

**TREK**  
**PLAYBACK**  
**TUTORIAL**



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Approved for Public Release; Distribution is Unlimited.

TABLE OF CONTENTS

<u>PARAGRAPH</u>	<u>PAGE</u>
<b>1 Welcome .....</b>	<b>1</b>
<b>2 Technical Support .....</b>	<b>1</b>
<b>3 Introduction .....</b>	<b>1</b>
<b>4 Overview of the User Interface.....</b>	<b>2</b>
4.1 Main Window.....	2
4.2 Menus.....	3
<b>5 TReK Playback Tour .....</b>	<b>3</b>
5.1 Step-By-Step.....	4

## FIGURES

<u>FIGURE</u>	<u>PAGE</u>
Figure 1 Main Window.....	2
Figure 2 TReK Playback Main Window .....	4
Figure 3 Configure Dialog.....	5
Figure 4 TReK Workspace Recorded Data Directory .....	6
Figure 5 Recorded Data File Added to List.....	7
Figure 6 Forward Tab .....	8
Figure 7 Forward Tab Network Tab Populated .....	9
Figure 8 Main Window with Playback Configured .....	10
Figure 9 Main Window with Playback Activated.....	10
Figure 10 Main Window with Playback Running.....	11
Figure 11 Device and Packet Statistics.....	12

## 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 playback recorded data.

This tutorial provides step-by-step instructions describing how to perform common application functions.

The topics in this tutorial require an understanding of the topics covered in the TReK Concepts document and the TReK Data User Guide. Please be sure you have read these documents before proceeding with this tutorial.

This tutorial uses screen dumps taken on a Windows computer. However, the steps are the same regardless of whether you are running on Windows or Linux.

## 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:

TReK Help Desk E-Mail, Phone & Fax:

E-Mail: [trek.help@nasa.gov](mailto:trek.help@nasa.gov)  
Telephone: 256-544-3521 (8:00 a.m. - 4:00 p.m. Central Time)  
Fax: 256-544-9353

If you call the TReK Help Desk and you get a recording please leave a message and someone will return your call. E-mail is the preferred contact method for help. The e-mail message is automatically forwarded to the TReK developers and helps cut the response time. The HOSC Help Desk (256-544-5066) can provide assistance as needed and is available 24x7.

## 3 Introduction

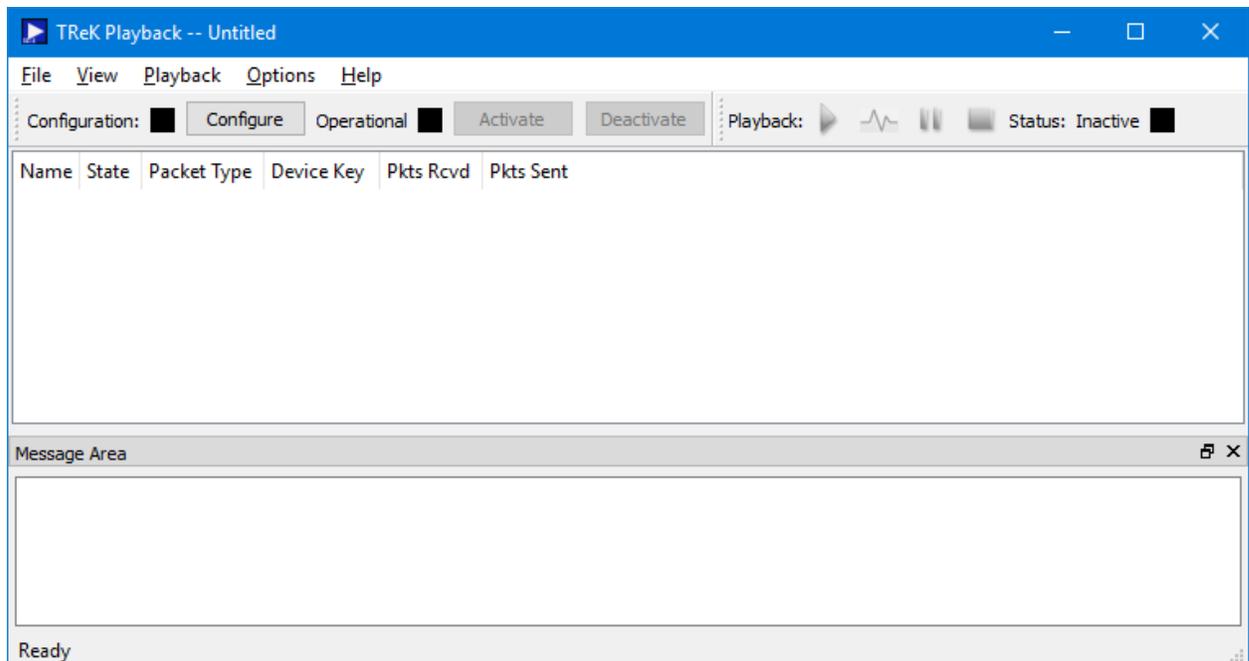
The TReK Playback application provides the capability to play back data stored in data recording files and forward the data. The TReK Data application can be used to receive the forwarded data and perform any of the functions available in the data application such as processing the data and displaying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

Sometimes it's easier to learn how to use an application by example. This section describes how to use the Playback application to play data back from a recorded data file.

This section was written assuming you have read the Introduction section and the Main Window section. If you have not read these sections, please go back and read them. They contain important information that is not repeated in this section.

The tutorial assumes you are familiar with the material in the TReK Data User Guide and have worked through the TReK Data Tutorial. To complete this tutorial, you will need access to the data recording file that was generated as part of the TReK Data tutorial. If you have not completed the TReK Data Tutorial please go through that tutorial before working through this one.

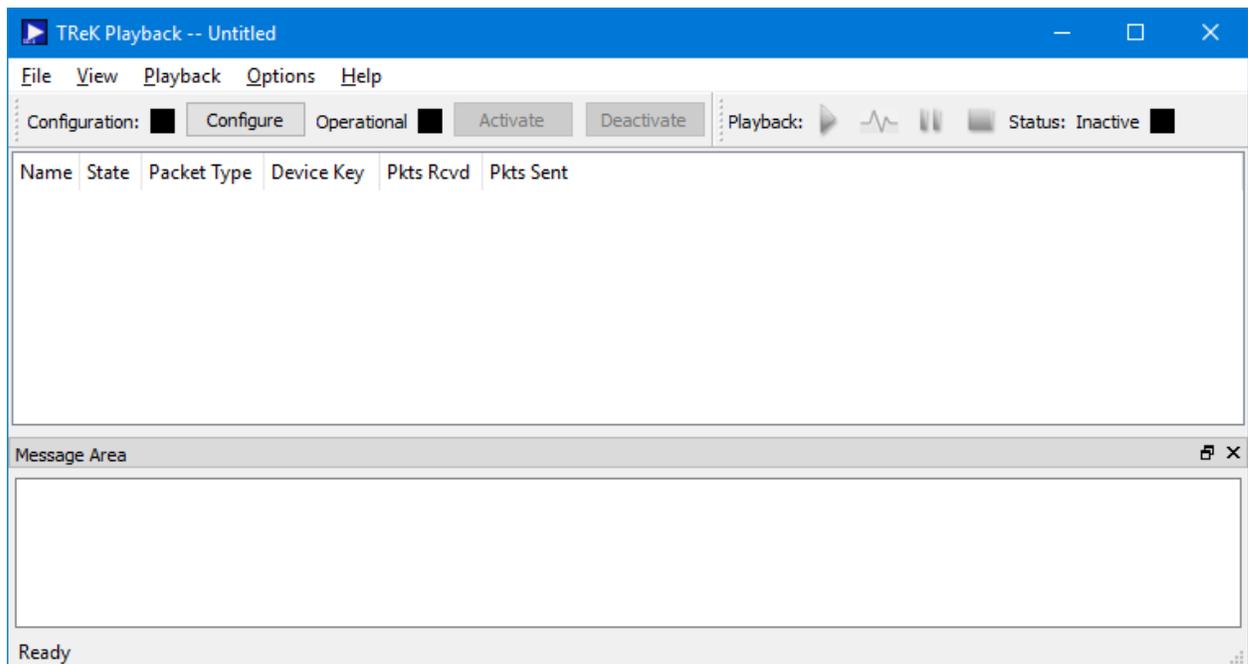
If at any time you need to exit the applications so you can resume working through the Tutorial at a later time, File Save will allow you to save all the data you entered.

**Please go through the tour in order.** Some sections depend on data from previous sections.

## 5.1 Step-By-Step

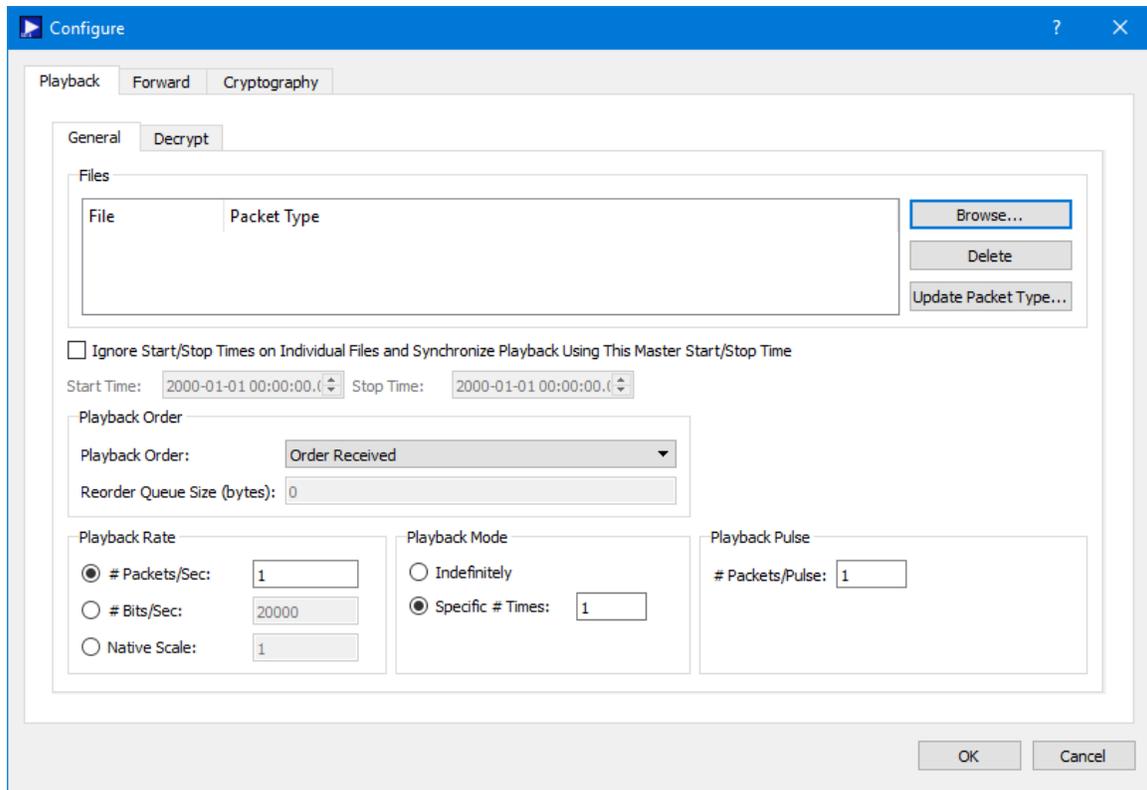
This section provides step-by-step instructions that show how to use the TReK Playback application to configure and start a playback.

1. Go to the operating system's menu to start the **TReK Playback** application. You should see the **TReK Playback** main window shown in Figure 2.



**Figure 2 TReK Playback Main Window**

2. Push the Configure button to configure the playback. You should see the dialog shown in Figure 3.



**Figure 3 Configure Dialog**

3. In the Files area, push the Browse button to add a recorded data file. The Open dialog will default to the `trek_workspace/recorded_data` directory. If you successfully completed the TReK Data Tutorial, you should see a recorded data file similar to the one shown in Figure 4.

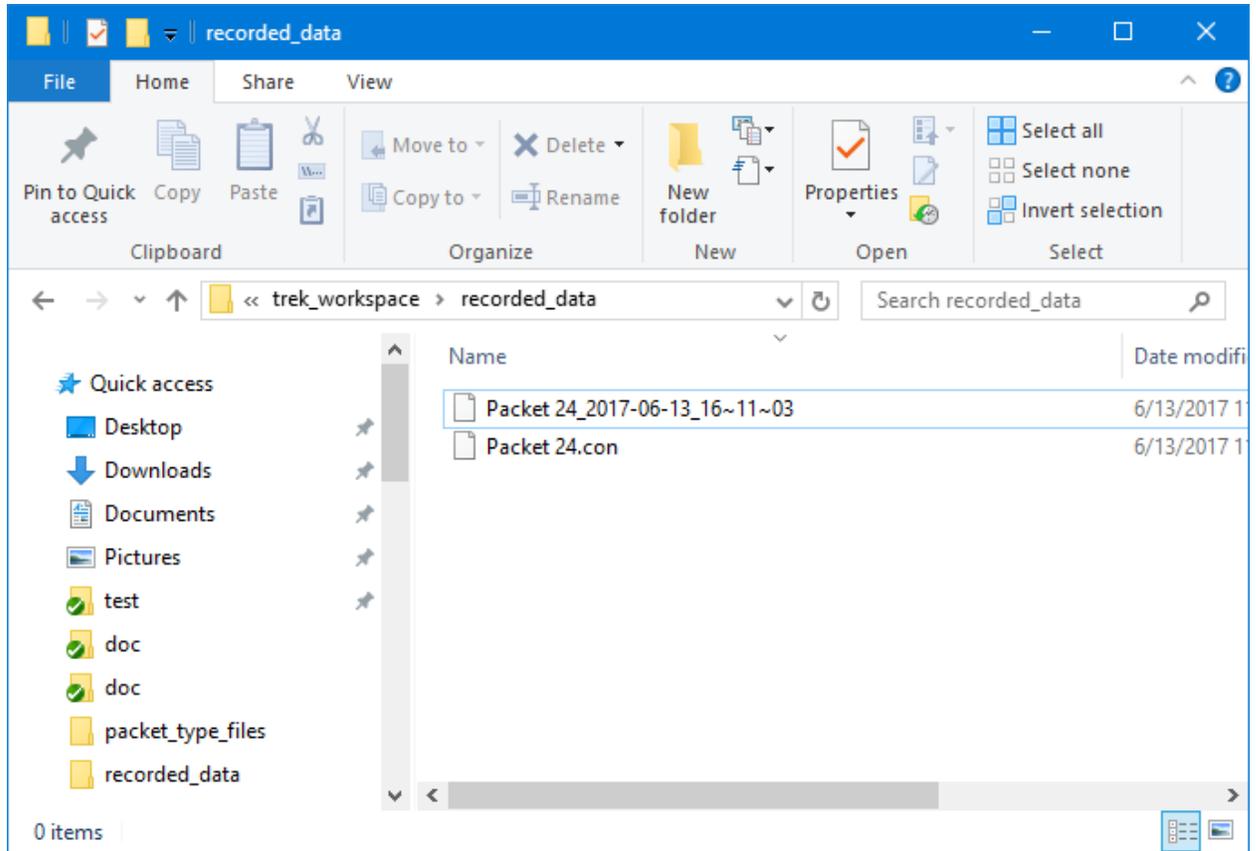
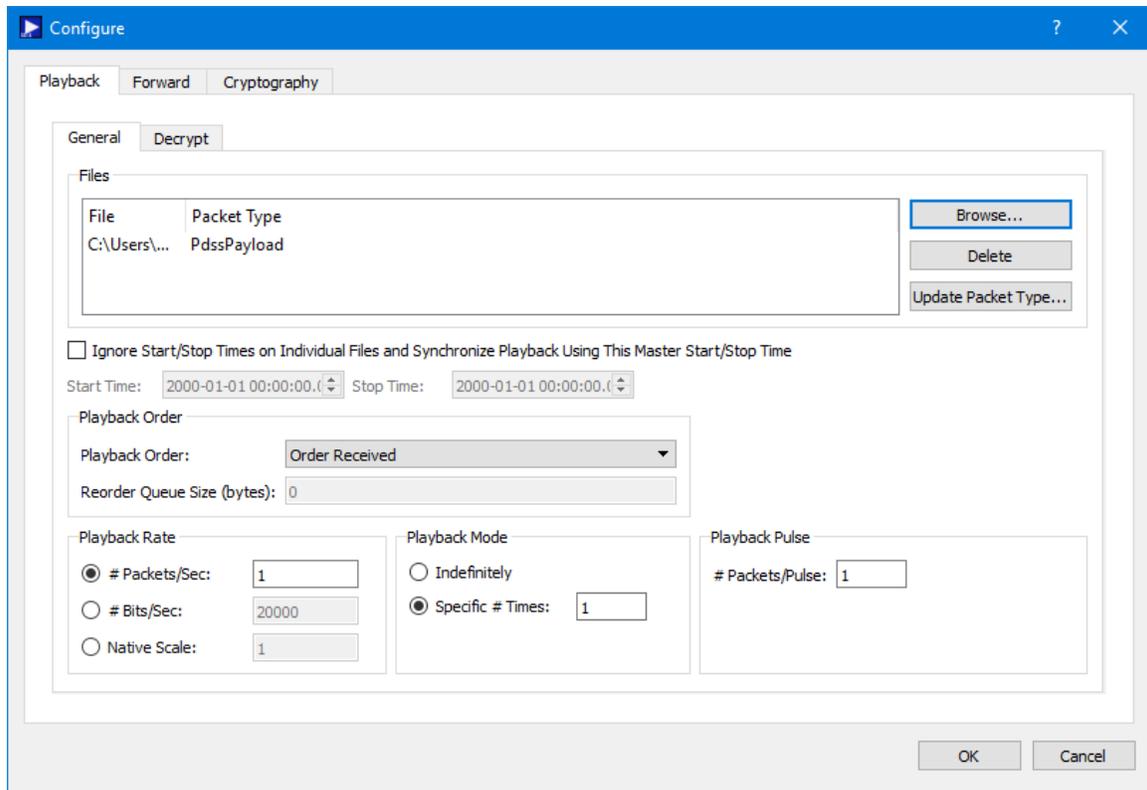


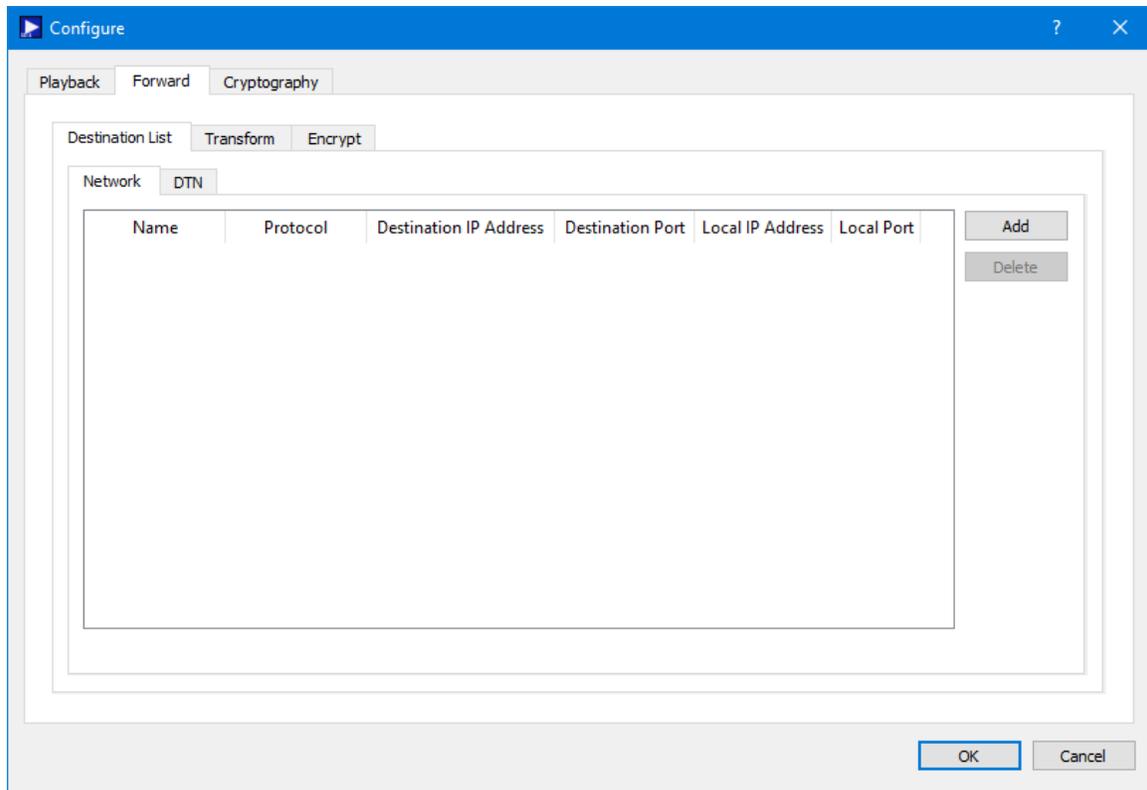
Figure 4 TReK Workspace RecordedData Directory

4. Select the file with a name similar to **Packet 24\_2017-06-13\_16~11~03** and push the Open button. The Configure dialog should look similar to the one shown in Figure 5. The playback will be configured to play data back from this recorded data file.



**Figure 5 Recorded Data File Added to List**

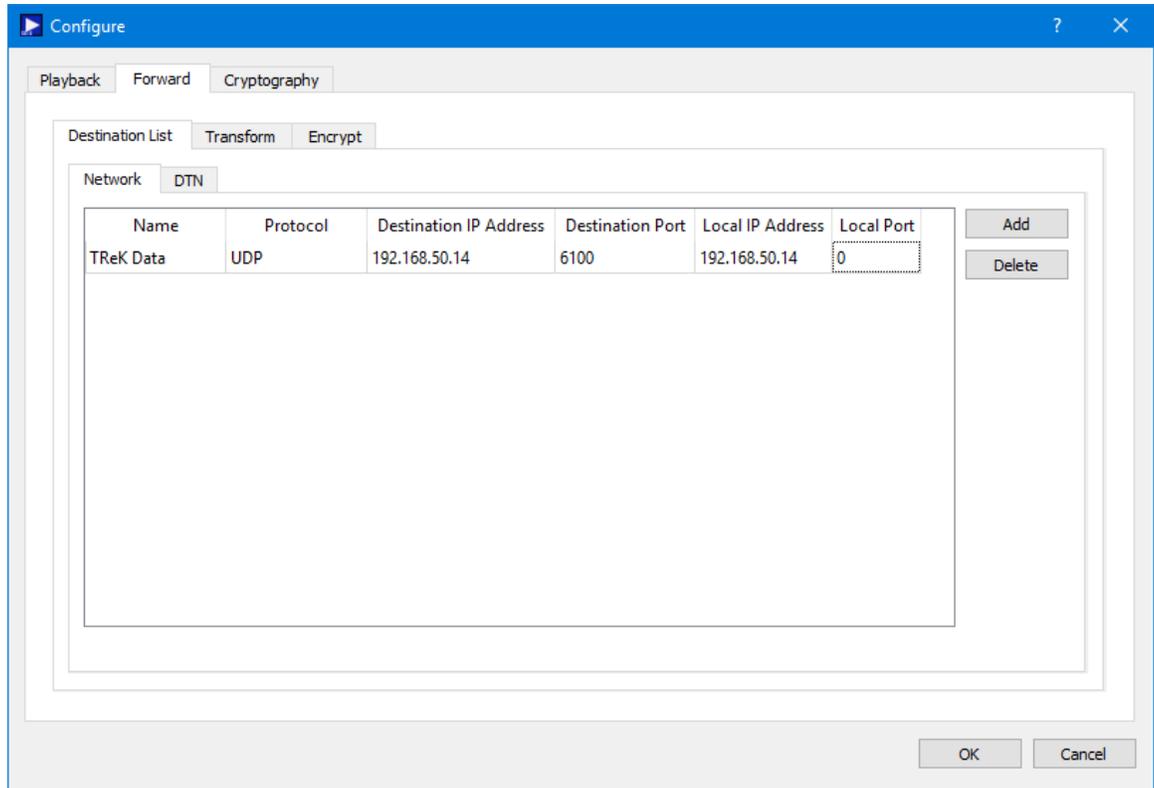
5. There are multiple settings to customize the playback. For this playback use the default settings as shown in Figure 5. The Playback Order will play the packets in the file back using the Embedded Time. The Playback Rate is set to #Packets/Sec with a value of 1. So 1 packet will be played back once a second. The Playback Mode is set to run the playback 1 time. If the playback is pulsed, one packet will be sent each time the Pulse button is pushed.
6. Select the Forward Tab as shown in Figure 6. To work with the data being played back you need to forward it to another application or computer.



**Figure 6 Forward Tab**

- In the Forward tab, push the Add button to add a row to the Network Destination List. In the row enter the following information as shown in Figure 7. The Local IP Address should default to the correct address – if it doesn't please enter the correct address. The Name can be anything you would like. TReK Data was used here as a hint to configure the TReK Data application to receive and display the data.

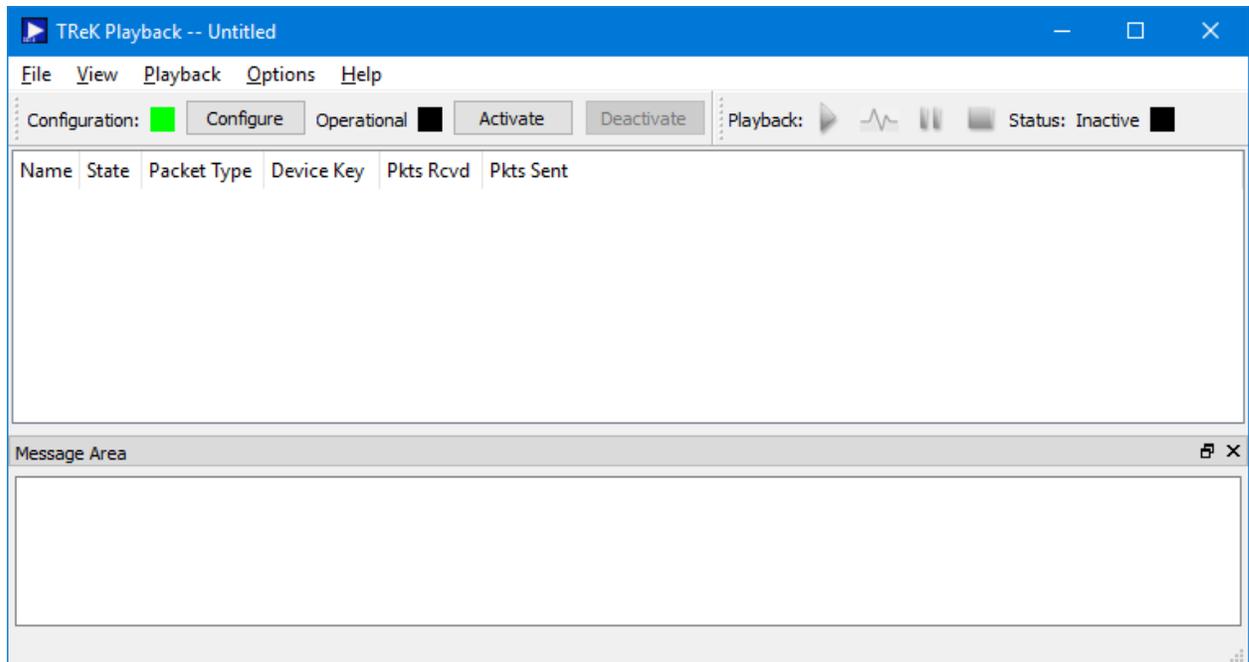
Name:	TReK Data
Protocol:	UDP
Destination IP Address:	<Enter your local IP Address>
Destination Port:	6100
Local IP Address:	<Enter your local IP Address>
Local Port:	0



**Figure 7 Forward Tab Network Tab Populated**

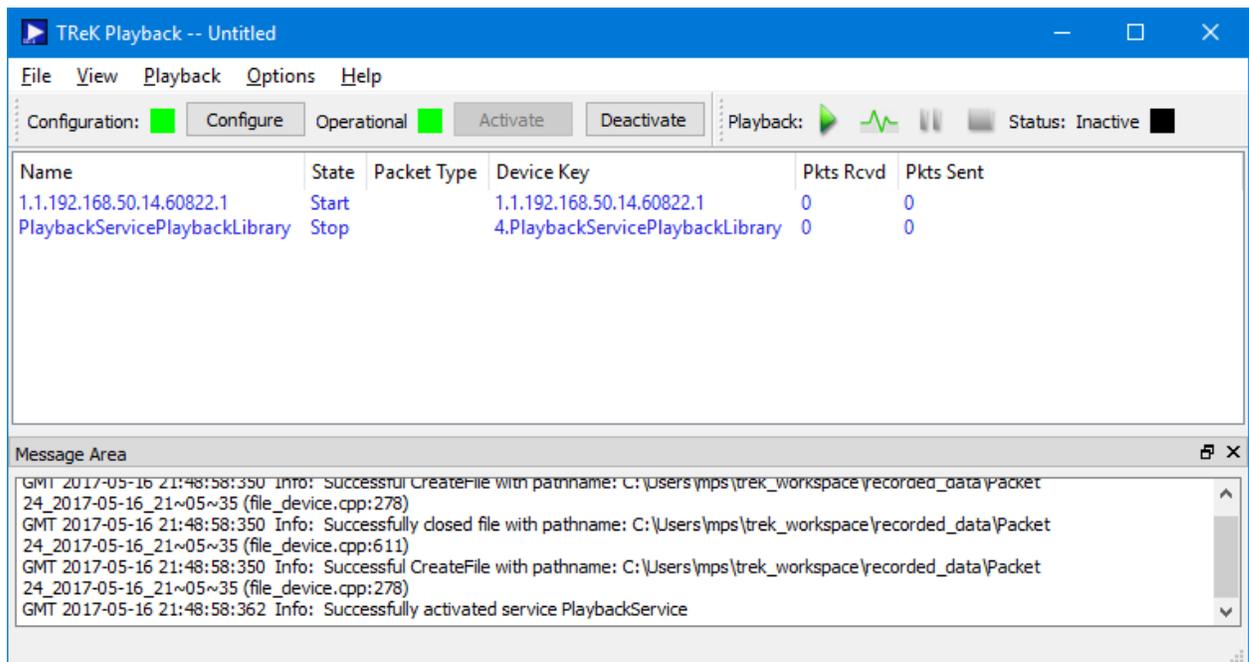
This will forward all the data played back to the Destination IP Address and Port identified. If you would like you can configure the TReK Data application to receive the data and display it.

8. Push the OK button to close the Configure dialog. Your Main Window should look like the one in Figure 8.



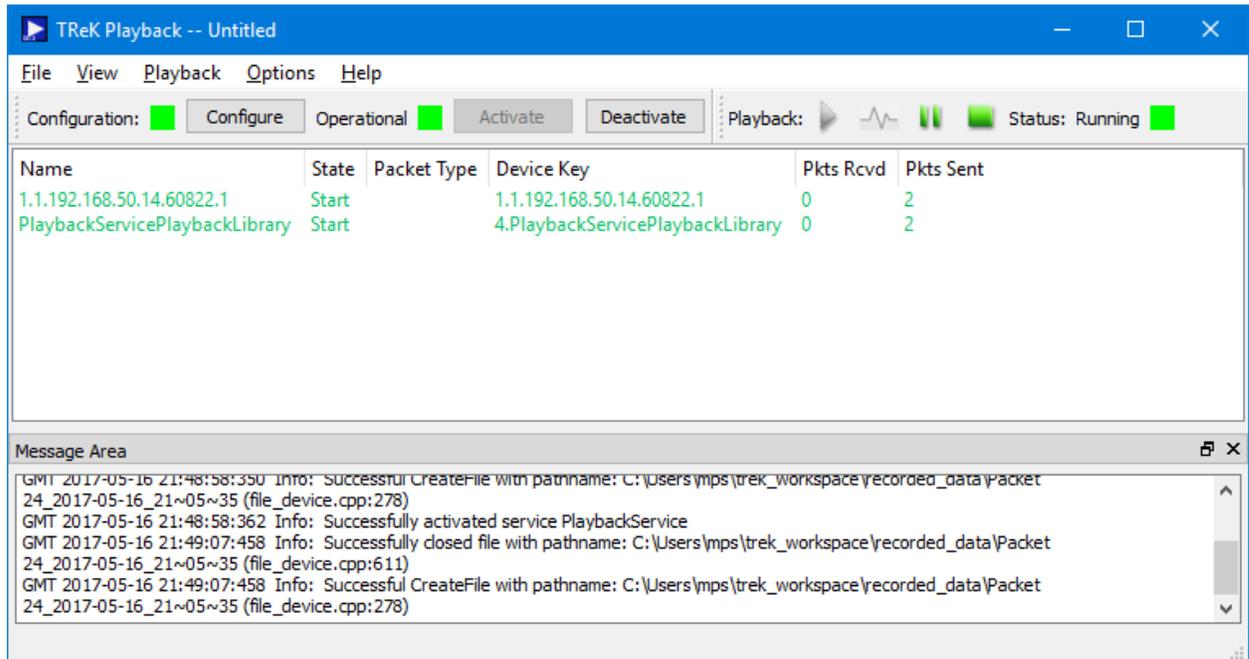
**Figure 8 Main Window with Playback Configured**

9. Now that the playback is configured, it needs to be activated. Push the Activate button. The Main Window should look like the one show in Figure 9.



**Figure 9 Main Window with Playback Activated**

10. Now that the Playback is Active, you can see the Playback Controls in the top right of the Main Window are enabled. You can also see that the Statistics area is now populated with information. Push the Start Button (Green Arrow) to start the playback. Your Main Window should look similar to the one in Figure 10.



**Figure 10 Main Window with Playback Running**

You can see that the both lines in Statistics are showing Pkts Sent incrementing. This indicates that the Playback is playing packets back from the file and the packets are being forwarded to the Destination and Port you identified when you configured the playback. If you would like to see additional details, use the right mouse button to access the Statistics Pop-Up menu and select **Device and Packet Statistics** and **Expand All**. Your Statistics area should have expanded to look similar to the one shown in Figure 11. This view shows you the packet key associated with the data being played back.

The screenshot shows the 'TREK Playback -- Untitled' application window. The interface includes a menu bar (File, View, Playback, Options, Help), a configuration section with 'Operational' status and 'Activate/Deactivate' buttons, and a playback control section with a play button and 'Status: Running' indicator. The main area displays a table of device and packet statistics.

Name	State	Packet Type	Device Key	Pkts Rcvd	Pkts Sent
1.1.192.168.50.14.60822.1	Start		1.1.192.168.50.14.60822.1	0	18
PdssPayload.RT.PL.24	Start		1.1.192.168.50.14.60822.1	0	18
PlaybackServicePlaybackLibrary	Start		4.PlaybackServicePlaybackLibrary	0	18
PdssPayload.RT.PL.24	Start		4.PlaybackServicePlaybackLibrary	0	18

Below the table is a 'Message Area' containing the following log entries:

```

GMT 2017-05-16 21:48:58:350 Info: Successful CreateFile with pathname: C:\Users\mpm\trek_workspace\recorded_data\Packet
24_2017-05-16_21~05~35 (file_device.cpp:278)
GMT 2017-05-16 21:48:58:362 Info: Successfully activated service PlaybackService
GMT 2017-05-16 21:49:07:458 Info: Successfully closed file with pathname: C:\Users\mpm\trek_workspace\recorded_data\Packet
24_2017-05-16_21~05~35 (file_device.cpp:611)
GMT 2017-05-16 21:49:07:458 Info: Successful CreateFile with pathname: C:\Users\mpm\trek_workspace\recorded_data\Packet
24_2017-05-16_21~05~35 (file_device.cpp:278)

```

**Figure 11 Device and Packet Statistics**

Congratulations you have successfully configured and run a playback!