TREK

PLAYBACK

USER GUIDE

November 2024

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1 Welcome

The Telescience Resource Kit (TReK) is a suite of software applications and libraries that can be used to monitor and control assets in space or on the ground.

The TReK Playback application provides the capability to play back data stored in data recording files.

The topics in this user guide require an understanding of the topics covered in the TReK Concepts document. Please be sure you have read the TReK Concepts document before reading this user guide.

1.1 Getting Started

Start with the Introduction which provides an application overview. Next, try the Quick Start Guides for "How Tos" for common functions. For help with details, reference the Details section. See the FAQ and Troubleshooting section for helpful hints and solutions to the common "gotchas".

2 Technical Support

If you are having trouble installing the TReK software or using any of the TReK software, please contact us for technical assistance:

E-Mail: trek.help@nasa.gov

Messages sent to this address are automatically forwarded to the TReK team.

The HOSC Help Desk (256-544-5066) can provide assistance as needed and is available 24x7.

3 Introduction

The TReK Playback application provides the capability to play back data stored in data recording files and forward the data. The TReK Data application can be used to receive the forwarded data and perform any of the functions available in the data application such as processing the data and displaying it. The configuration of the TReK Playback application can be saved.

4 Overview of the User Interface

4.1 Main Window

The main window is shown in Figure 1. The main window consists of two areas. The top part of the main window contains statistics information about the playback in progress. It will be empty until a playback is started. The bottom part of the window is a message area that is used to display important status and information messages about the activities in progress.

The Message Area is a dock window that you can float or dock. To float a dock window, use your left mouse button to click and hold the title area while dragging the window to another area of the screen. To dock, use the title bar to drag the dock window over the main window and drop.

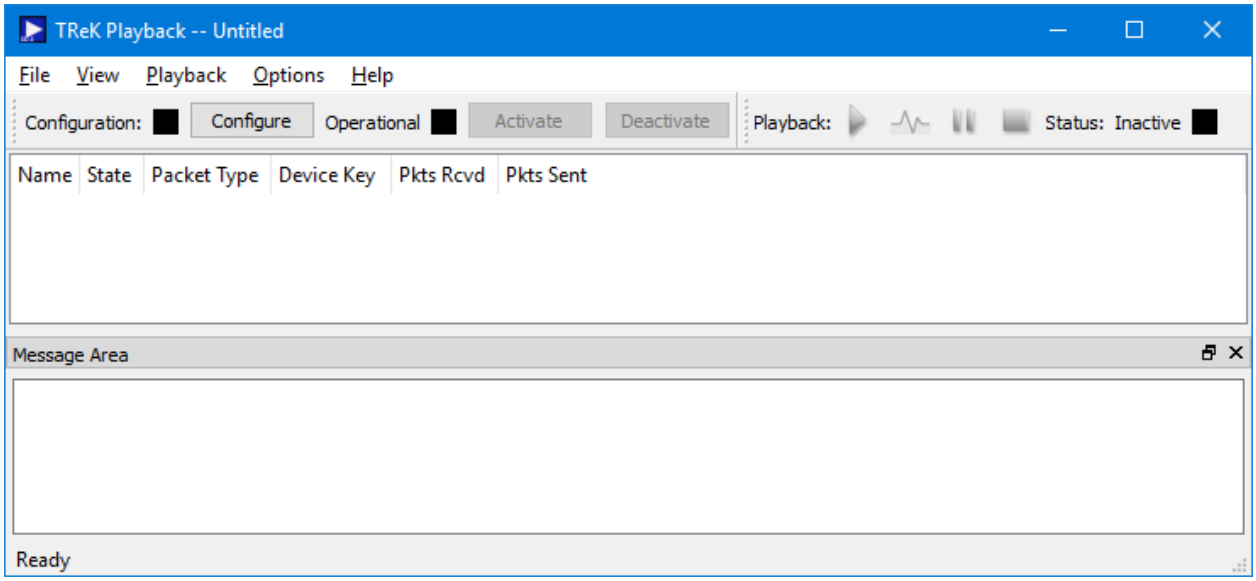

Figure 1 Main Window

Configuration Toolbar

The Configuration toolbar provides the capability to configure the playback, Activate the playback, and Deactivate the playback.

Playback Toolbar

The Playback toolbar provides access to the playback controls. The control buttons provide the capability to Start, Pulse, Pause, or Stop a playback. The Status area to the right of the controls displays the status of the playback.

Statistics Area

The Statistics area provides real time statistics information for active services.

Message Area
The Message Area displays important information, warning and error messages. The message area can be cleared using the View menu.

4.2 Menus

The application menus are: File, View, Playback, Options, and Help. Each of these menus is described in more detail below.

File Menu
The File menu provides the capability to create a new configuration, open a configuration, save a configuration, and exit the application.

View Menu
The View menu provides the capability to clear the main window message area and show and hide the statistics area and the main window message area.

Playback Menu
The Playback menu provides the capability to configure, activate, and deactivate a playback. Once a playback has been activated, the Playback menu will also display menu items to control the playback.

Options Menu
The Options menu provides the capability to access statistics, reset statistics, and configure statistics snapshot recording. It also provides access to the Messages dialog which can be used to display and filter application messages.

Help Menu
The Help menu provides access to on-line help and application version information.

5 Quick Start Guides

This section provides "How Tos" for common functions.

5.1 How to Configure the Playback

This section describes how to configure the application to play data back from recorded data files. For additional information and details about the Configure dialog please reference section 6.1.

1. To configure a playback push the Configure button.
2. In the configure dialog use the Playback tab to add one or more recorded data files. Update other playback configuration information such as Playback Order, Playback Rate, or Playback Mode as needed.
3. In the Configure dialog use the Forward tab to enter one or more destinations for the data to be played back.

4. Push the Ok button to complete the configuration. The Configuration status should turn green.

5.2 How to Activate a Playback

This section describes how to activate a playback. A playback must be configured in order to activate it.

1. To activate a playback push the Activate button.

5.3 How to Deactivate a Playback

This section describes how to deactivate a service. A playback must be activated in order to deactivate it.

1. To deactivate a playback, push the Deactivate button.

6 Details

This section covers various application details.

6.1 Configure Dialog

The Configure dialog is used to configure a playback. The Configure dialog is shown in Figure 2. Details are provided below.

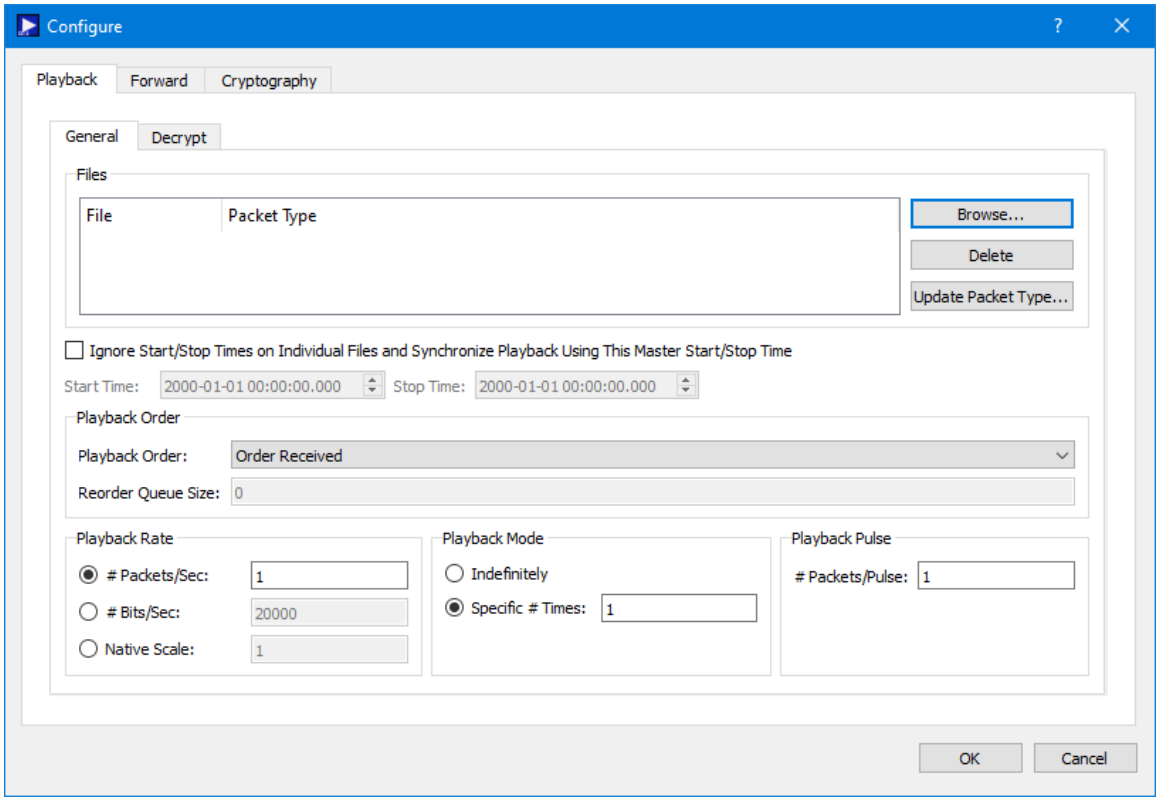

Figure 2 Configure Dialog

There are three tabs in the Configure dialog: Playback, Forward and Cryptography. The Playback tab is used to configure the playback, the Forward tab is used to configure data forwarding, and the Cryptography tab is used to configure cryptography settings.

6.1.1 Configure Dialog (Playback Tab)

The Playback tab is shown in Figure 3. It is used to enter information about the playback. It has two tabs: General and Decrypt. The General tab is used to enter playback settings and the Decrypt tab is used to enter information needed to decrypt encrypted recorded data files.

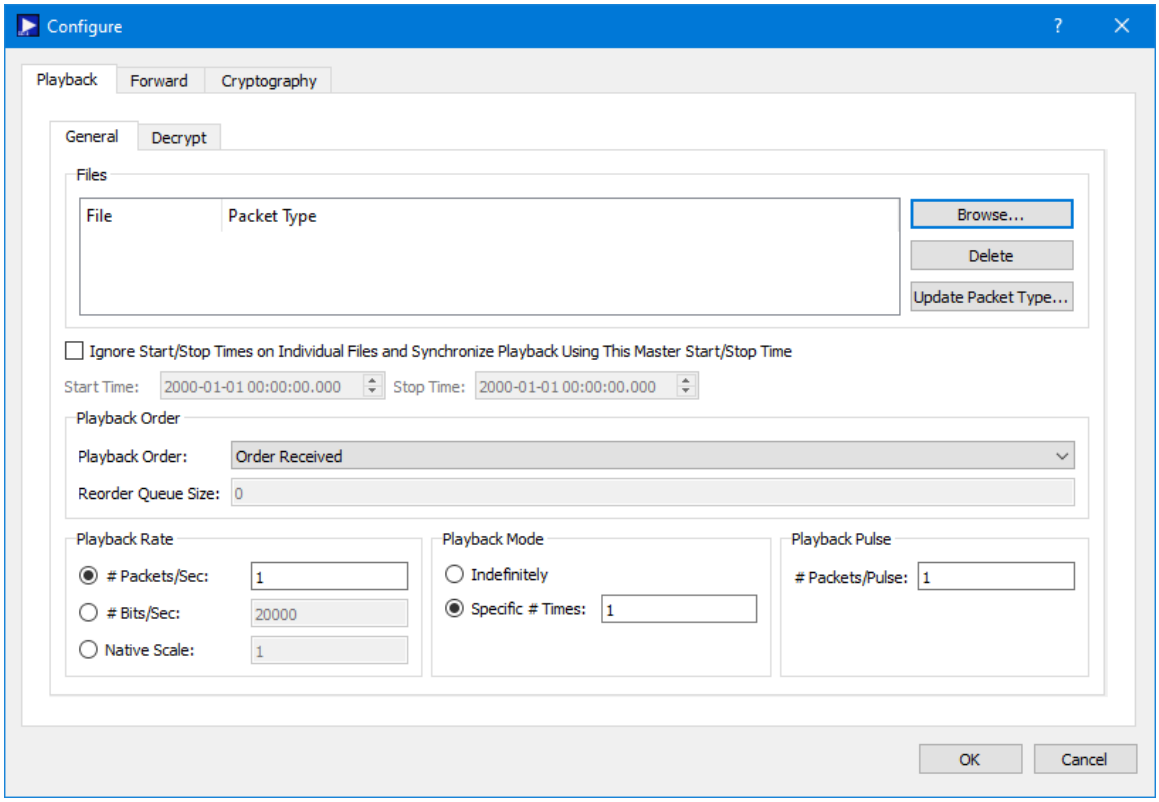

Figure 3 Configure Dialog Playback Tab

Configure Dialog (Playback Tab [General Tab])

The General tab is shown in Figure 4.

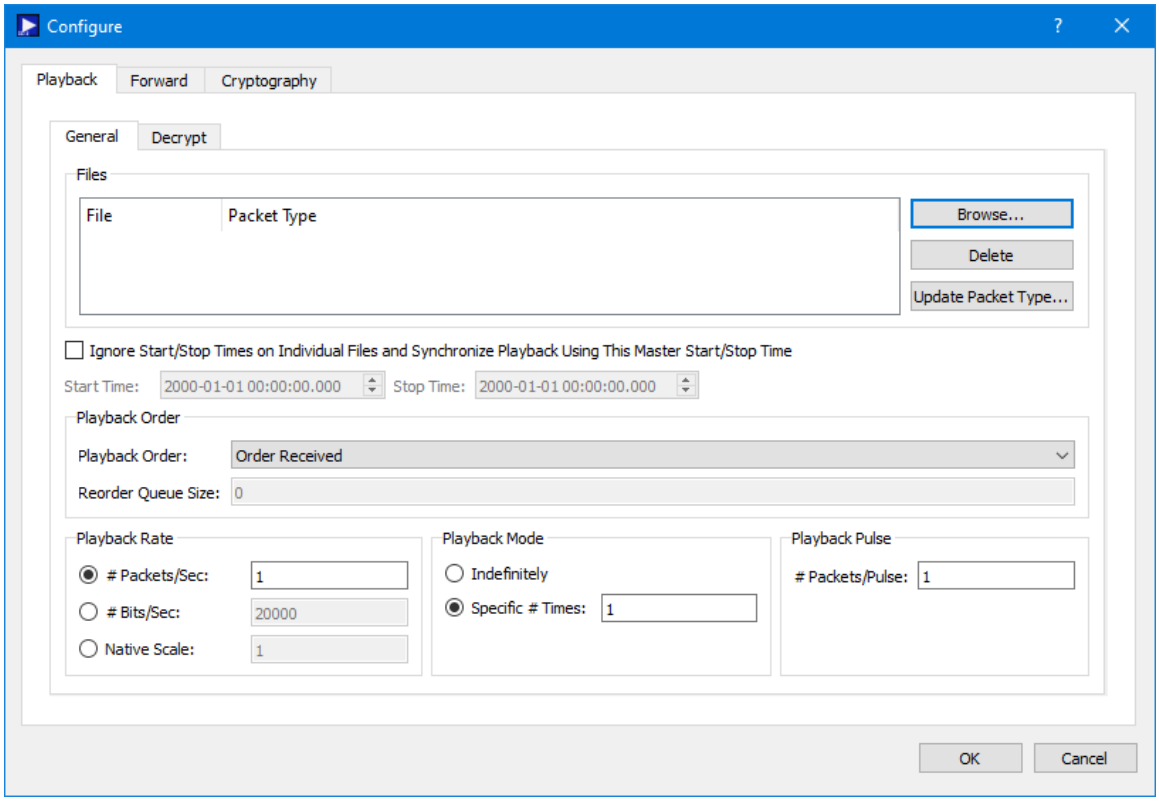

Figure 4 Configure Dialog (Playback Tab [General Tab])

The fields in the General Tab are described below.

Files

Files containing recorded data can be identified by browsing for the files and adding them to the list. The Browse button will display an Open dialog which can be used to select one or more files and add them to the list. Figure 5 shows the Files list after a single recorded data file was selected and added to the list. The Delete button can be used to delete one or more files from the list. If the directory containing the recorded data file does not have an associated configuration file describing the recorded data file's format, the Packet Type will show "UserDefined" when the recorded data file is added to the list. If this occurs, the Update Packet Type button can be used to identify the type of data in the recorded data file(s) selected. The Playback library identifies configuration files, in a record file directory, by the file name which is a combination of the record file's base file name with a ".con" extension. The configuration file associated with a record file uses a packet header processor template to record information on how to determine the length, packet sequence count and embedded time of each recorded packet.

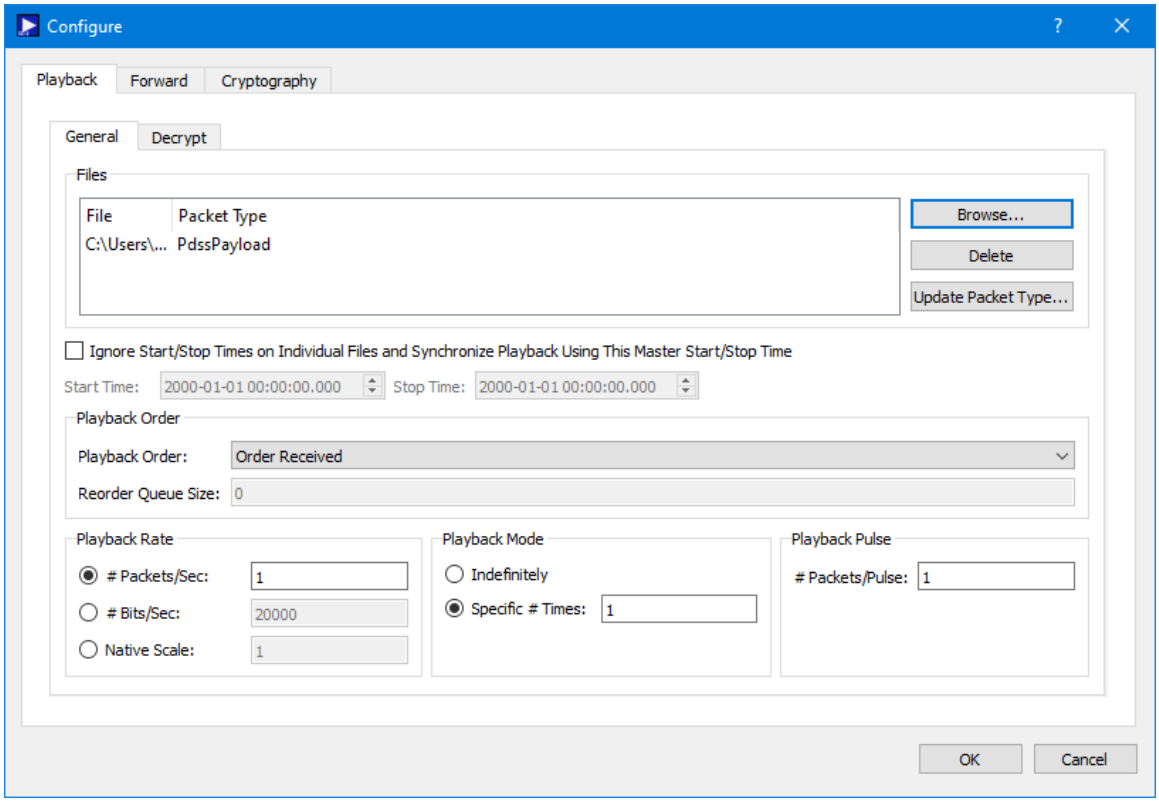

Figure 5 Configure Dialog (Playback Tab [General Tab] Files)

Working with Encrypted Recorded Data Files
If the recorded data file selected is encrypted and a configuration file exists, the Packet Type is set to Encrypted. If the recorded data configuration file is missing, the Packet Type will default to UserDefined. Since the recorded data file contains encrypted data, the Update Packet Type dialog should be used to set the packet type to Encrypted.

The following scenarios describe what default packet type will be displayed based on several different factors and whether you need to take any action to update the packet type.

Scenario 1

Recorded Data File Contains:	PdssPayload 7 Data
Is Data Encrypted?	No
Does Recorded Data Configuration File Exist?	Yes
When File is Added Packet Type Displayed:	PdssPayload

Action:
No Action is necessary since the default packet type displayed is correct. The data being played back is unencrypted PdssPayload data.

Scenario 2

Recorded Data File Contains:	PdssPayload 7 Data
Is Data Encrypted?	Yes

Does Recorded Data Configuration File Exist? Yes
When File is Added Packet Type Displayed: Encrypted
Action:
No Action is necessary since the default packet type displayed is correct. The data being played back is encrypted data.

Scenario 3
Recorded Data File Contains: PdssPayload 7 Data
Is Data Encrypted? No
Does Recorded Data Configuration File Exist? No
When File is Added Packet Type Displayed: UserDefined
Action:
Use the Update Packet Type dialog to change the packet type to identify the type of data in the recorded data file (PdssPayload) since the data being played back will be unencrypted PdssPayload data.

Scenario 4
Recorded Data File Contains: PdssPayload 7 Data
Is Data Encrypted? Yes
Does Recorded Data Configuration File Exist? No
When File is Added Packet Type Displayed: UserDefined
Action:
Use the Update Packet Type dialog to change the packet type to identify the type of data in the recorded data file (Encrypted) since the data being played back will be encrypted data.

Ignore Start/Stop Times on Individual Files and Synchronize Playback Using This Master Start/Stop Time
The default configuration for a playback will play back the recorded data one file at a time. If this checkbox is checked, the playback will be 'synchronized' such that the data in the total set of recorded data files will be playback based on time and not based on individual files.

Start Time
The Start Time for the synchronized playback.

Stop Time
The Stop Time for the synchronized playback.

Playback Order
There are three options for Playback Order. Each is described below:

*Order Receive*d
Order Received will playback files in the order they were added to the list and playback packets in the files in the order they were recorded in the file.

Reorder Using Embedded Time
Reorder Using Embedded Time will playback packets from the playback files in time order using the embedded time stamp in the individual packets. A reorder queue is required if packets in the individual playback files are out of order. The reorder queue must be sized to hold the maximum sequence of out of order packets in the playback files or the packets will not be reordered correctly. For example, packets A,B,C,D,M,N,O,E,F,G,H,I,J,K,L,P,Q,R in a file would require a reorder queue size of four to produce the proper packet sequence of A,B,C,D,E,F,G,H,I,J,L,K,M,N,O,P,Q,R.

Reorder Using Embedded Time And Remove Duplicates
Reorder Using Embedded Time will playback packets from the playback files in time order using the embedded time stamp in the individual packets. Duplicate packets will not be played back. Duplicate packets are identified using the packet's embedded time and sequence count. A reorder queue is required if packets in the individual playback files are out of order or contain duplicate packets. The reorder queue must be sized to hold the maximum sequence of out of order packets or duplicate packets or the packets will not be played back correctly. For example, packets A,B,C,D,M,E,F,G,H,I,J,K,L,M,N,O,P,Q,R in a file would require a reorder queue size of two to produce the proper packet sequence of A,B,C,D,E,F,G,H,I,J,L,K,M,N,O,P,Q,R.

Reorder Queue Size
Reorder Queue Size is the size of the queue used to reorder the packets in a playback file. Doubling the maximum packet sequence error associated with the playback file is a method that may be used to estimate a reorder queue size. If the reorder queue size is too small, packets will not be reordered in the proper sequence. If the reorder queue size is too large, CPU will be taxed unnecessarily.

Playback Rate
There are three options for playback rate. Each are described below:

Packets/Sec
Packets per Second will be play the recorded data back using the # packets per second rate entered.

Bits/Sec
Bits per Second will be play the recorded data back using the # bits per second rate entered.

Native Scale
Native Scale will play the recorded data back at a specified multiple of the packet's native rate. Native rate is determined by the embedded time stamp associated with each packet

Playback Mode
The playback can be configured to play back indefinitely or a specific number of times. If the playback is set to 'Indefinitely' the playback will continue to replay the playback until the playback is stopped using the Stop Playback command. If it is set to Specific # Times, the playback will be run the specific number of times identified.

Playback Pulse
When the playback is pulsed, the # packets sent per pulse is defined by this entry.

Configure Dialog (Playback Tab [Decrypt Tab])
The Decrypt Tab is shown in Figure 6.

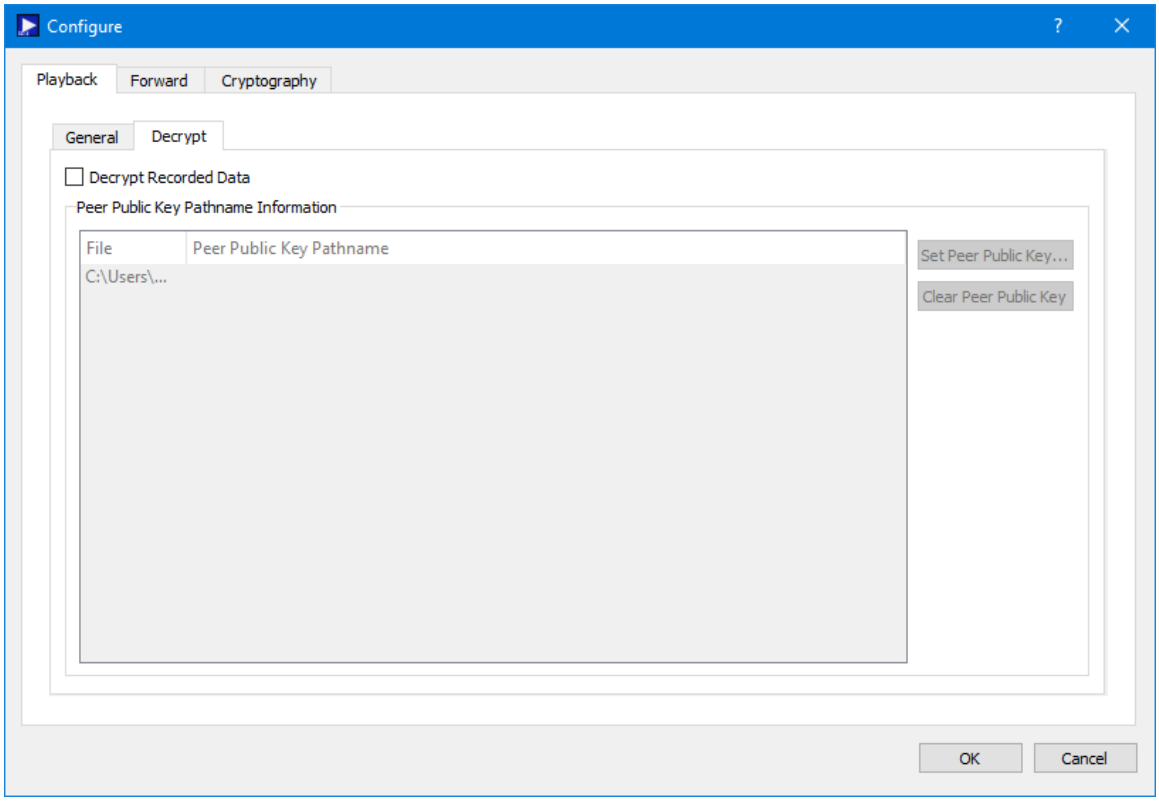

Figure 6 Configure Dialog (Playback Tab [Decrypt Tab])

The fields in the Decrypt Tab are described below.

Decrypt Recorded Data Checkbox
The Decrypt Recorded Data checkbox is used to identify that the recorded data should be decrypted as it is played back. If decryption is used the Cryptography tab must be populated with the information needed to perform the decryption.

Peer Public Key Pathname List

To decrypt recorded data during the playback, the TReK software needs the Peer Public Key for the encrypted data. To decrypt data, the Decrypt Recorded Data checkbox should be checked and the Peer Public Key should be entered for each playback file that needs to be decrypted. The Set Peer Public Key button is used to browse the local disk for a peer public key file. The Delete button is used to Delete an entry. One or more rows must be selected to use the Delete and Peer Public Key buttons.

6.1.2 Configure Dialog (Forward Tab)

The Configure Dialog Forward Tab is shown in Figure 7. It is used to configure settings for forwarding data. The Forward tab contains three tabs: Destination List, Transform, and Encrypt.

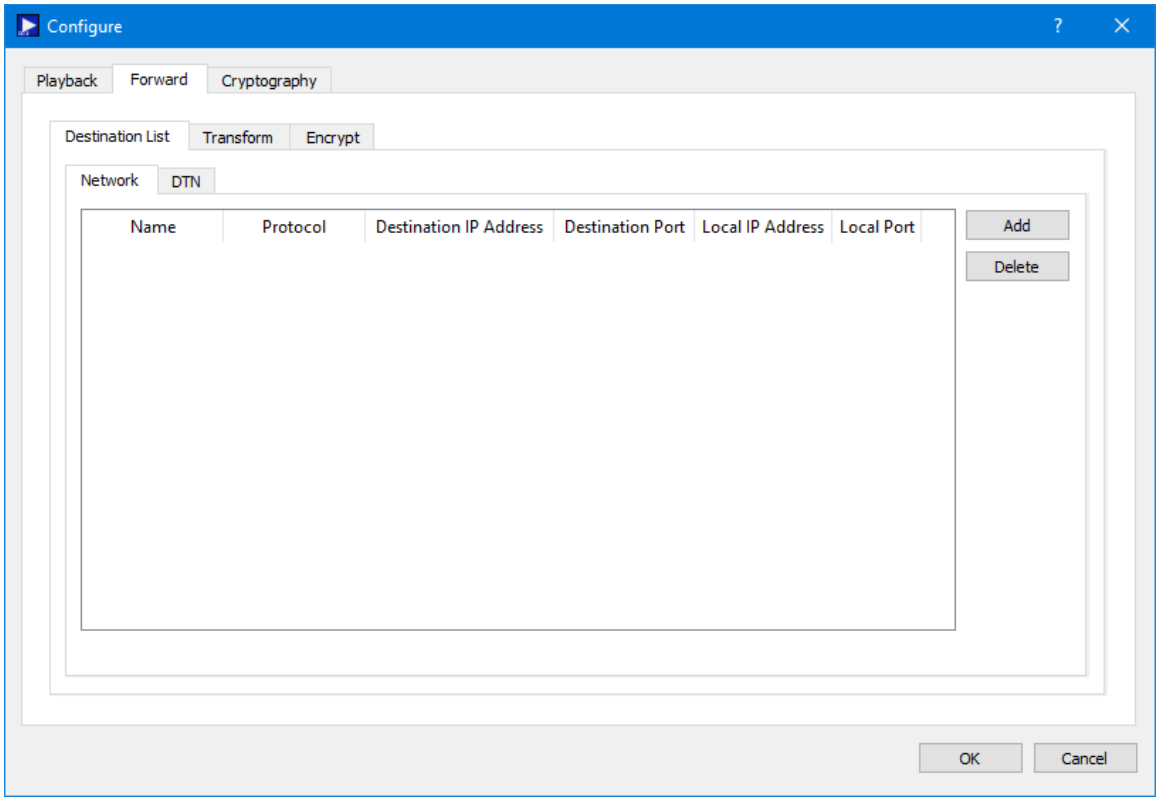

Figure 7 Configure Dialog Forward Tab

Configure Dialog (Forward Tab [Destination List Tab])

The Destination List Tab is shown in Figure 8.

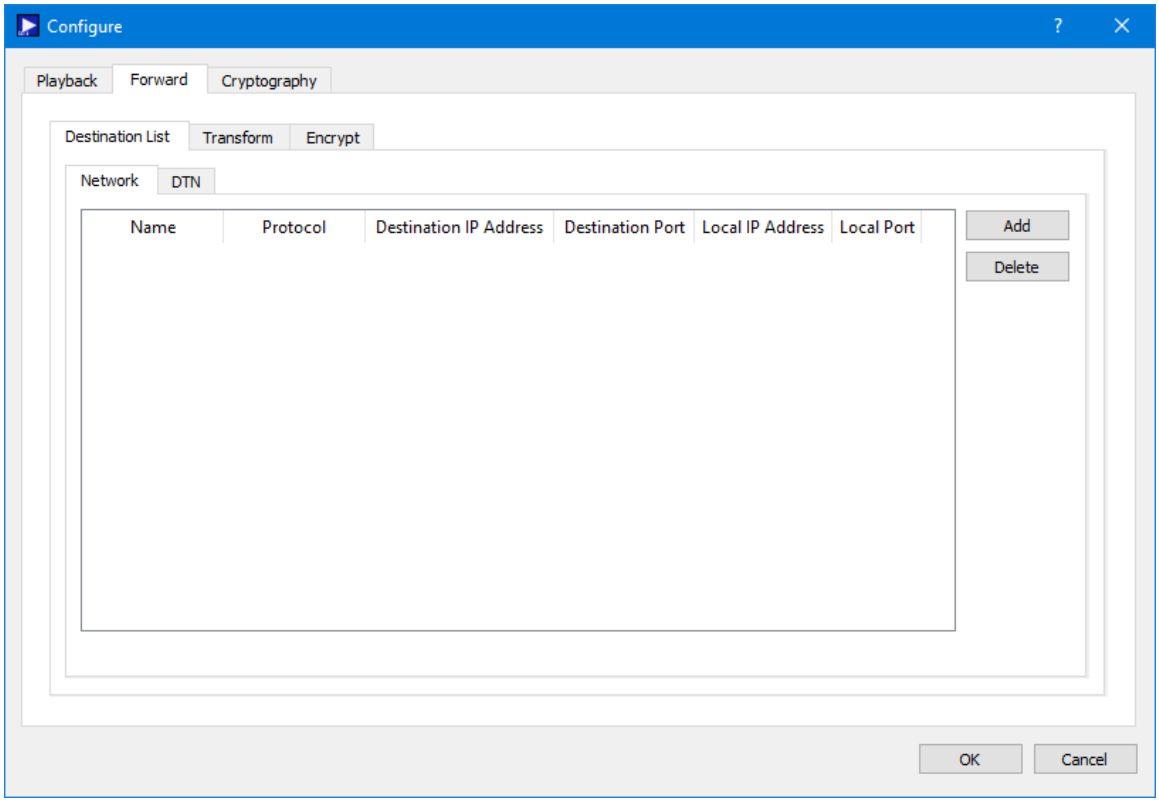

Figure 8 Configure Dialog (Forward Tab Destination List Tab)

Destination List

The destination list is used to identify the list of destinations to which the data should be forwarded. Data can be forwarded to a network destination or a Delay Tolerant Network (DTN) destination.

A network destination example is shown in Figure 9. For a network destination, each destination must include a user defined name that is unique in this destination list, a Protocol, and the applicable settings required for the protocol selected. The Protocols supported are UDP and TCP. The Protocol menu provides the capability to select the type of socket to use when forwarding the data: UDP, TCP Client, or TCP Listener socket. Figure 9 shows three different destinations in the Destination List. When using a TCP Listener socket it is not necessary to define a Destination IP Address or a Destination Port. When the Local Port is set to 0, the operating system will automatically select a port to use for the socket that is created to send data to the destination. This is the default as it saves you the trouble of keeping up with ports. However, you can enter a specific port if you would like. This is advisable if you are using a TCP Listener socket since another party will be connecting to the socket. The + and - buttons are used to add a row to the list and delete a row from the list respectively.

A DTN destination example is shown in Figure 10. For a DTN destination, each destination must include a destination node number and a destination service number. General properties that must be input for all DTN destinations include Source Service

Number, Lifespan, Bundle Protocol Class of Service, Expedited Priority Ordinal, Transmission Mode, and Criticality.

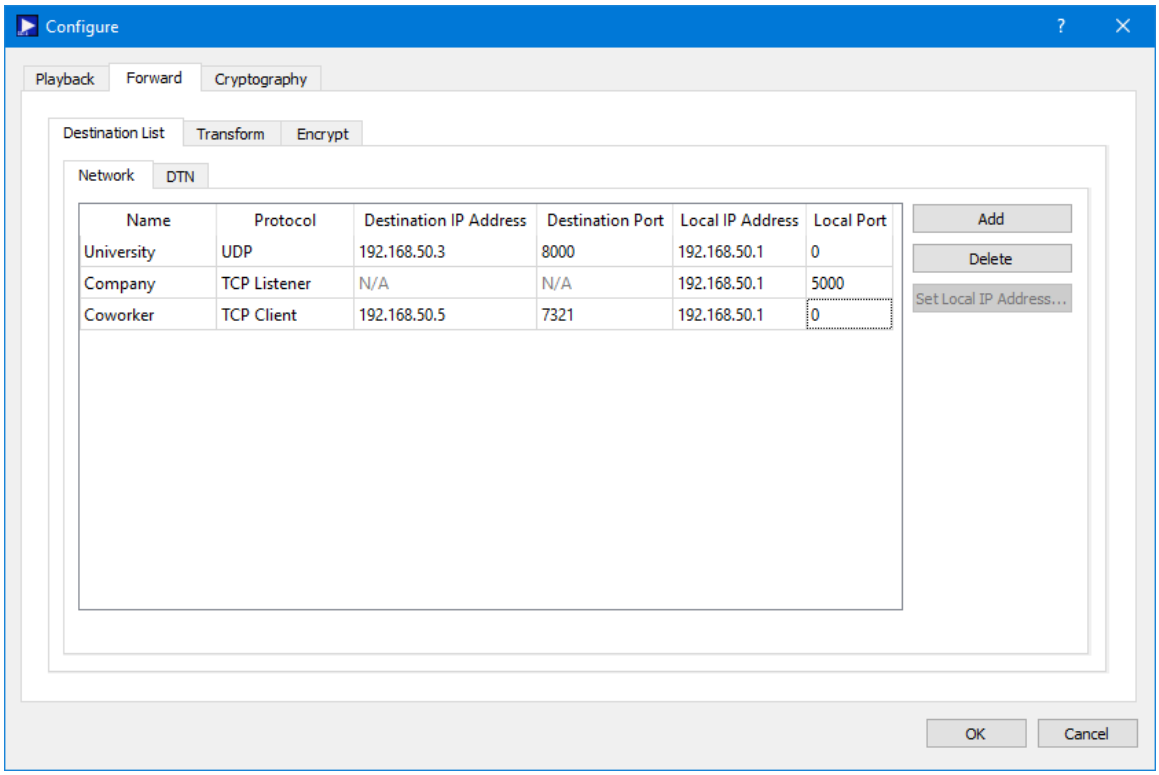

Figure 9 Configure Dialog Forward Tab Network Destination List Tab Populated

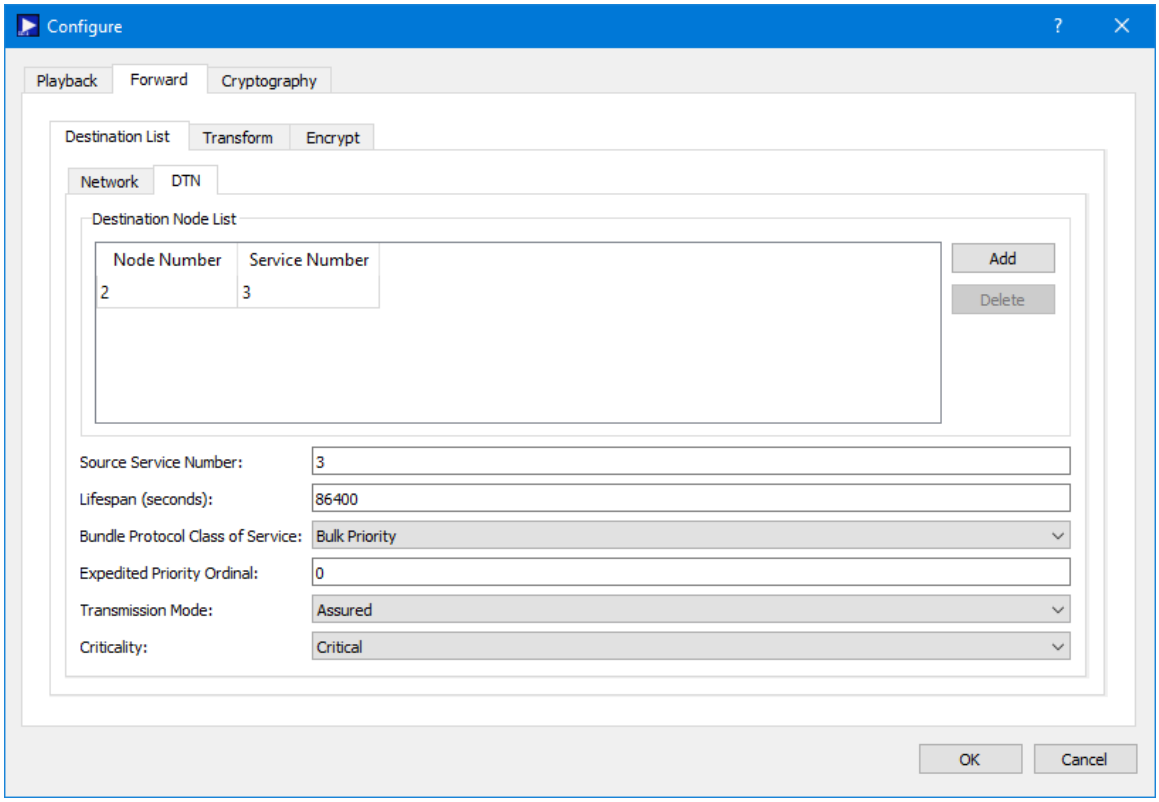

Figure 10 Configure Dialog Forward Tab DTN Destination List Tab Populated

Configure Dialog (Forward Tab [Transform Tab])

The Transform tab is shown in Figure 11. The Transform tab provides the capability to enable the transform feature which can be used to remove a specific number of bytes from the beginning of each packet before the packet is forwarded.

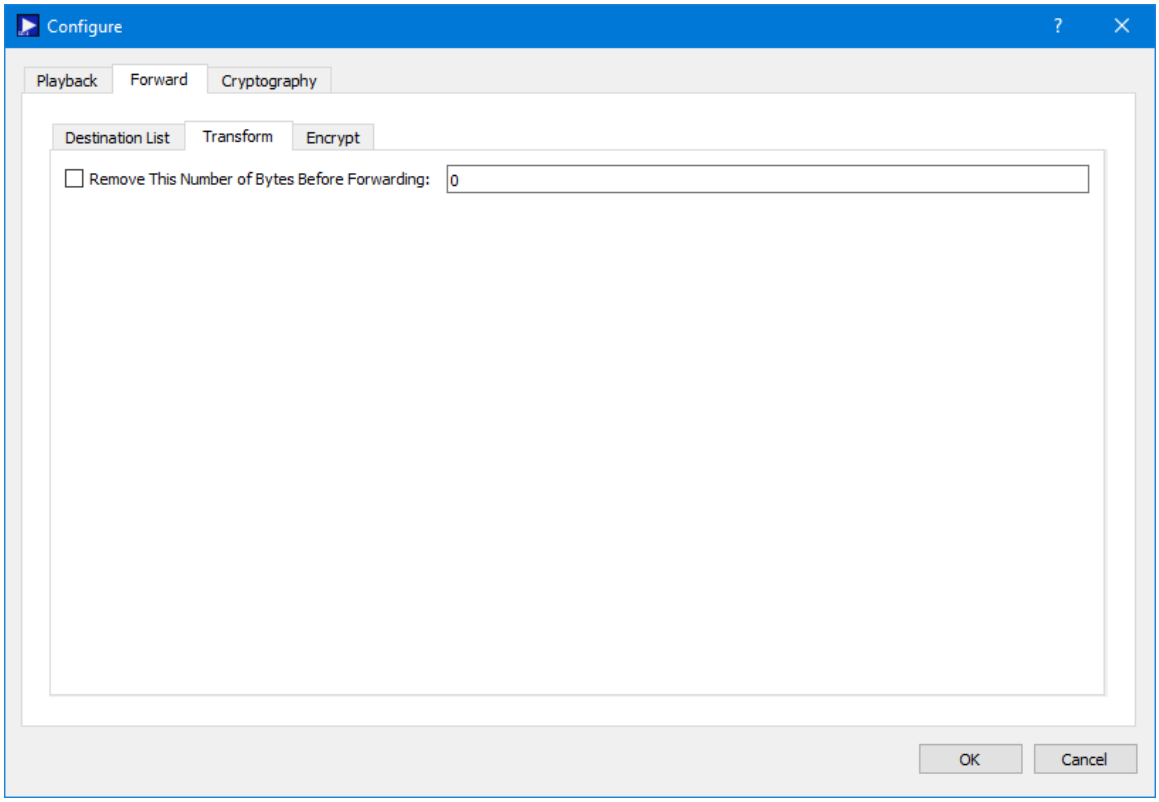

Figure 11 Configure Dialog Forward Tab Transform Tab

Configure Dialog (Forward Tab [Encrypt Tab])

The Encrypt Tab is shown in Figure 12. The Encrypt tab provides the capability to encrypt data before it is sent to a destination. Encryption is controlled per destination. The Peer Public Key associated with a destination must be provided in order to send encrypted data to the destination.

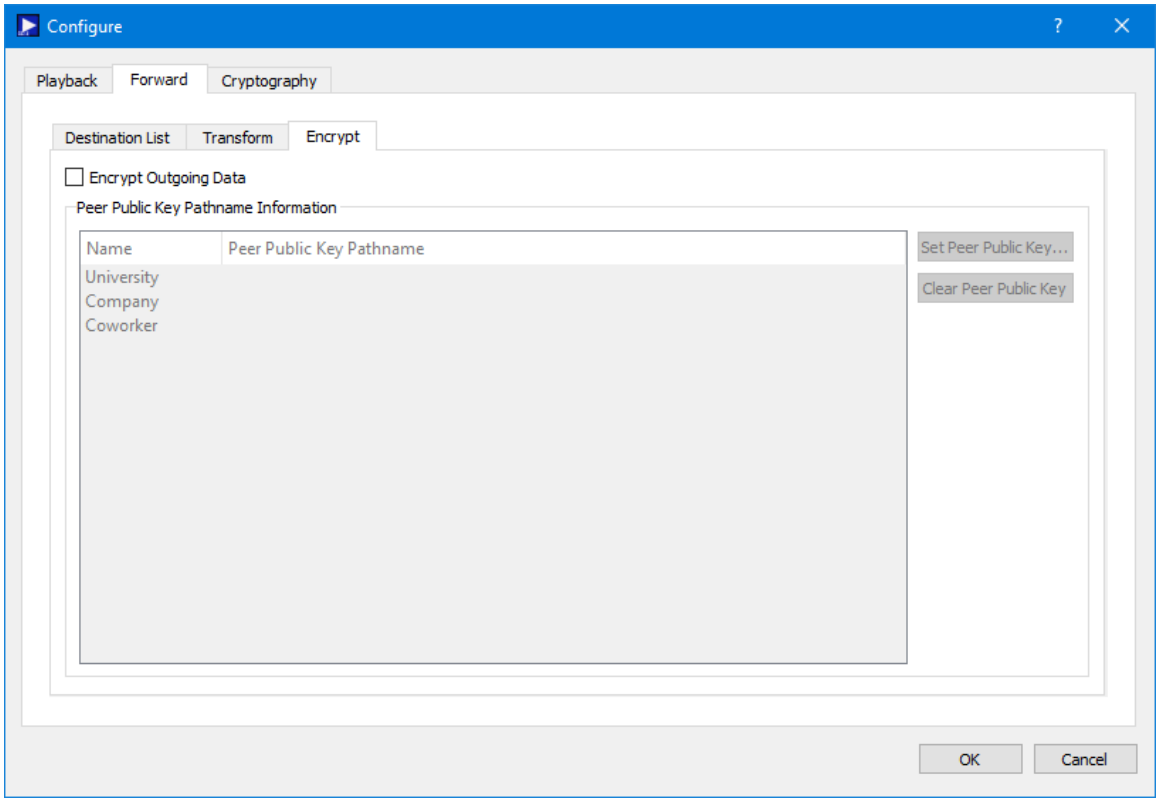

Figure 12 Configure Dialog Forward Tab Encrypt Tab

The Peer Public Key Pathname list is populated using the Destination List. To encrypt data going to a specific destination, check the Encrypt Outgoing Data checkbox, and identify the absolute path to the Peer Public Key associated with the destination. The Set Peer Public Key button is used to browse the local disk for a peer public key file. The Clear Peer Public Key button is used to clear a peer public key pathname. One or more rows must be selected to use the Set Peer Public Key and Clear Peer Public Key buttons.

6.1.3 Configure Dialog (Cryptography Tab)

The Configure Dialog Cryptography Tab is used to configure cryptography settings when cryptography services are in use. It is shown in Figure 13. The Cryptography checkbox must be checked and all required cryptography settings must be populated with valid information in order to successfully activate a playback that uses cryptography capabilities.

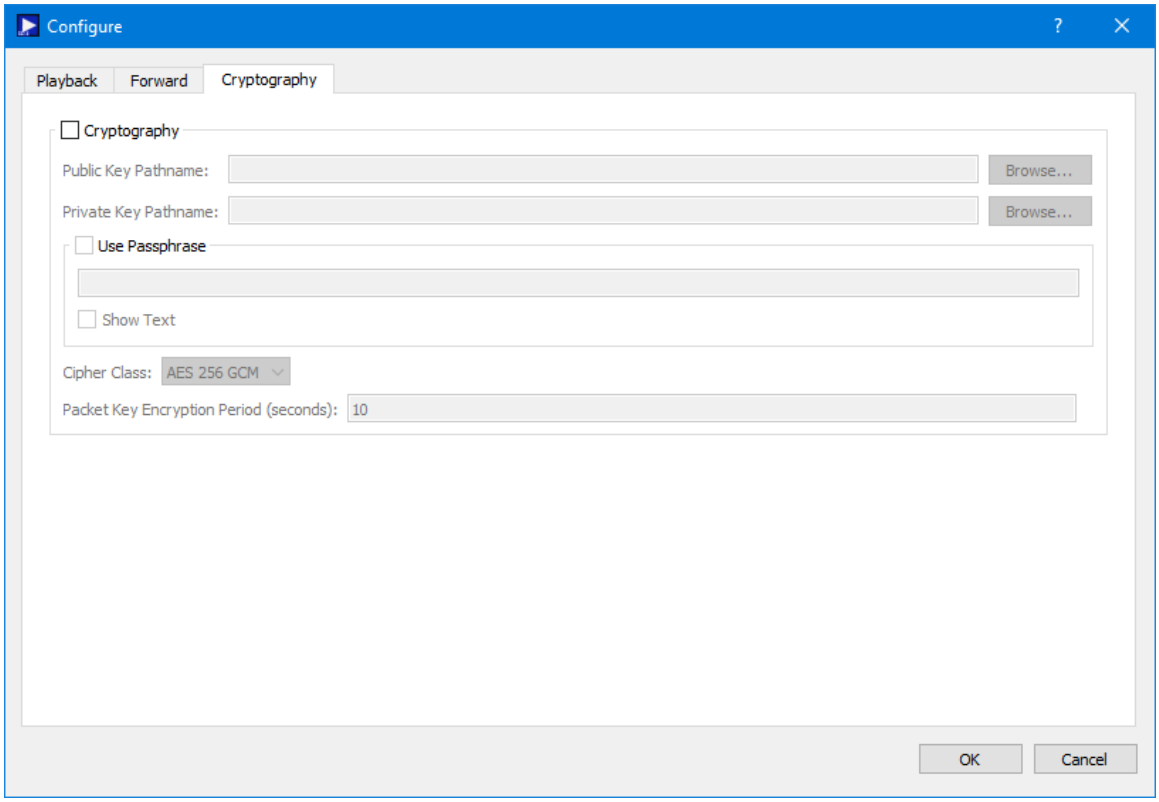

Figure 13 Configure Dialog (Cryptography Tab)

Each field is described below.

Cryptography Checkbox
The Cryptography checkbox is used to specify you want to use cryptography services.

Public Key Pathname
This is the absolute path for the public key file.

Private Key Pathname
This is the absolute path for the private key file.

Use Passphrase
The Use Passphrase checkbox is used to specify that the private key requires a passphrase. If this box is checked, the passphrase must be entered into the text field. The passphrase text will not be displayed in the clear. If you want to see the text entered in the clear, check the Show Text checkbox. This information is not stored when you save a configuration. You will have to enter it each time you restart the application when using cryptography services.

Show Text
The Show Text checkbox is used to display the passphrase text in the clear.

Cipher Class
This option menu is used to select the cipher class.

Packet Key Encryption Period

The Packet Key Encryption Period is only used when using the Packet encryption feature. As mentioned in the TReK Cryptography Services Tutorial, cryptography keys are used to generate other keys behind the scenes. One of these keys is called a Cipher Encryption Key (CEK). The Packet Key Encryption period defines how often to generate a new Cipher Encryption Key (CEK) when streaming encrypted data. It can be configured to generate a new CEK for a packet stream once every "x" seconds to support encryption of high rate packet streams. The time period is measured in seconds. If the packet key encryption period is set to zero, the TReK encryption library will generate a new packet encryption key for every packet in the stream. The TReK encryption library can support the encryption of high rate packet streams by setting the packet key encryption period to a non-zero value. The default value is 10 seconds.

6.2 Statistics

Statistics displays statistics information as the data playback is in progress. Statistics information is displayed in the Main Window and in the Statistics dialog available from the Options menu. Figure 14 shows the Statistics area in the Main Window. Figure 15 shows the Statistics dialog.

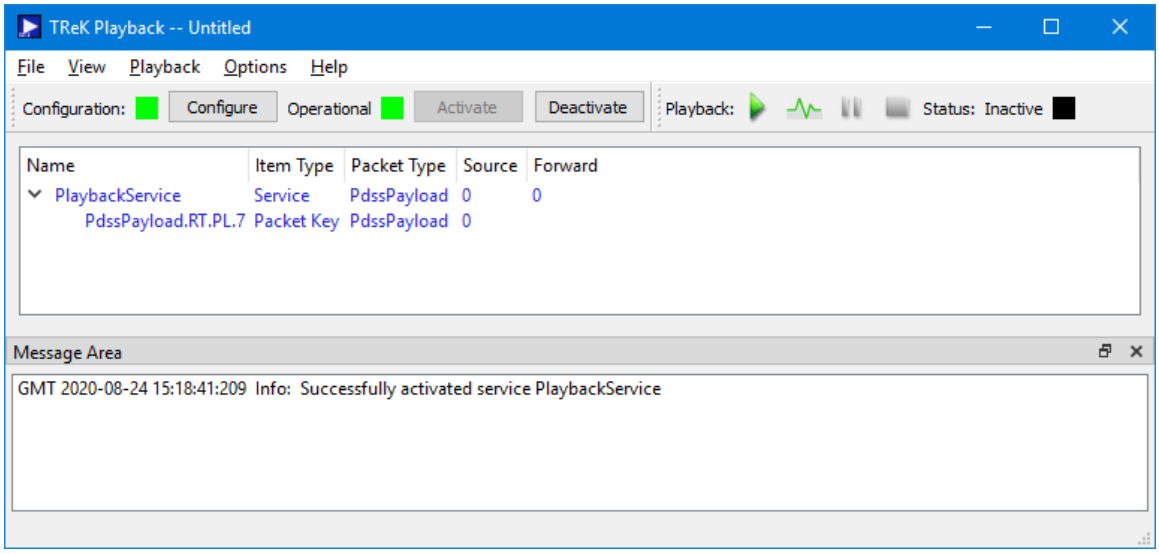

Figure 14 Statistics in the Main Window

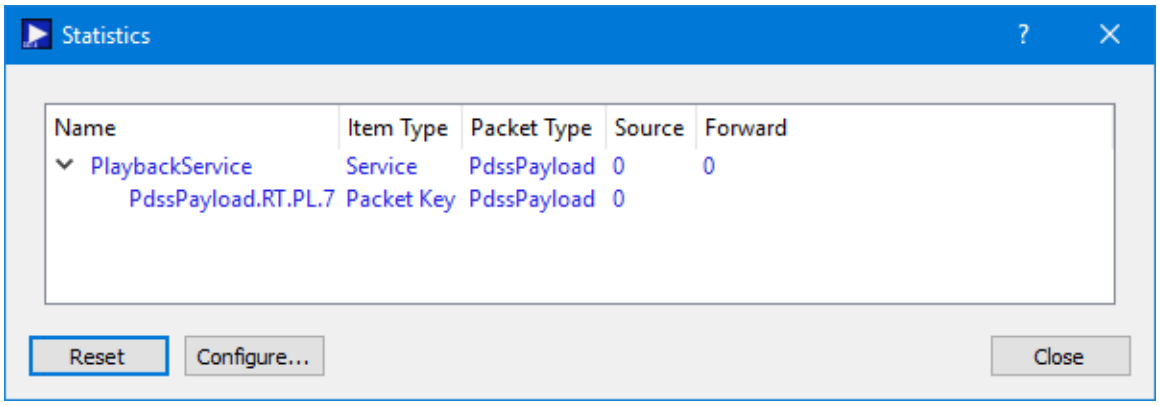

Figure 15 Statistics Dialog

Statistics can be configured to display different views of the statistics information. The view options can be accessed using the Statistics area pop-up menu. The pop-up menu is shown in Figure 16 and can be accessed by clicking the right mouse button in the statistics area.

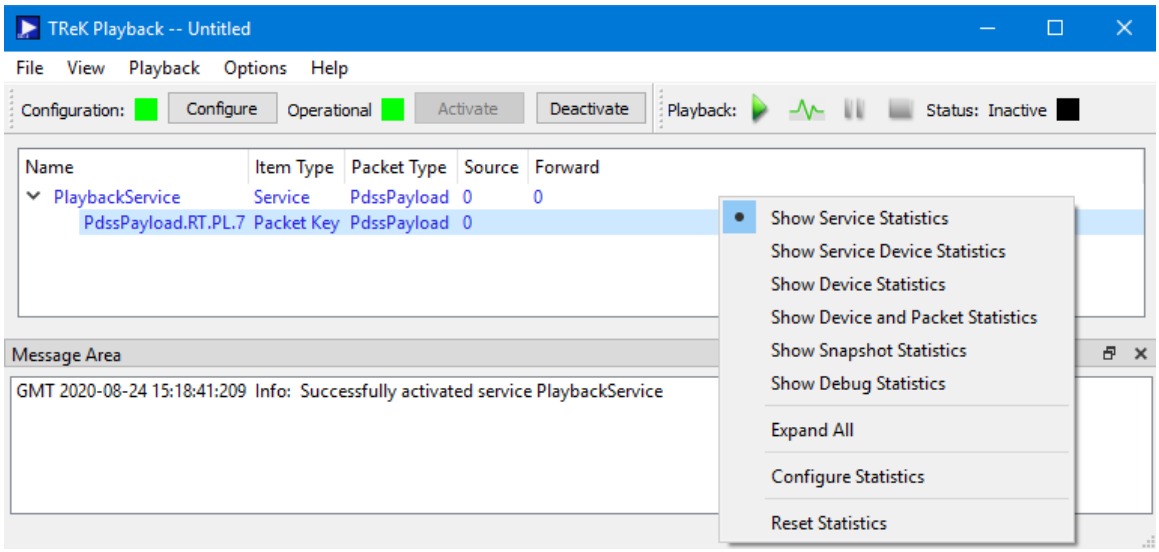

Figure 16 Statistics Pop-Up Menu

The Statistics pop-up menu has several options. Each is described below:

Show Service Statistics

Service Statistics is the default view. It is shown in Figure 14. This view shows statistics associated with the playback service. You can expand the Playback Service item to see information about playback packets.

Show Service Device Statistics

Service Device Statistics shows the same information as Service Statistics with the addition of devices that are used by the service. Figure 17 shows an example. In this

view you can see the service is configured to play back PdssPayload.RT.PL.7 packets and forward the packets using a unicast socket. Figure 18 shows the view after some data has been played back.

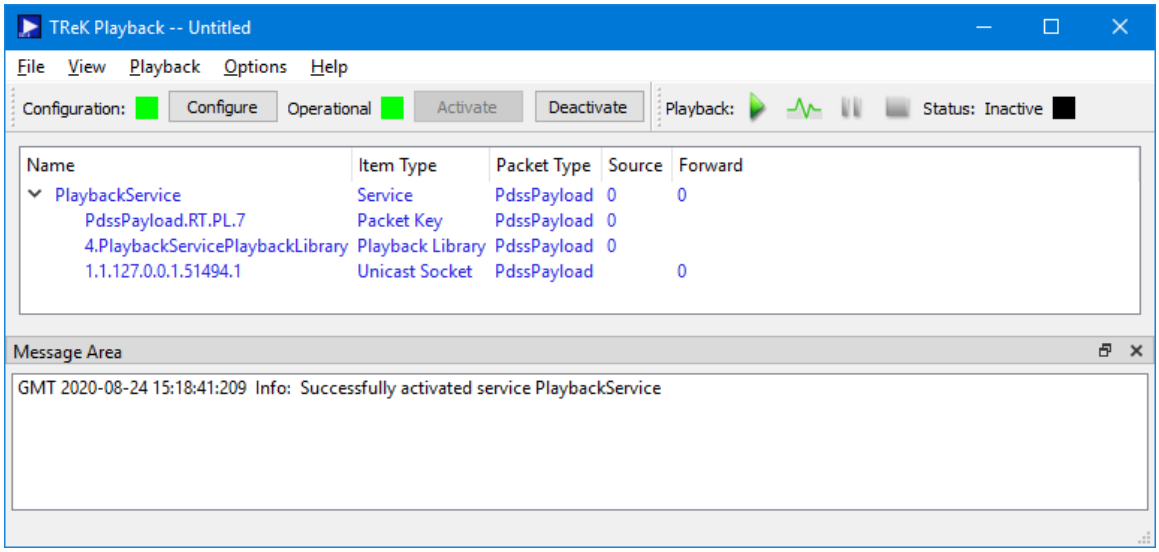

Figure 17 Service Device Statistics

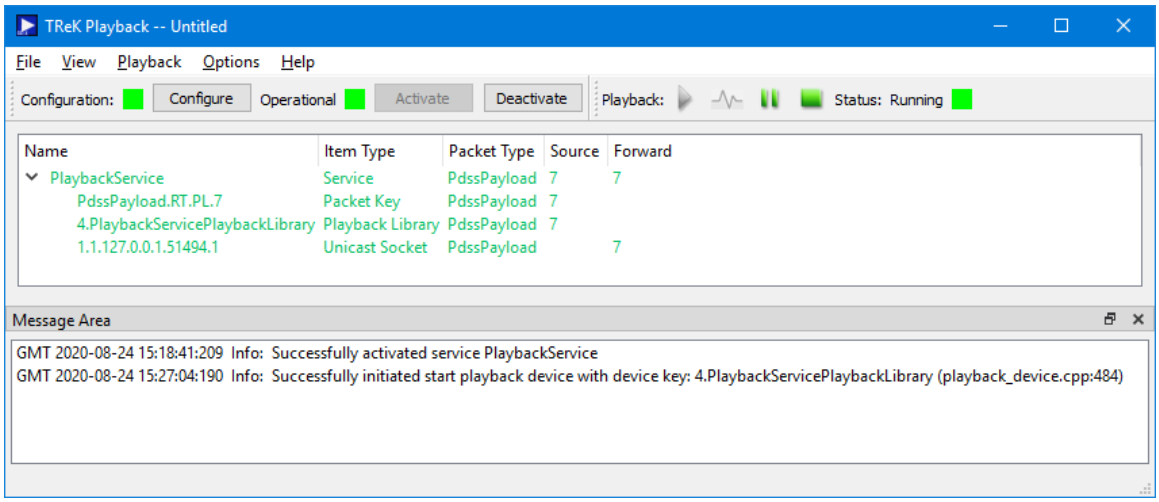

Figure 18 Service Device Statistics After Starting the Playback

Each row in Figure 18 is described below:

Playback Service: Indicates that seven packets were played back and seven packets were forwarded.

PdssPayload.RT.PL.7: Indicates that seven packets that matched this packet key were played back.

4.PlaybackServicePlaybackLibrary: This item is a playback library device created behind the scenes to play back data from the recorded data files. This shows that seven packets were played back by the playback library device.

1.1.127.0.0.1.51494.1: Indicates that seven packets were forwarded using this unicast socket.

Show Device Statistics

Device Statistics displays all the network sockets or devices in use by the playback. When the device is a network socket it will include the IP address and Port. When the device is a library device that performs a specific function such as the playback, the name will reflect the device's function. Figure 19 shows the device statistics view. In this example, there is one network socket displayed. This socket is used to forward the data. When the playback is active, the Pkts Sent column will update reflecting the number of packets sent. The PlaybackServicePlaybackLibrary line item represents the device used to perform the playback. When the playback is active, the Pkts Sent column will update reflecting the number of packets played back.

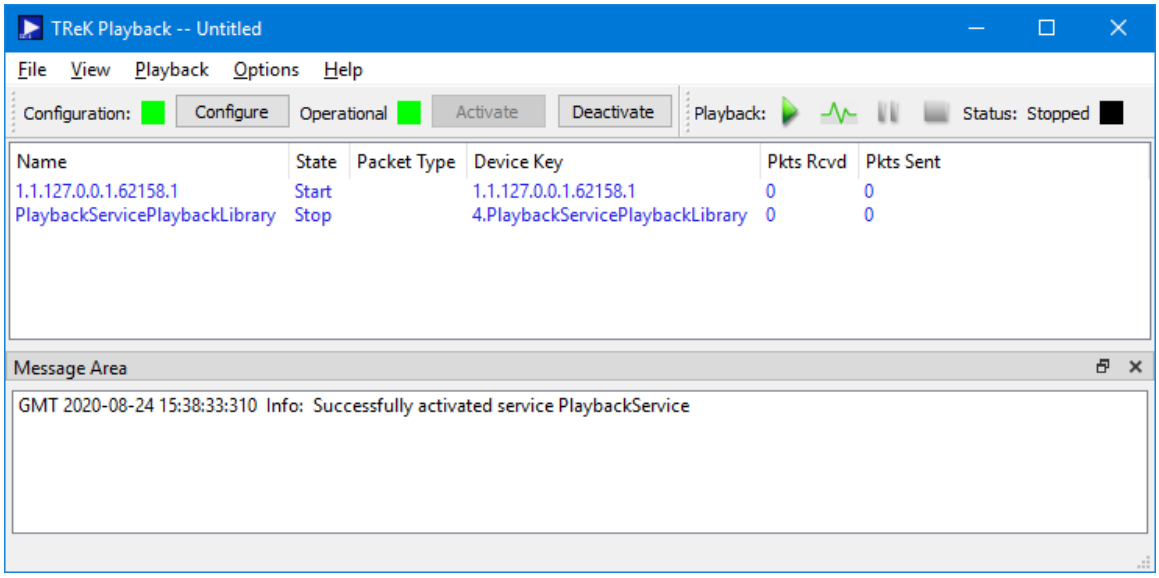

Figure 19 Device Statistics View

Show Device and Packet Statistics

The Device and Packet Statistics option will display both device statistics and packet statistics. Figure 20 shows the device and packet statistics view expanded. When this data is played back the Pkts sent column will update reflecting the number of packets played back and the number of packets forwarded for each device and packet key.

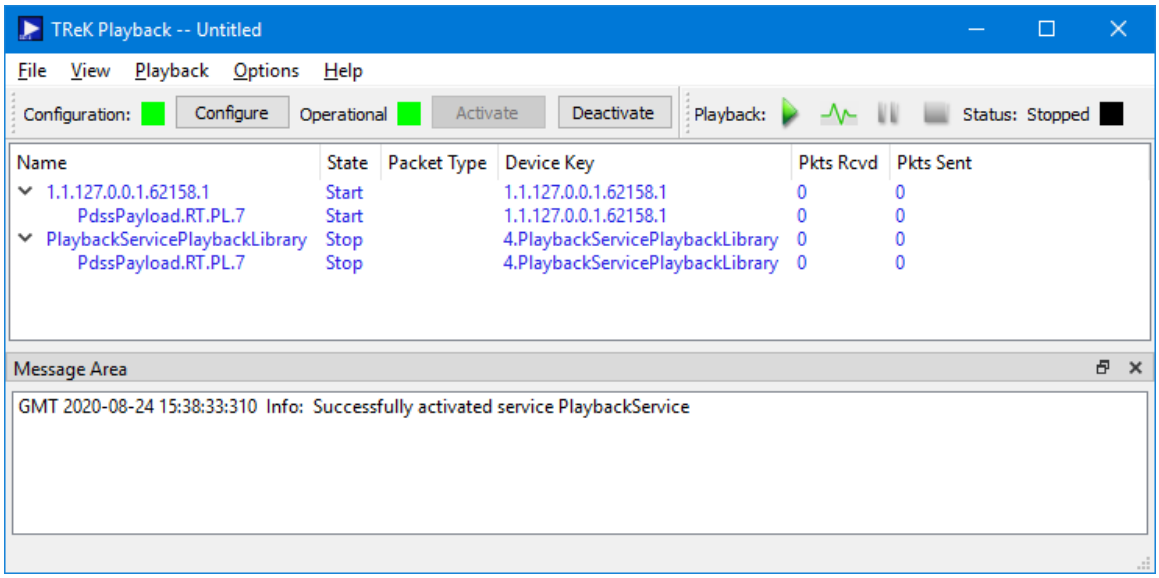

Figure 20 Device and Packet Statistics

Show Snapshot Statistics

Figure 21 shows the Snapshot view. This view provides a snapshot of the current state of the packets being played back. In Figure 21 you can see one packet that is blue. Blue indicates the playback is configured to play the packet back but it is not currently being played back. Green indicates the packet is being played back.

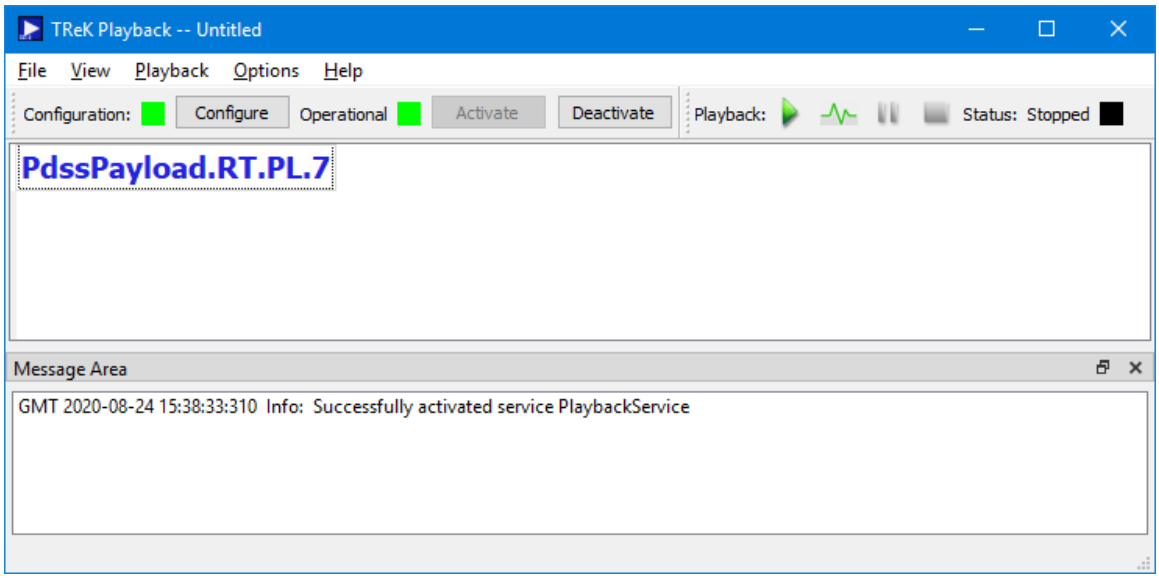

Figure 21 Snapshot Statistics

Show Debug Statistics

The Debug Statistics view shows the most detailed information of all the various views. It shows device statistics and packet statistics for the playback. The Debug Statistics View is shown in Figure 22.

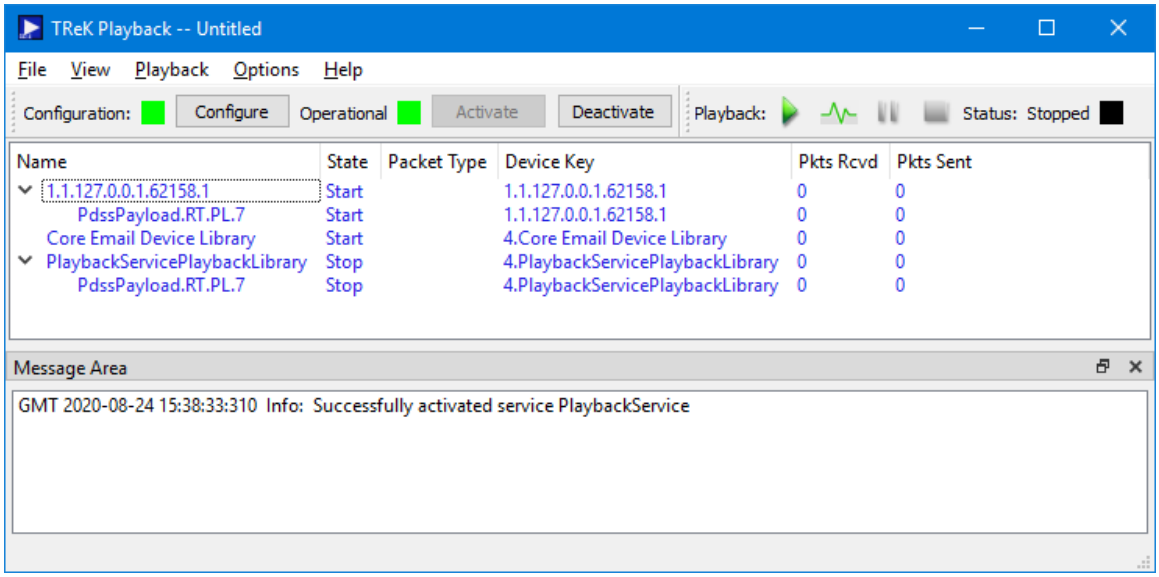

Figure 22 Debug Statistics View

Expand All

The Expand All option will expand the Statistics tree to show all items. The Statistics tree will only appear for views that show packet statistics (e.g. 'Device and Packet Statistics' view).

6.2.1 Configure Statistics Dialog

The Configure Statistics Dialog is context dependent based on the current statistics configuration. It provides the capability to show and hide columns. Each configuration is described below.

Service and Service Device Statistics Configuration

The Configure Statistics Dialog shown in Figure 23 is displayed when the statistics configuration is set to Service Statistics or Service Device Statistics.

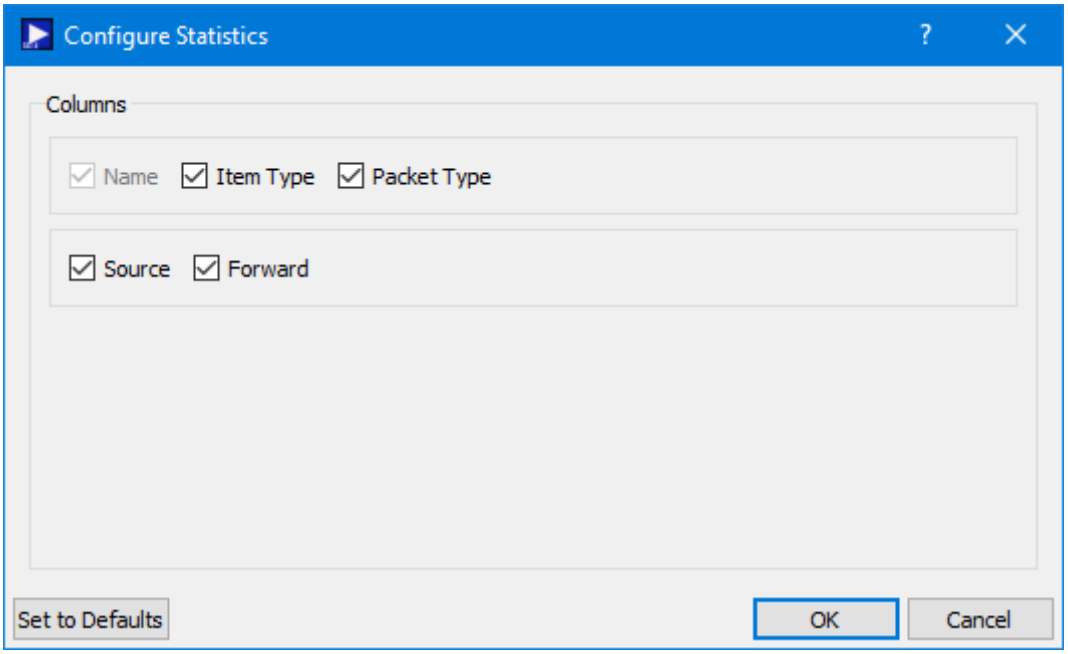

Figure 23 Configure Statistics Dialog (Service and Service Device)

Each field is described below.

Name
Name will always be set to “PlaybackService”and cannot be turned off.

Item Type
Item Type identifies the type of item for which statistics are being provided. In the Service Statistics view types include Service and Packet Key. In the Service Device Statistics view you will see additional devices such as socket devices and library devices.

Packet Type
Packet Type corresponds to the types of packets contained in the recorded data files identified on the Configure dialog.

Service Function Columns
The Source and Forward columns provide statistics associated with specific functions. For example, the Source column indicates how many packets have been played back and the Forward column indicates how many packets have been forwarded.

Configure Statistics (Device Statistics, Device and Packet Statistics, Debug Statistics)
The Configure Statistics Dialog shown in Figure 24 is displayed when the statistics configuration is set to Device Statistics, Device and Packet Statistics, or Debug Statistics.

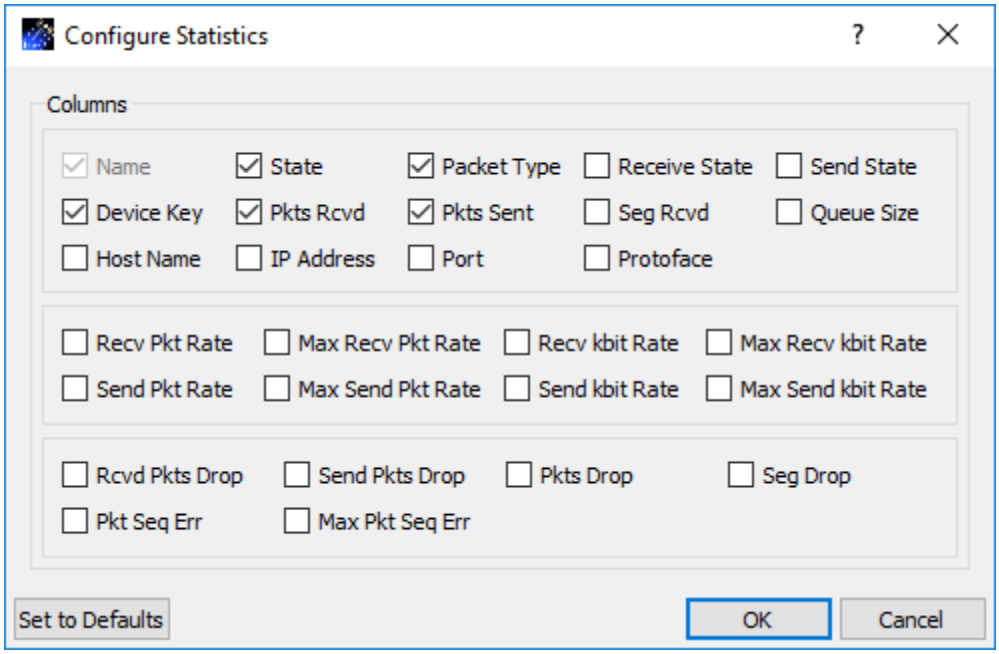

Figure 24 Configure Statistics (Device, Device and Packet, Debug) Dialog

Each field is described below.

Name
Name is a character string that uniquely identifies each device and packet type. The device name is the device key if no device name is provided when the device is created. The packet name is the packet key associated with the packet.

State
State is the current state or condition of a device. Valid states include Start, Stop, Pause, Pulse, Ready and Undefined. If you check the State checkbox, the State column will be displayed.

Packet Type
Packet Type is a character string identifying the configuration of a device's packet header processor. If a device does not have to have an associated packet header processor, the Packet Type column is blank. Packet header processors process individual fields in the packet header producing packet keys. If you check the Packet Type checkbox, the Packet Type column will be displayed.

Receive State
Receive State is the current receive state of an object. Valid receive states include Ready To Receive, Receiving and Not Receiving. If you check the Receive State checkbox, the Receive State column will be displayed.

Send State
Send State is the current receive state of an object. Valid receive states include Ready To Send, Sending and Not Sending. If you check the Send State checkbox, the Send State column will be displayed.

Device Key
Device Key is a character string that uniquely identifies each device. If you check the Device Key checkbox, the Device Key column will be displayed.

Pkts Rcvd
Packets received represents the number of packets received. If you check the Pkts Rcvd checkbox, the Pkts Rcvd column will be displayed.

Pkts Sent
The number of packets sent to a destination. If you check the Pkts Sent checkbox, the Pkts Sent column will be displayed. Pkts Sent is not the same as packets forwarded. Pkts Sent is used to represent the number of packets sent across a socket that is configured to receive and send packets. Pkts Sent never indicates packets forwarded. To see the number of packets forwarded, look at the Pkts Fwd column on the Port Tab.

Seg Rcvd
Segments Received represents the number of segments received. This column is only applicable for TCP. If you check the Seg Rcvd checkbox, the Seg Rcvd column will be displayed.

Queue Size
Queue Size is the size of the queue that temporarily buffers packets that are being processed by a device. A device does not have to be associated with a queue. The device's queue size is defined when the device is created. If you check the Queue Size checkbox, the Queue Size column will be displayed.

Host Name
Host Name is a unique identifier that serves as the name of the computer. If you check the Host Name checkbox, the Host Name column will be displayed.

IP Address
IP Address is the IP address of a device if the device is a socket. If you check the IP Address checkbox, the IP Address column will be displayed.

Port
Port is the port number of the device if it is a socket. The port number is a string identifying the type of socket (e.g., client, listener or server) formatted as "c/l/s". If the socket is a client socket then the port number will be followed by two "/" (e.g., 6100//). If the client socket is connected to a listener socket, the listener's port number is also listed (e.g., 6100/5432/). If the socket is a server socket then the client port number that is connected to the server is listed first, followed by two "/" and the server's listener port

number (e.g., 6100//7890). If the socket is a listener socket the listener's port number is listed between two "/" (e.g., /5555/). If you check the Port checkbox, the Port column will be displayed.

Protoface
Protoface is the IP transportation protocol, either TCP or UDP, of a socket device. If you check the Protoface checkbox, the Protoface column will be displayed.

Recv Pkt Rate
Receive Packet Rate represents the number of packets received in the last second. If you check the Recv Pkt Rate checkbox, the Recv Pkt Rate column will be displayed.

Max Recv Pkt Rate
Maximum Receive Packet Rate represents the maximum packet rate seen thus far. If you check the Max Recv Pkt Rate checkbox, the Max Recv Pkt Rate column will be displayed.

Recv kbit Rate
Receive kilobit Rate represents the current number of kilobits per second that are being received. If you check the Recv kbit Rate checkbox, the Recv kbit Rate column will be displayed.

Max Recv kbit Rate
Maximum Receive kilobit Rate represents the maximum kilobit rate seen thus far. If you check the Max Recv kbit Rate checkbox, the Max Recv kbit Rate column will be displayed.

Send Pkt Rate
Send Packet Rate represents the number of packets sent in the last second. If you check the Send Pkt Rate checkbox, the Send Pkt Rate column will be displayed.

Max Send Pkt Rate
Maximum Send Packet Rate represents the maximum packet rate sent thus far. If you check the Max Send Pkt Rate checkbox, the Max Send Pkt Rate column will be displayed.

Send kbit Rate
Send kilobit Rate represents the current number of kilobits per second that are being sent. If you check the Send kbit Rate checkbox, the Send kbit Rate column will be displayed.

Max Send kbit Rate
Maximum Send kilobit Rate represents the maximum kilobit rate sent thus far. If you check the Max Send kbit Rate checkbox, the Max Send kbit Rate column will be displayed.

Rcvd Pkts Drop
Received Packets Dropped represents the number of packets that TReK received and then dropped. If you check the Rcvd Pkts Drop checkbox, the Rcvd Pkts Drop column will be displayed.

Send Pkts Drop
Send Packets Dropped represents the number of packets that TReK attempted to send but dropped. If you check the Send Pkts Drop checkbox, the Send Pkts Drop column will be displayed.

Pkts Drop
Packets Dropped represents the number of packets that were dropped because they could not be processed by another device. If you check the Pkts Drop checkbox, the Pkts Drop column will be displayed.

Seg Drop
Segments Dropped represents the number of segments that TReK received and then dropped. This column is only applicable for TCP. If you check the Seg Drop checkbox, the Seg Drop column will be displayed

Pkt Seq Err
Packet Sequence Error represents the number of packet sequence errors that occurred for a packet that is being received. A packet sequence error occurs when a packet arrives out of order (i.e. a packet with a sequence count of six was expected but instead a packet with a sequence count of seven was received). If you check the Pkt Seq Err checkbox, the Pkt Seq Err column will be displayed.

Max Pkt Seq Err
Maximum Packet Sequence Error represents the maximum packet sequence error that occurred for a packet that is being received. TReK determines the maximum packet sequence error by calculating the delta or difference between the expected packet sequence count and the actual packet sequence count. If you check the Max Pkt Seq Err checkbox, the Max Pkt Seq Err column will be displayed.

Set To Defaults
Set To Defaults will set all the fields to their default values.

Configure Statistics (Snapshot Statistics)
The Configure Statistics Dialog shown in Figure 25 is displayed when the statistics configuration is set to Snapshot Statistics.

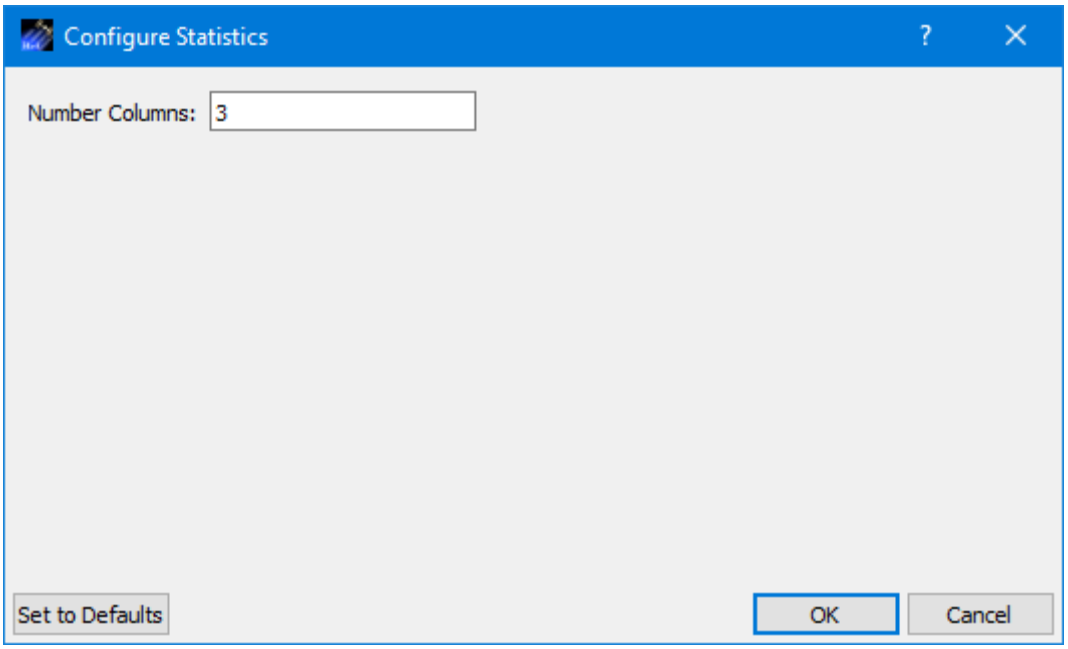

Figure 25 Configure Statistics Dialog (Snapshot)

Each field is described below.

Number Columns
Identifies the number of columns to display in a row.

6.3 Configure Statistics Snapshot Recording Dialog

The Configure Statistics Snapshot Recording dialog is shown in Figure 26. Statistics are generated and captured in memory as you use the application. A snapshot of the statistics can also be recorded to a file by turning on Statistics Snapshot Recording. When Statistics Snapshot Recording is on, the snapshot is updated once a second with the latest statistics and written to a file. Previous statistics snapshot information is overwritten each time the latest statistics information is written to the file. Statistics are not available when the playback service is inactive. If you deactivate the playback service before turning off Statistics Snapshot Recording, the statistics snapshot information will be empty.

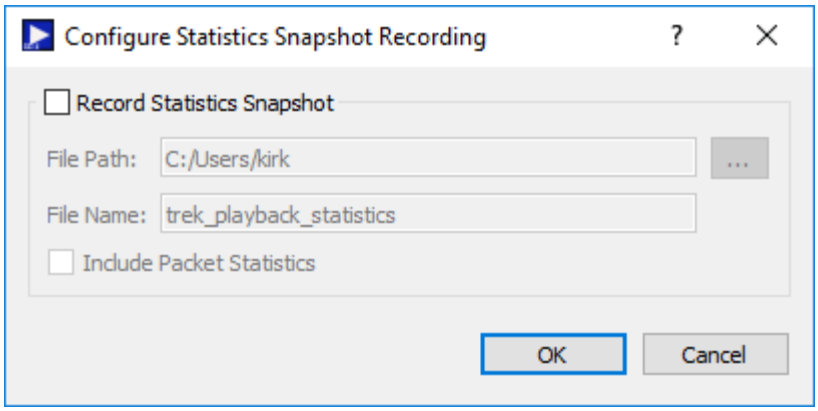

Figure 26 Configure Statistics Snapshot Recording Dialog

Each field is described below:

Record Statistics Snapshot
The Playback application provides the capability to write a snapshot of application statistics to a file. If you check Record Statistics Snapshot, a snapshot of the application statistics will be written to the file specified.

File Path
The File Path should contain the absolute path to the directory where the statistics snapshot file should be written.

File Name
The File Name field should contain the name to use for the statistics snapshot file.

Include Packet Statistics
The Include Packet Statistics checkbox specifies whether packet statistics should be written to the file.

6.4 Application Messages

Various types of application messages are generated including information, progress, warning, error, and debug messages. Application messages are stored in memory and written to a temporary log file. The temporary log file is created on application initialization and exists as long as the application is running. It is deleted when you exit the application. The log file is located in the temporary directory provided by the operating system. Only a subset of messages are stored in memory while all messages are written to the temporary log file. The maximum number of application messages stored in memory is controlled by the message storage setting in the Configure Messages dialog. Once the maximum is reached, older messages are deleted to make room for new messages. Setting the maximum value to a large number can impact application performance since it will increase the amount of memory used by the application. Setting

this number too low can cause you to miss important messages. The application default was selected to protect against both of these scenarios. Messages stored in memory are displayed in the Main Window Message Area and the Messages dialog. The Messages dialog is shown in Figure 27. The Main Window message area only displays Info, Warning, and Error messages. The Messages dialog displays messages based on the display preferences defined in the Configure Messages dialog. By default, the Messages dialog will display information, progress, warning, and error messages. Columns in the Messages dialog can be sorted by clicking on the column header. The Messages dialog is available from the Options menu. progress, warning, and error messages. Columns in the Messages dialog can be sorted by clicking on the column header. The Messages dialog is available from the Options menu.

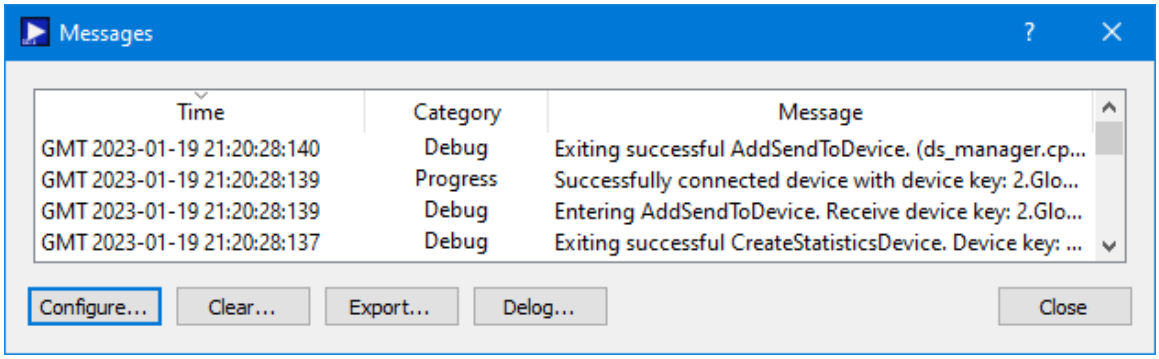

Figure 27 Messages Dialog

Configure

The Configure button provides access to the Configure Messages dialog shown in Figure 28. This dialog provides access to preferences associated with messages. Display preferences can be set to filter the types of messages (category) displayed in the Messages dialog. Export Preferences control how the time tag is added to the filename that is created when messages are exported. See the Export section for details. Message storage defines the maximum number of messages that will be stored in memory while the application is running. Once the maximum is reached, older messages are deleted to make room for new messages. The Set to Defaults button can be used to reset these properties to application defaults.

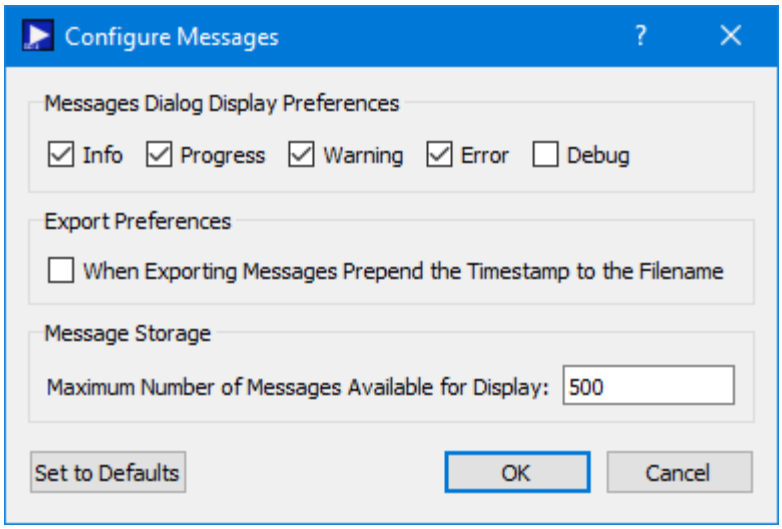

Figure 28 Configure Messages Dialog

Clear

The Clear button provides access to the Clear Messages dialog shown in Figure 29. This dialog provides two ways to clear application messages stored in memory. You can clear all the messages or clear selected messages. Once you clear messages, the messages are permanently deleted in all views (Main Window Message Area and the Messages dialog).

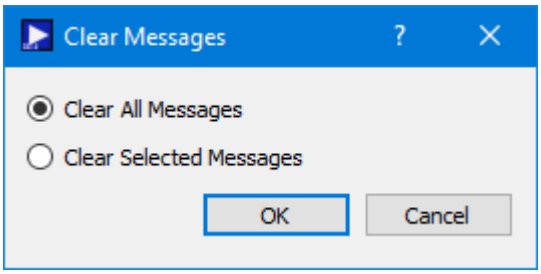

Figure 29 Clear Messages Dialog

Export

The Export button provides the capability to save all the application messages currently in memory to a file. When you push the Export button you will be prompted for a directory and filename. Export will save all messages in memory, not just the messages currently displayed in the Messages dialog (i.e. the Display Preferences are not applied). The name you provide for the file will be modified with a time tag that is added to the filename. The time tag indicates the time the file was closed. The default is to append the time tag to the filename. For example:

Filename Input: messages.txt
Filename Output: messages_2017-05-07_13~03~28.txt

If you would like to prepend the time tag to the filename you can set this preference in the Configure Messages dialog. This would result in the following:

Filename Input: messages.txt
Filename Output: 2017-05-07_13~03~28_messages.txt

Delog
The Delog button provides the capability to save all application messages generated since the application was started. Delog will retrieve the messages from the temporary log file. When you push the Delog button you will be prompted for a directory and filename. A timetag is not applied to the filename.

Filename Input: messages.txt
Filename Output: messages.txt

6.5 Application Configuration File

The Playback application saves the following information when you save a configuration:

- Playback Configuration.

6.6 Application Settings

The Playback application saves application settings each time you exit the application. The next time you run the application, the application will initialize with the previous settings. The following settings are saved:

- Application Window Size
- Configure Messages Selections

6.7 Application Command Line Arguments

The Playback application accepts the following command line arguments:

- trek_playback.exe <filename> <passphrase>

filename to open a configuration file (full path to file)

passphrase to set the cryptography settings passphrase

A value must be wrapped in double quotes if it contains spaces.

Examples:

- trek_playback.exe “D:/playback config.xml”

- trek_playback.exe D:/playback_config.xml topsecret

If the configuration is valid, the application will automatically activate the playback service.

7 FAQ and Troubleshooting

This section addresses Frequently Asked Questions and provides tips for troubleshooting common gotchas.

No FAQs Yet.