking the “Automatically save msgs to HTML file” check box on the main screen. There is a slight delay writing the received messages to file to allow for application messages which have been split across two TCP packets to both be received.

Files are saved in the user’s Current Data Folder as specified in TranScan Viewer. (See section 11.2 Folders.) The file name will start with the base name, “TSlog”, followed by:

- the user id,
- the letter “T”,
- a timestamp of when the file was created, YYYYMMDD-hhmmss,
- “-”,
- a sequential number,
- “.html”

For example: “TSlogJdoeT20160530-155707-072”

The maximum of number of messages written to each html file can be set via the menu item, “Options/”Options...” on the “Tuning/Settings” tab, “Maximum number of messages saved to html file:”. The, minimum value is 100; maximum is 10,000, with a default of 1,000. When the specified number of messages has been written to an html file, another file will be started automatically.

For html files with a large number of messages, the browser will be slow in opening the file. The browser may seem unresponsive because it is reading the large file.

WARNING: Saving messages to html file in near realtime uses a considerable amount of CPU, disk, and memory resources. With this option set, the processing rate capability of TranScan/LAN to process realtime messages is cut to about 1/3rd. With the increased memory use, the maximum number of messages that can be processed before available memory becomes an issue is approximately 1 million messages when the number of message buffers is set to 100,000; and approximately 750,000 messages when the number of message buffer is set to 300,000.

WARNING: Attempting to open or copy the current html output file while writing to it is in progress may cause a write error. When this occurs, writing to it is abandoned and a new html file is started.

8. Copying a Parsed Message to the Clipboard

To copy a parsed message being displayed in the upper box:

- From the Edit menu, select “Copy Parsed Msg to Clipboard”, or use the “Copy Message to Clipboard” button on the toolbar.

The text copied into the clipboard is in Text Format, without color. To copy the parsed message with color, selected the text in the upper text box using the mouse. Then press the keys “Ctrl” “C” at the same time.

9. Clear Messages from Display Buffers

To clear all of the messages from the TranScan Viewer display buffers, from the “Edit” menu, select “Clear Messages”. Note that whenever a file is opened, the messages in the display buffer are cleared prior to opening the file. If the messages in the buffers were received via realtime capture, then TranScan Viewer will give a warning if the realtime capture messages have not been saved to file. The buffers are also cleared when switching from Examine mode to Realtime Capture mode.

10. Privacy Masking

Privacy Masking allows for masking/hiding sensitive cardholder data, such as account number, magnetic stripe data, PINs, and card security codes. When Privacy Masking is turned on, the raw hexadecimal display will be truncated. To turn Privacy Masking on or off, from the “View” menu, select “Privacy Masking”.

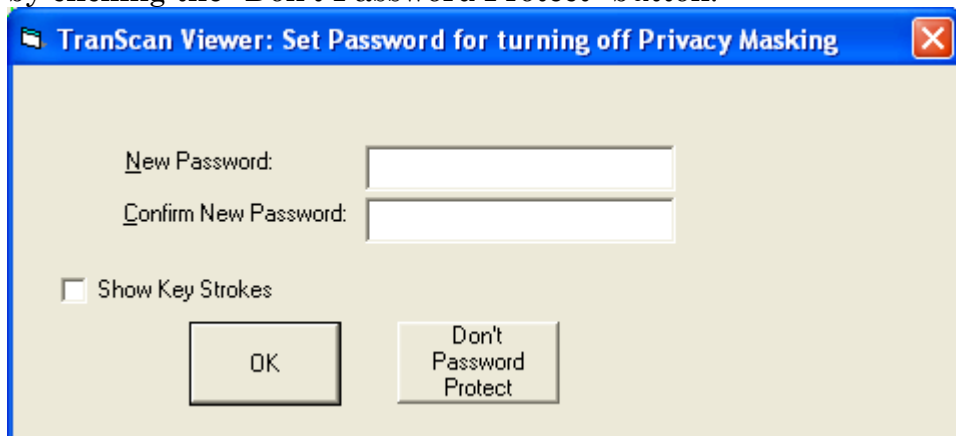
By default, Privacy Masking is turned on. Privacy Masking can only be turned off once an Activation Code has been entered to activate a TranScan Viewer license. An optional password may be specified to allow only authorized users to turn off Privacy Masking. When a password is set, Privacy Masking can only be turned off when the correct password is entered.

TranScan Viewer will ask the user to create a password,

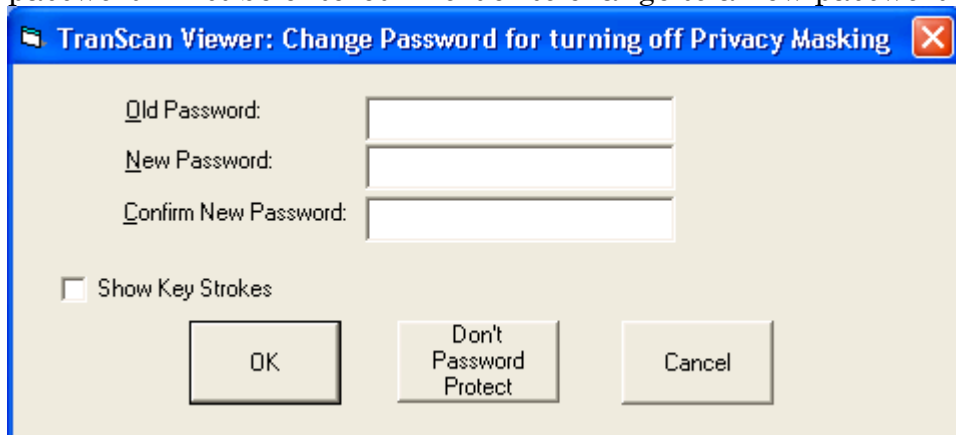
- when a TranScan license is activated, or

- upon first starting TranScan Viewer, if version 5.9 or greater is installed over an activated earlier version of TranScan Viewer.

The requirement to enter a password when turning off Privacy Masking can be disabled by clicking the “Don’t Password Protect” button.



To change the password, from the “Options” menu, click “Change Password...”. The old password must be entered in order to change to a new password.



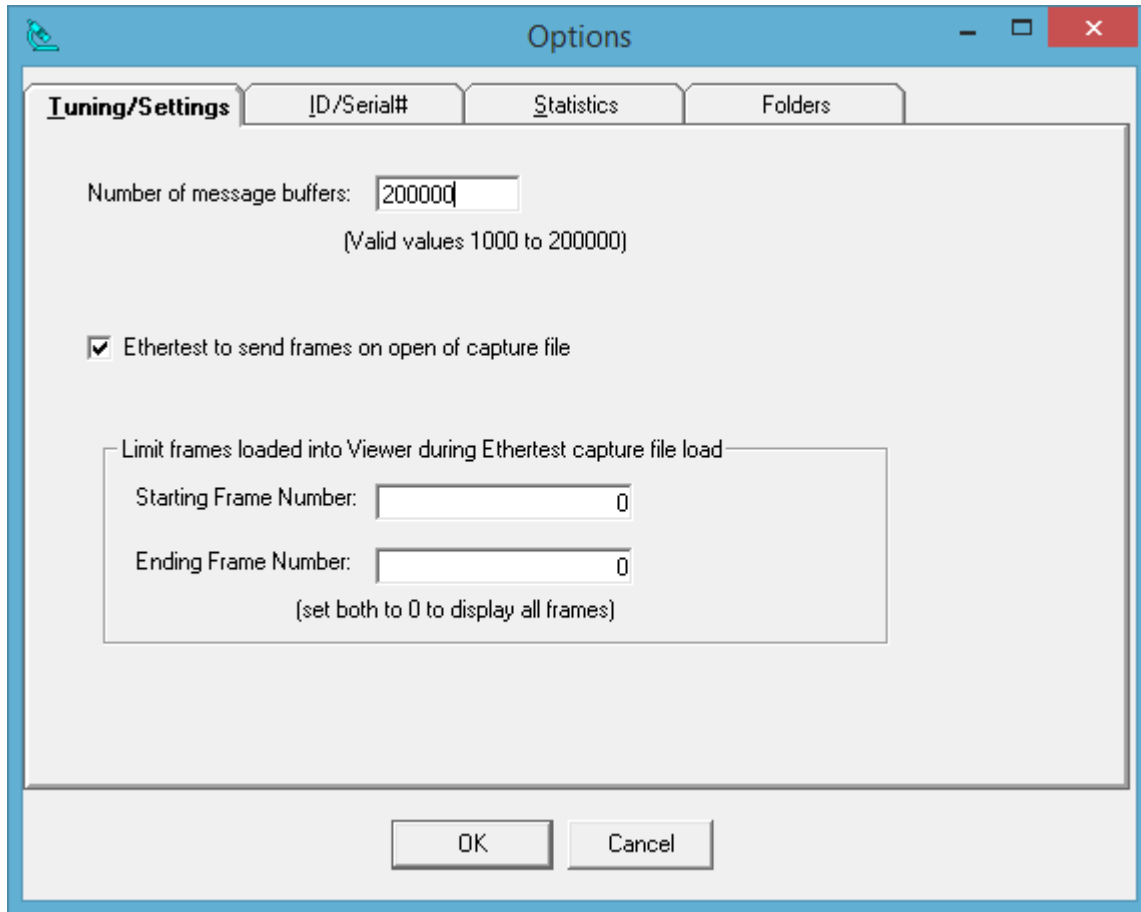
11. Miscellaneous Options

11.1 Tuning

TranScan Viewer maintains messages in display buffers. TranScan Viewer uses the buffers in a wraparound fashion. The maximum number of display buffers can be set for optimal use. If this number is set low, new messages will quickly overlay the buffers used by older messages. If this number is set high, large memory resources will be used.

To set the number of message display buffers, from the “Options” menu, select “Options...”. Set the number of message buffers on the “Tuning” tab, and click “OK”.

TranScan Viewer & TranScan/LAN



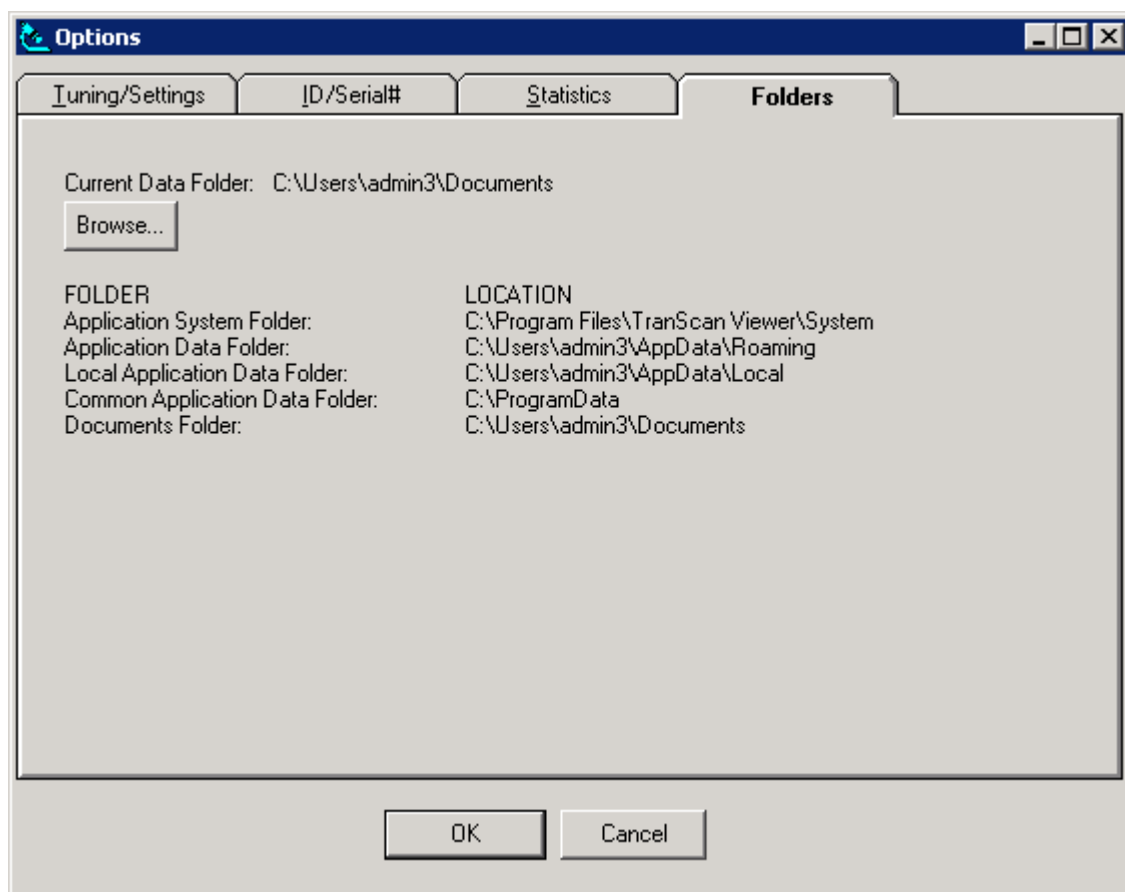
Other options available in the Tuning tab are whether or not FTS is to send frames on open of a capture (.cfa) file; and if so, there is an option to limit what frame numbers are loaded into the TranScan Viewer from FTS and Wireshark. (Note: At this time, Wireshark does not support turning off the option to send frames on open of capture file. Limiting which frames are loaded in the Viewer is supported when using Wireshark.)

11.2 Folders

The “folders” tab lists various folders, including the current data folder. The current data folder can be changed by clicking the “Browse...” button. A data folder can be selected when saving messages to file. Any folder selected during the save messages function, will saved as the current data folder.

The other folders listed are for informational purposes, and cannot be changed. The default folder for the Dialect and TCP options are saved in .tmr extension files in the “TranScan Viewer” sub-folder of the Common Application Data Folder listed on this screen. This facilitates sharing of the dialect and TCP options with all users. Users still have the option of changing the location of .tmr files when saving or opening the files. See section 5.2 Changing message formats (dialects)

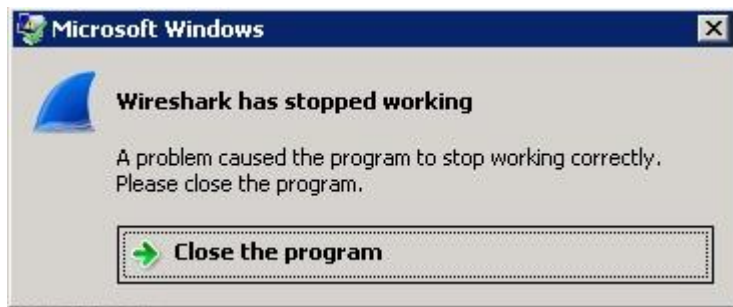
Other user specified configuration values are saved in the tranview.cfg file in the “TranScan Viewer” sub-folder of the Application Data Folder listed on this screen.



12. Trouble Shooting

12.1 Known issues with Wireshark

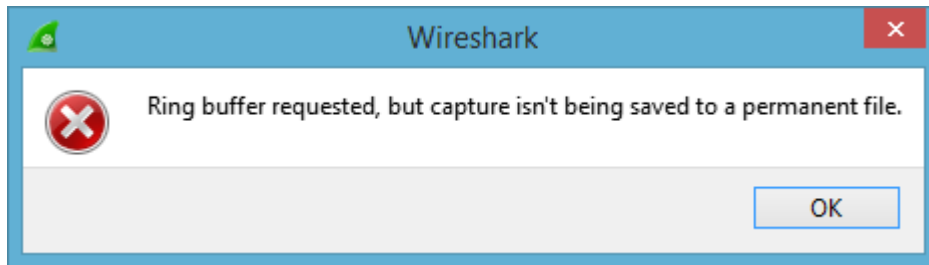
Wireshark will normally run successfully for long periods of time. Capturing files to ring buffers will maximize Wireshark's ability to manage its traffic. However, if a copy is run for an unusually long period of time (greater than eight hours) with high data volumes, Wireshark may run out of memory and crash. Depending on the exact circumstances, one of the follow error messages may appear:



The Wireshark program must be exited and started up again. If Wireshark appears hung, then save your TranScan Viewer data and log off and then log back on. Report this event to the TranScan support team as well.

To keep Wireshark running, be sure to use ring buffers for Wireshark capture files. See section 3. Starting the Programs.

If you stop capturing in Wireshark and try and restart by clicking “restart” or “capture/start” after stopping the capture, Wireshark will issue this error:



The Output settings need to be reentered on the menu item “Capture” / “Options...”, “Output” tab. Any Ethernet traffic captured after clicking OK will be saved to a temporary file, which will be deleted when Wireshark exits or when capture is stopped and restarted.

[This is a bug that Wireshark will fix in a future release.]

12.2 Trouble Shooting TranScan Viewer

This section covers various errors that may occur with TranScan Viewer. For additional support, send e-mail to support@transcan.com or phone 707-935-8238. The TranScan Viewer also keeps a log, tranview.log, which may be helpful in troubleshooting. Tranview.log resides in the TranScan Viewer\system directory.

TranScan Viewer & TranScan/LAN

Problem	Description/Action to take
<p>No messages are being displayed, during capture of frames by FTS Ethertest.</p>	<p>Ensure that the listening port is defined in “port assignments.ini” and “TranScan.personality” in Ethertest’s “my decoders\” directory. Make a backup copy of these files prior to making any changes to them.</p> <p>In “port assignments.ini”, add the port(s) to the [TCP] section. Format is: n=port, 0x7f028001 or n=startport-endport, 0x7f028001</p> <p>In “TranScan.personality”, add the port(s) to the [Port Assignments:TCP] section. Format is: port, 0x7f028001 or startport-endport, 0x7f028001</p> <p>For TranScan Viewer to display messages from FTS, put TranScan Viewer into Realtime Capture mode and the Unfreeze the display.</p> <p>Ensure the option “FTS to send frames on open of capture (.cfa) file” is checked, and no limit to the range of frame numbers to be loaded are specified. These option is under the menu “Options”, “Options...”, “Tuning/Settings” tab in TranScan Viewer.</p>
<p>Help not displaying or getting error “Why can’t I get help from this program?”, “Feature not included”, or “Help not supported.”</p>	<p>Download and install WinHlp32.exe from: https://support.microsoft.com/en-us/kb/917607</p>

TranScan Viewer & TranScan/LAN

<p>No messages are being displayed, during capture of frames by Wireshark.</p>	<p>Ensure that the listening port is defined in “port assignments.ini” in Wireshark’s program folder. (See “Help”/“About Wireshark”, “Folders” tab for the program folder name.) Make a backup copy of these files prior to making any changes to them.</p> <p>Format for entries is: n=rangelow[-rangehigh] ; comment</p> <p>For TranScan Viewer to display messages from Wireshark, put TranScan Viewer into Realtime Capture mode and the Unfreeze the display.</p> <p>Ensure the option “FTS and Wireshark to send frames on open of capture file” is checked, and no limit to the range of frame numbers to be loaded are specified. These option is under the menu “Options”, “Options...”, “Tuning/Settings” tab in TranScan Viewer.</p>
--	--

Error Msg	Description/Action to take
<p>Error executing ParseISO.dll</p>	<p>The file ParseISO.dll should be in the TranScan Viewer system directory, along with the file Tranview.exe. If this file has accidentally been erased, you may have to re-install TranScan Viewer.</p>
<p>Error in message #: n Do you want to continue with remainder of messages?</p>	<p>An error was found while parsing the messages in the TranScan/8583 ASCII output file. Click “Yes” to continue with the next message. Click “No” to abort reading the file.</p>
<p>Error - only partial message found in file</p>	<p>TranScan Viewer is attempting to extract a message from a host console screen image. The file may not contain the entire message, or the file format may not be supported by TranScan Viewer.</p> <p>When trying to format data from the host console screen, if TranScan Viewer cannot find what it detects as a valid AMOSG¹⁰ formatted message, an error message will be displayed. If the file contains a host console screen, make sure that the host console, the entire screen may not have been captured.</p>

¹⁰ AMOSG format is a TPF standard for the format of a message block.

TranScan Viewer & TranScan/LAN

Error Msg	Description/Action to take
<p>Error One of the libraries files needed to run this application cannot be found.</p>	<p>TranScan Viewer needs the path to a file called SessMngr.DLR which is in the Extra! directory. Normally Extra installation will add/update a path statement in autoexec.bat so that it appears similar to: <code>path=%PATH%;C:\PROGRA~1\CERTIF~1\EXTRA!</code> which is the DOS short path name. If the autoexec.bat on your PC does not include the path to the Extra! directory, you will need to add it. Remember to make a backup copy of autoexec.bat prior to making any changes. To find the exact location of the Extra! directory, from the Windows "start" menu, select "find", then "files or folders". Then find file "SessMngr.DLR" on your c: drive. The default is the directory c:\Program Files\Certified Apps\Extra! If the file is in that directory, and there is no path statement in autoexec.bat, then by adding the following line as is, with quotation marks, to autoexec.bat, should take care of the problem. <code>path=%path%;c:"\program files\certified apps\extra!"</code> If there is a path statement, but the extra! directory is not specified, add the specification at the end. Directories in the path are separated by a semicolon(;). The PC must be restarted in order for this change to take effect.</p>
<p>Error reading dialects from file ISODIAL.TBL</p>	<p>The file isodial.tbl should be in the TranScan Viewer system directory, along with the file tranview.exe. If this file has accidentally been erased, you may have to re-install TranScan Viewer.</p>
<p>Error saving file</p>	<p>Ensure you have write access and enough disk space on the drive on which you are attempting to save the file.</p>
<p>File contains the text "MSG TYPE"; thus does not contain the hexadecimal display of the message." Continue reading file?"</p>	<p>The TranScan/8583 ASCII output file being read, contains the parsed messages. The messages should be in hexadecimal display. Click "OK" to continue reading file. Click "Cancel" to cancel reading of the file. (Note: In TranScan/8583, display the messages in hexadecimal format before creating the ASCII output file.)</p>

TranScan Viewer & TranScan/LAN

Error Msg	Description/Action to take
Found start of msg with no end to prior msg.	TranScan Viewer just previously displayed “Message too short for AM0SG format. Display next portion then select OK” (see below) OK was selected without displaying the next portion of the message on the TPF console.
Invalid hex data: ..	When attempting to extract the ISO message from a character display, a value of other than 0-9, A-F was encountered where a hexadecimal digit was expected. The TPF console output may not have been display properly. Try clearing the TPF console screen, then re-entering the functional message.
Message too short for AM0SG format. Display next portion then select OK	The most likely cause of this message is due to a TPF console message that does not fit on one screen. To grab the rest of the message: <ol style="list-style-type: none"> 1. Switch to Extra and the TPF Console screen. 2. Display the remainder of the output from the Functional Message. 3. Switch back to TranScan Viewer. 4. Click “OK”
No messages found in input.	The Clipboard contains character or hexadecimal character display of the message, and the Clipboard option is set to “Host Formatted Msg Display”. Check the option by selecting “Options” from the menu, then “Clipboard Contains:” -Or- The TPF console screen grabbed from Extra is not recognized as output from one of the functional message supported by TranScan Viewer. -Or- When trying to format data from the TPF console screen, if TranScan Viewer cannot find what it detects as a valid AM0SG formatted message, an error message will be displayed. Make sure that the TPF output does not wrap on the screen, clear the screen and re-enter the TPF functional message. If the screen output looks correct, print the TPF screen and contact Ontrac Consulting.
No message in clipboard	When pasting from the clipboard, the clipboard must contain text. The clipboard contains a picture or some other object, other than text.
No messages read, 0 length file.	The file you tried to open had a length of 0. Make sure you opened the correct file.

TranScan Viewer & TranScan/LAN

Error Msg	Description/Action to take
No parsed message to print. Print Canceled.	Ensure that a message is parsed and displayed in the upper text box of the TranScan Viewer prior to selecting the Print option.
Non-hexadecimal value:	A paste from clipboard operation was performed with the "Clipboard contains:" option set to "Hex Character Representation of Msg". TranScan Viewer is looking for only the characters 0 through 9 and A through F. If there is a host console screen in the clipboard, or a character message in the clipboard, change the "Clipboard contains:" options to match.
Odd number of hex characters, msg # ...	When attempting to extract the ISO message from the TPF console, an odd number of hexadecimal digits were found. The TPF console output may not have been display properly. Try clearing the TPF console screen, then re-entering the functional message.
SV0005 MORE BITS IN MAP THAN DATA IN MESSAGE. LAST BIT PROCESSED IS 42 - or - SV0007 LENGTH FIELD FOR FIELD xxxxxx EXCEEDS END OF MESSAGE	For messages from FTS Ethertest or Wireshark, <ul style="list-style-type: none"> • the message within TCP/IP protocol may span more than one frame. When messages span more than one frame, TranScan Viewer can combine two parts of a message. In FTS Ethertest or Wireshark, display the frame containing the remainder of the message in the frame display. • the message within SNA protocol may be chained or segmented. TranScan Viewer currently does not support combining messages which have been chained or segmented.
System Error, File Sharing Violation on drive <i>d</i>	TranScan Viewer uses some temporary files when grabbing and formatting an screen display from Extra. You may have 2 copies of TranScan Viewer running. If so, exit all but one.
TranScan Viewer trial period over.	Each copy of TranScan Viewer requires an Activation Code beyond the trial period. There is a finite number of licenses that were purchased and can be installed. For each license, you are given a grace period between the time the software is installed, and the time an Activation Code must be entered. Contact Ontrac Consulting after the installation, to receive your Activation Code specific to the installed copy of TranScan Viewer.

TranScan Viewer & TranScan/LAN

Error Msg	Description/Action to take
Unable to activate link to Extra	TranScan Viewer normally establishes a session (connection) to Extra when you click on “Grab Message”. Make sure Extra is started, then exit and restart TranScan Viewer.
Unable to activate TranGrab.dll	The file trangrab.dll should be in the TranScan Viewer system directory, along with the file tranview.exe. If this file has accidentally been erased, you may have to re-install TranScan Viewer.
Unable to get information from Extra.	<ol style="list-style-type: none"> 1. Remote TPF consoles will automatically logoff the user when the keyboard has been idle for a few minutes. If this happens, and a request is made by TranScan Viewer to "grab" an ISO message, then this error message will occur. Click "OK" or press <code>ENTER</code>, then log back onto the TPF console and redisplay the message.. 2. TranScan Viewer normally establishes a session (connection) to Extra when you click on “Grab Message”. Make sure Extra is started.
Unable to open temporary file ..\SVDATA\\$\$MSG.RAW for output -or- Unable to open output file - or - Unable to open file	TranScan Viewer uses temporary files to when extracting a message from an Extra screen display. These temporary files are put into the svdata\ sub-directory of the directory where TranScan Viewer was installed (default install directory is C:\Program Files\TranScan Viewer\). <ol style="list-style-type: none"> 1. Verify that you have at least 20 K free disk space. 2. Verify that the svdata\ sub-directory has not been deleted or renamed. 3. Verify that you have write access to the drive where TranScan Viewer is installed. (TranScan Viewer does not support LAN based execution.)

13. TranScan Viewer Character Message File Format

This section contains the specifications for TranScan Viewer’s Character Message file format. Files in this format can be opened in TranScan Viewer via the menu option “File”, “Open Character msg file...”.

The file must be an ASCII text file. TranScan Viewer uses a default file extension of .tgs.

Record	Positions	Field
1	1 to 13	The constant ++TSViewer++C Upper and lower case must be exact.
1	14 to 18	Version number. Currently must be constant V01.1 The V must be in upper case. The 0 is the number zero
2	1 to 4	Direction, either RECV or XMIT in upper case.
2	5	filler
2	6 to 28	Optional time stamp. In the form: yyyy/mm/dd hh:mm:ss.mmm
3 to m	1 to x	Hexadecimal character representation of the message. Must be 0-9, A-F, a-f or space. Spaces are ignored.
m+1		If more than one message, this starts the second message. The format is the same as record 2, with direction and timestamp.
m+2 to m+n		Hexadecimal character representation of second message.
...		Additional messages formatted as described in record 2 through record m.

The following example contains messages formatted according to the “ASCII/1993” dialect of ISO/8583.

```
++TSViewer++CV01.1
RECV 1999/12/31 01:12:34.567
30383030 00000000 00010000 30353149
6620796F 75206361 6E207265 61642074
6869732C 20746865 206D6573 73616765
20706172 73656420 636F7272 6563746C
792E
XMIT 1999/12/31 01:12:35.321
30383030 0000000000010000 303531 496620796F752063616E
207265616420 74686973 2C2074686520
6D65737361676520 70617273656420636F72726563746C792E
```

14. Specifications for Automation Server Calls

14.1 Clear TranScan Viewer Display Buffers

ClearISOdisplayBuffers takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
ClearReason	integer	short integer

and returns:

	data type, Visual Basic	data type, Visual C++
{return value}}	integer	short integer

Where:

ClearReason = reason for clearing buffers. Currently not used. 0-999 reserve for Ontrac use.

{return value} = 0 if buffers cleared successfully
non-0 if buffers not cleared

14.2 Format and Display ISO Message

DisplayISOMsg takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
ISOMsg	String	BSTR*
msgDirection	Integer	short integer*
cProtocol	String	BSTR*
TimeStamp	String	BSTR*
Source	String	BSTR*
Dest	String	BSTR*
BytesTrunc	Integer	short integer*
DisplayMode	Long	long integer*

and returns:

	data type, Visual Basic	data type, Visual C++
{return value}}	integer	short integer

Where:

ISOMsg = the message as a string of hexadecimal character representation of the message

msgDirection = message direction, 0 = transmit, non-0 = receive

cProtocol = protocol used to transmit the message (e.g. TCP, TCPIP, SNA, NONE) Currently, only TCP and TCPIP have any special processing for protocol.

TimeStamp = time stamp of message transmission,
format: yyyy/mm/dd hh:mm:ss.mmm or yyyy/mm/dd hh:mm:ss

Source = source associated with message. For example, TranScan/LAN sets the source to the hardware address of the Ethernet. If protocol is TCPIP, and the Source is 8 characters of

- hexadecimal digits (0-9, A-F), then Source if interpreted and formatted as an IP address. (e.g. for Source="A1CCC728", then TranScan Viewer will display "161.204.199.40")
- Dest = destination associated with message. For example, TranScan/LAN sets the destination to the hardware address of the Ethernet card. If protocol is TCPIP, and the Dest is 8 characters of hexadecimal digits (0-9, A-F), then the Dest is interpreted and formatted as an IP address.
- BytesTrunc = The number of bytes at the end of the message which have been truncated, and thus are not available for parsing. For TCP protocol, with an application header, TranScan Viewer can then perform a better job of combining messages which have been split across multiple frames.
- DisplayMode = indication of realtime capture versus a playback examine mode. 0 = realtime capture, 1 = examine mode. This setting determines how the TranScan Viewer screen display can be frozen, and still save incoming messages in buffers.
- {return value} = numerical expression which is the sum of the value indicating the following:
- 1 = message accepted and written to message buffers
 - 2 = TranScan Viewer in Examine mode
 - 4 = Display is frozen (only set when TranScan Viewer is in Capture mode, i.e. not in Examine mode)
 - 80 = Not authorized. e.g.: TranScan Viewer trial period over.

See section 15. Example Code for Calls to TranScan Viewer, for examples of calls to "DisplayISOMsg" function from Visual C++, Visual Basic, and Visual Basic for Application.

14.3 Get Display Mode (Realtime/Examine)

GetDisplayMode takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
(none)		

and returns:

	data type, Visual Basic	data type, Visual C++
{return value}	integer	short integer

Where:

- {return value} = 0 = Realtime,
 1 = Examine

14.4 Set Display Mode (Realtime/Examine)

SetDisplayMode takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
ViewerDisplayMode	integer	short integer *

and returns:

	data type, Visual Basic	data type, Visual C++
{return value}	integer	short integer

Where:

ViewerDisplayMode = 0 = Realtime,
 1 = Examine
 {return value} = 0 if buffers cleared successfully
 1 = invalid input value
 (other non-zero values reserved for other TranScan Viewer errors)

14.5 Get Display Freeze Setting

GetFreeze takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
(none)		

and returns:

	data type, Visual Basic	data type, Visual C++
{return value}	integer	short integer

Where:

{return value} = 0 = Display is not frozen,
 1 = Display is frozen

14.6 Set Display Freeze/Unfreeze

SetFreeze takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
ViewerFreeze	integer	short integer *

and returns:

	data type, Visual Basic	data type, Visual C++
{return value}	integer	short integer

Where:

ViewerFreeze = 0 = Unfreeze,
 1 = Freeze
 {return value} = 0 if buffers cleared successfully
 1 = invalid input value
 (other non-zero values reserved for other TranScan
 Viewer errors)

14.7 Get Message Number of First Message in TranScan Viewer Display Buffer

GetFirstMsgNumber gets the message number of the first message in the TranScan Viewer buffers. GetFirstMsgNumber takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
(none)		

and returns:

	data type, Visual Basic	data type, Visual C++
{return value}	Long	long integer

Where:

{return value} = 0 = no messages in buffer,
 otherwise, returns the message number of the first
 message in the TranScan Viewer buffer.

14.8 Get Message Number of Last Message in TranScan Viewer Display Buffer

GetLastMsgNumber gets the message number of the last message in the TranScan Viewer buffers. GetLastMsgNumber takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
(none)		

and returns:

	data type, Visual Basic	data type, Visual C++
{return value}}	Long	long integer

Where:

{return value} = 0 = no messages in buffer,
 otherwise, returns the message number of the last message in the TranScan Viewer buffer.

14.9 Get Messages Formatted in HTML

GetFormattedHTMLMsgs takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
RequestedFirstMsgNumber	Long	long integer *
RequestedLastMsgNumber	Long	long integer *
IncludeRawMessage	String	BSTR*
Comment	String	BSTR*

and returns:

Argument	data type, Visual Basic	data type, Visual C++
FormattedOutput	String	BSTR*
ErrMsg	String	BSTR*

	data type, Visual Basic	data type, Visual C++
{return value}}	integer	short integer

Where:

RequestedFirstMsgNumber = 0 = current displayed message
 Otherwise, the message number of the first message to be formatted and returned

RequestedLastMsgNumber = The message number of the last message to be formatted and returned. (Ignored if RequestedFirstMsgNumber = 0)

IncludeRawMessage = Y = raw hexadecimal message to be included with returned formatted message
 N = raw hexadecimal message not to be included.

Comment = Text of comment to be placed in output

FormattedOutput = Output string formatted in HTML

ErrMsg = If error occurred (return value not 0), contains error text

{return value} = 0 messages successfully formatted
 2001 = Requested First Message greater than last.
 2003 = No messages to display.
 2004 = Message numbers not within range
 2005 = The 'from' value cannot be greater than the 'to' value.
 2006 = Maximum output is 250 messages.
 (other non-zero values reserved for other TranScan Viewer errors)

14.10 Get Messages Formatted in RTF

GetFormattedRTFMsgs takes the following arguments:

Argument	data type, Visual Basic	data type, Visual C++
RequestedFirstMsgNumber	Long	long integer *
RequestedLastMsgNumber	Long	long integer *
IncludeRawMessage	String	BSTR*
Comment	String	BSTR*

and returns:

Argument	data type, Visual Basic	data type, Visual C++
FormattedOutput	String	BSTR*
ErrMsg	String	BSTR*

	data type, Visual Basic	data type, Visual C++
{return value})	integer	short integer

Where:

RequestedFirstMsgNumber = 0 = current displayed message
 Otherwise, the message number of the first message to be formatted and returned
 RequestedLastMsgNumber = The message number of the last message to be formatted and returned. (Ignored if RequestedFirstMsgNumber = 0)
 IncludeRawMessage = Y = raw hexadecimal message to be included with returned formatted message
 N = raw hexadecimal message not to be included.
 Comment = Text of comment to be placed in output
 FormattedOutput = Output string formatted in RTF
 ErrMsg = If error occurred (return value not 0), contains error text

{return value} = 0 messages successfully formatted
2001 = Requested First Message greater than last.
2003 = No messages to display.
2004 = Message numbers not within range
2005 = The 'from' value cannot be greater than the 'to' value.
2006 = Maximum output is 250 messages.

(other non-zero values reserved for other TranScan Viewer errors)

15. Example Code for Calls to TranScan Viewer

The executable, tranview.exe, include type library information for the TranScan Viewer. This can be used with Visual Studio, or other programming environment to generate a class wrapper for the TranScanViewer class, for a programming project.

15.1 Example MFC Visual C++ Code

Using the Class Wizard in Visual Studio, add a class from the tranview.exe executable. Below is an example of the files generated, tranview.h and tranview.cpp:

tranview.h:

```
// Machine generated IDispatch wrapper class(es) created with ClassWizard
//
// _TranScanViewer wrapper class

class _TranScanViewer : public COleDispatchDriver
{
public:
    _TranScanViewer() {} // Calls COleDispatchDriver default constructor
    _TranScanViewer(LPDISPATCH pDispatch) : COleDispatchDriver(pDispatch) {}
    _TranScanViewer(const _TranScanViewer& dispatchSrc) :
COleDispatchDriver(dispatchSrc) {}

// Attributes
public:

// Operations
public:
    short DisplayISOMsg(BSTR* ISOMsg, short* msgDirection, BSTR* cProtocol,
BSTR* TimeStamp, BSTR* Source, BSTR* Dest, short* BytesTrunc, long* DisplayMode);
    short ClearISODisplayBuffers(short* ClearReason);
};
```


TranScan Viewer & TranScan/LAN

tranview.cpp:

```
// Machine generated IDispatch wrapper class(es) created with ClassWizard

#include "stdafx.h"
#include "tranview.h"

#ifdef _DEBUG
#define new DEBUG_NEW
#undef THIS_FILE
static char THIS_FILE[] = __FILE__;
#endif

////////////////////////////////////
// _TranScanViewer properties
////////////////////////////////////

////////////////////////////////////
// _TranScanViewer operations
////////////////////////////////////

short _TranScanViewer::DisplayISOMsg(BSTR* ISOMsg, short* msgDirection, BSTR*
cProtocol, BSTR* TimeStamp, BSTR* Source, BSTR* Dest, short* BytesTrunc, long*
DisplayMode)
{
    short result;
    static BYTE parms[] =
        VTS_PBSTR VTS_PI2 VTS_PBSTR VTS_PBSTR VTS_PBSTR VTS_PBSTR VTS_PI2
VTS_PI4;
    InvokeHelper(0x60030028, DISPATCH_METHOD, VT_I2, (void*)&result, parms,
        ISOMsg, msgDirection, cProtocol, TimeStamp, Source, Dest, BytesTrunc,
DisplayMode);
    return result;
}

short _TranScanViewer::ClearISODisplayBuffers(short* ClearReason)
{
    short result;
    static BYTE parms[] =
        VTS_PI2;
    InvokeHelper(0x6003002c, DISPATCH_METHOD, VT_I2, (void*)&result, parms,
        ClearReason);
    return result;
}
```

TranScan Viewer & TranScan/LAN

Below is an example C++ call:

```
{
    TranScanViewer m_TSView;
    BSTR msgB; /* msg */
    short bDirection = 1; /* 1 = receive */
    long DisplayMode = 0; /* realtime capture mode */
    BSTR ProtocolB;
    BSTR srceB;
    BSTR destB;
    BSTR DateTimeB;
    short sTrunc = 0;
    msgB = SysAllocString (L"303230300000000000010000"
        L"303531496620796F752063616E"
        L"207265616420746869732C2074686520"
        L"6D6573736167652070617273656420636F72726563746C792E");
    ProtocolB = SysAllocString (L"NONE");
    srceB = SysAllocString (L"123456");
    destB = SysAllocString (L"654321");
    DateTimeB = SysAllocString (L"2001/12/31 23:59:59.012");

    if (!m_TSView.CreateDispatch(_T("TranView.TranScanViewer"),NULL))
    {
        AfxMessageBox("cannot create TSView");
    }
    else
    {
        try
        {
            m_TSView.DisplayISOMsg(&msgB, &bDirection, &ProtocolB,
                &DateTimeB, &srceB, &destB, &sTrunc, &DisplayMode);
        }
        catch (COleException* e)
        {
            e->Delete();
            AfxMessageBox("unable to send message to TranScan Viewer");
        }
        m_TSView.ReleaseDispatch();
    }
    SysFreeString(msgB);
    SysFreeString(DateTimeB);
    SysFreeString(srceB);
    SysFreeString(destB);
    SysFreeString(ProtocolB);
    SysFreeString(destB);
}
```

15.2 Example Visual Basic Code

The following code is an example of how to call the TranScan Viewer from a Visual Basic project.

1. Open a new Visual Basic Project
2. Add a Command button to the form
3. Enter the following code¹¹
4. Start the TranScan Viewer
5. Start the Visual Basic program and click the command button.

```
Private Sub Command1_Click()
    Dim TSViewer As Object
    Dim rc As Integer
    Dim msg As String
    Dim Direction As Integer
    Dim DateAndTime As String
    Dim DispMode As Long

    msg = "30323030" & "0000000000010000" 'msg type and bitmap
    msg = msg & "303531" & "496620" 'fld len and 1st part
    msg = msg & "796F752063616E207265616420746869732C2074686520"
    msg = msg & "6D6573736167652070617273656420"
    msg = msg & "636F72726563746C792E"

    Direction = 1 'direction = received
    DateAndTime = "2000/02/29 23:59:59.012"
    DispMode = 1 'display mode = examine

    Set TSViewer = CreateObject("tranview.TranScanViewer")
    rc = TSViewer.DisplayISOMsg(ISOMsg:=msg, _
                               msgDirection:=Direction, _
                               cProtocol:="none", _
                               TimeStamp:=DateAndTime, _
                               Source:="", _
                               Dest:="", _
                               BytesTrunc:=0, _
                               DisplayMode:=DispMode)

    MsgBox "Msg sent to TranScan Viewer. Returned value = " & rc
    Set TSViewer = Nothing

End Sub
```

¹¹ The same code can be used in a Visual Basic for Applications (VBA), such as an Excel macro. (You may need to remove the "Private" declaration for a VBA macro.)

End of Document