Intrepid Control Systems, Inc.

PC Data Logging Using VehicleSpy3

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1. **Introduction:**

Vehicle Spy Supports data logging on PC in two ways,

- Data Cache Disk Streaming.
- Capture Type Function Block

2. **PC Data Logging**

   2.1 Data Cache Disk Streaming:

   Data Cache Disk Streaming provides a fast way to save large amounts of unfiltered data in a binary format (.vsb) message buffer file. This feature can be accessed using the Vehicle Spy Setup main menu.

   The Vehicle Spy Setup main menu contains hardware and database configuration tools as shown in Figure 1.
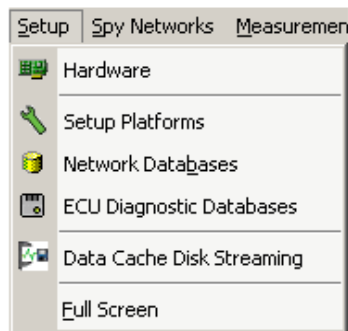

   Figure 1: The Vehicle Spy Setup main menu.

   This feature can also be accessed using the Vehicle Spy dropdown button next to the Data Directory button as shown in Figure 2.
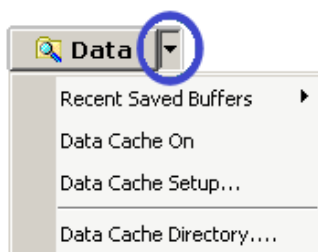

   Figure 2: The dropdown button next to Data Directory can be clicked to see Data Cache selection.

To enable or disable Data Cache Disk Streaming, use the setup dialog checkbox or the "Data Cache On" dropdown list selection while Vehicle Spy is offline. Once enabled, all network traffic will be streamed to disk anytime Vehicle Spy is running. Data is saved in a binary format (.vsb) file in the Vehicle Spy 3\DataCache directory with a specific date and timestamp. A new data cache file is created each time Vehicle Spy transitions from offline to online while Data Cache Disk Streaming is enabled. If more advanced buffer capture features are needed then 'Capture' type function blocks can be used.

2.2 Capture Type Function Block:

Capture type function blocks capture network data to a buffer file for later analysis. Setup options fit the Capture function blocks to countless situations.

Function Block Setup Available at Scripting and Automation Menu (1). Choose Function Blocks option then click on + sign (2) available at top left hand corner and select capture from the drop down list. Refer Figure.3
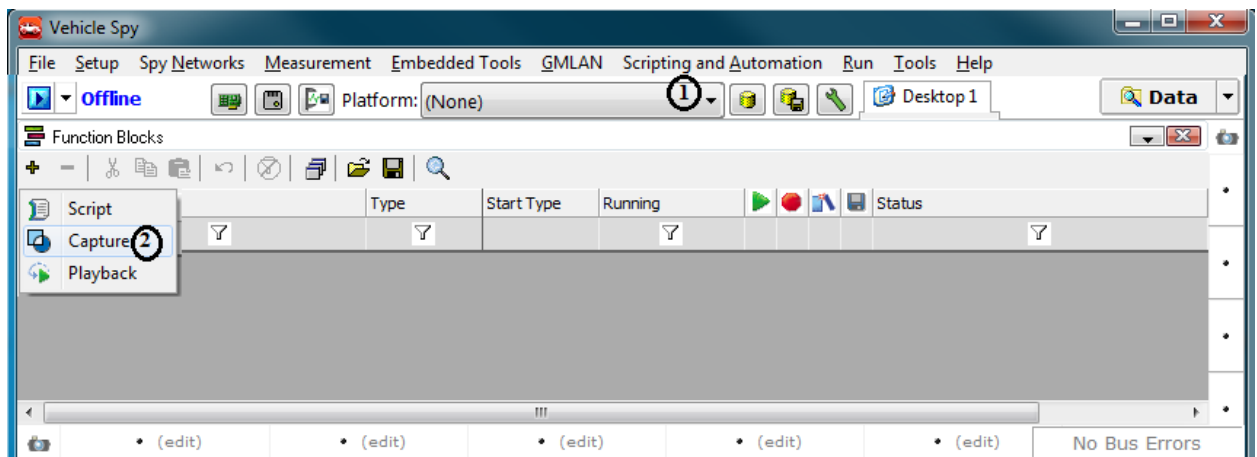

Figure 3: Capture Function Blocks option.

The Capture Function Block Screen will allow you to create a script for data logging. Here you can set the parameters for data logging as you wish for Figure. 3

In the Buffer setup tab (2) you can select which messages you wish to capture as well as the ones that you do not wish to collect. Clicking the "Filters" button causes the Custom Filter dialog to appear. From this dialog include and exclude messages can be selected. If no message filters are selected, all messages are collected.

2.2.1 Application:

Log the message Engine Speed and Throttle position using filters. Store in excel sheet with 50000 Messages in one file.

2.2.2 Script Filters:

Click on the description field (1) and name the script as you wish. Click on buffer tab (2) and click on filter tab (3) to setup filter Refer Figure 4.
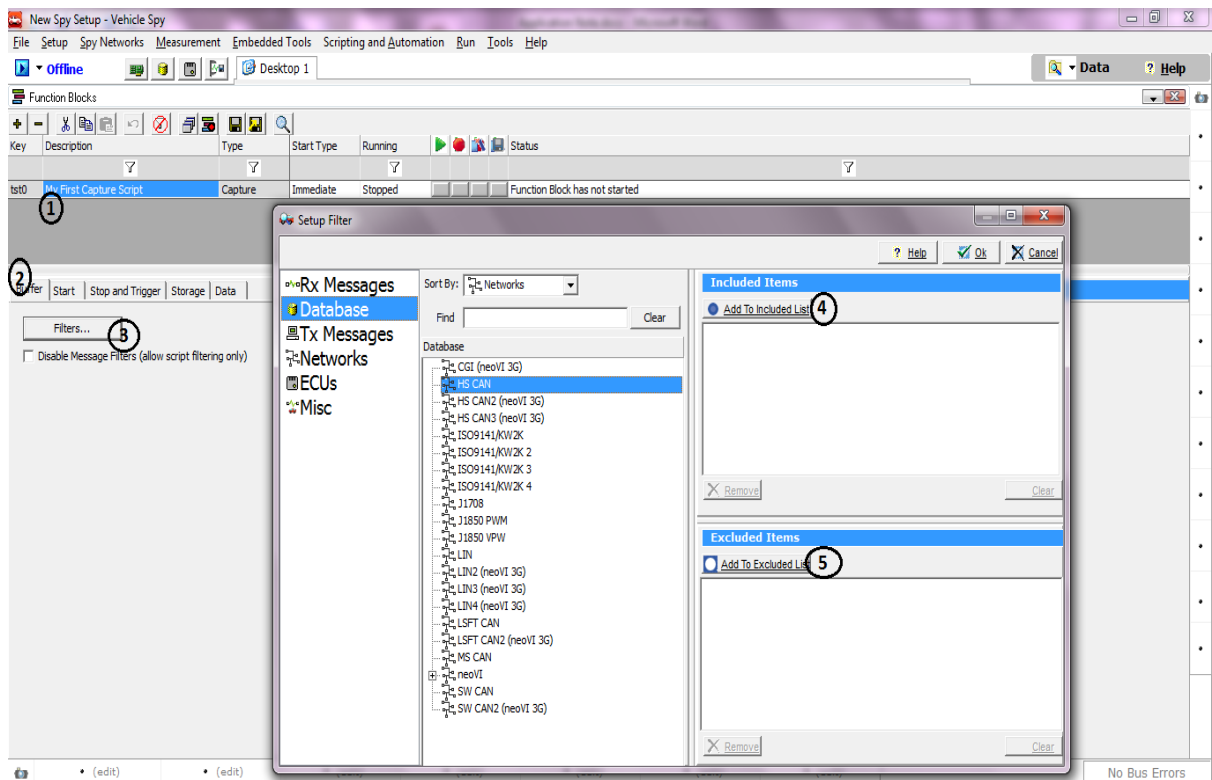

Figure 4: Capture Function Blocks Filter option.

2.2.3   Setting Up Filter:

Next, you need to setup your filter. The first step is to select your data source. Data sources are listed just below the "Name of Filter" heading they include: Rx Messages, Database, Tx Messages, Networks, ECUs, and Misc. When you select a data source from the list, available items (messages, signals, etc.) will be shown in the central window in a tree. To add an item to your filter, simply select it from the tree and press the "Add to Included List" (4) button or the "Add to Excluded List" (5) button. A filter can contain both included and excluded items. (Double clicking on an item in the tree will automatically add it to the Included Items List.) All items added to your filter will appear in either the Included Items or Excluded Items list. Refer Figure.5
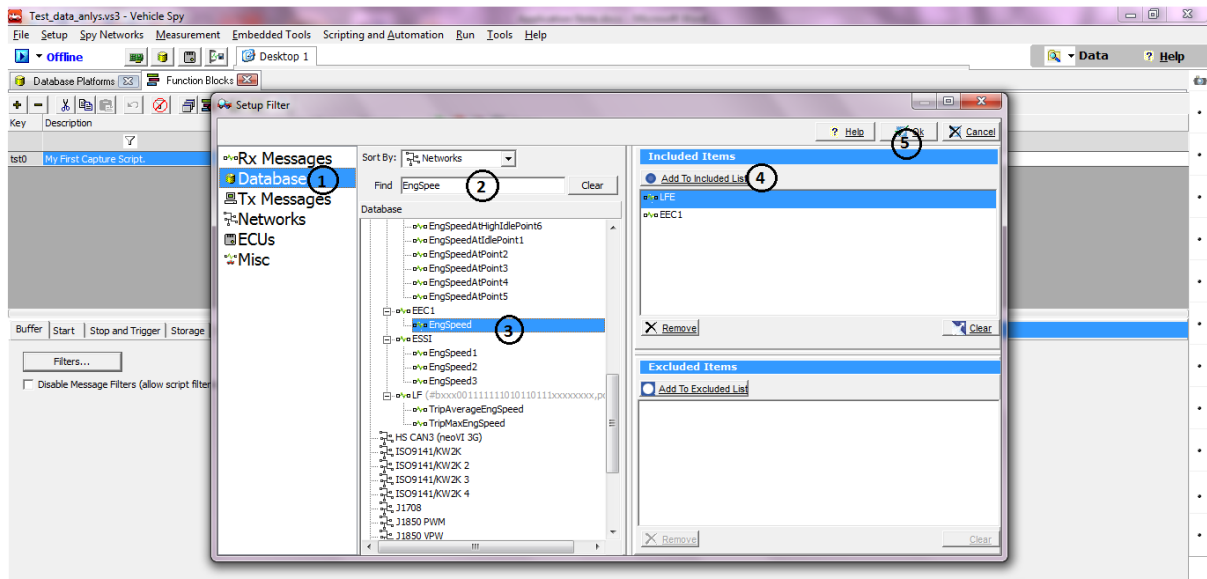

Figure 5: Setting Filter for Capture Function Block.

2.2.4 Stop and Trigger:

The Capture function block "Stop and Trigger" tab is where you find the options for when to stop collecting, how much to collect, how to trigger, and when to trigger.

The first option to set is the collection mode Vehicle Spy has 4 options. The Table 1 below lists and describes each mode.

Collection Mode	Description
Collect in a circular buffer	Captures a buffer of the newest messages. Old messages are discarded to make room for new messages when the buffer is full. Save needs to be clicked or called to save data.
Collect in a one-shot buffer	Collects one buffer and saves the data to disk.
Collect before and after trigger expression	Captures a number of messages before and after a trigger expression. This is a very handy type of function block because it allows for acquiring data before and after an event.
Collect before and after manual trigger	Captures a number of messages before and after a manual trigger. The manual trigger can come from: ☐ Clicking the <u>Trigger button</u>. ☐ Using a Script function block and the <u>Function Block Action - Trigger</u> command. ☐ Tapping an assigned hotkey. (described below)

All four types of capture function blocks have a Buffer Size option. For circular buffer and one-shot buffer capture types, this is the only setting to setup. The buffer size indicates the number of messages to collect when the function block runs.

When using a "Collect before and after a trigger expression" type capture there will be an option to specify the trigger expression. The Fx button opens the Expression Builder to build your trigger expression. The Post Trigger section configures how information is collected after the trigger expression or manual trigger occurs. You can choose between capturing a certain number of messages or capturing messages for a specific length of time. The pre-capture is determined by the remaining messages in the buffer. For example, if the buffer size is set to 5000 messages and the post trigger is set to 1000 messages, 4000 messages will be captured before the trigger and 1000 messages will be captured after the trigger.
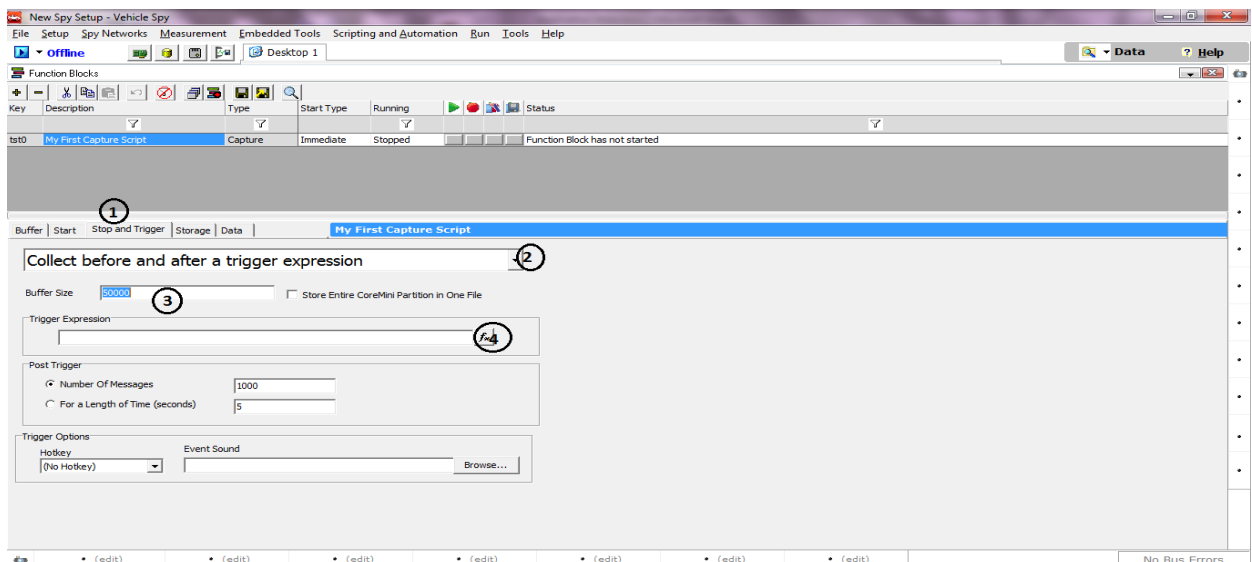

Figure 6: Stop and Trigger Capture Function Block Option

The last option in the "Stop and Trigger" tab is to set a Hotkey and/or event sound. Both of these features are optional. The hotkey offers a way to trigger the function block with a keyboard or joystick. The event sound option will play a specified. WAV file when the function block is triggered. This is an easy way to let the user know that new data is being collected.

2.2.5 Data Storage for Capture Function Block:

The "Storage" tab in the capture function block setup area determines how captured data will be stored. First, select when to save the data from the dropdown list. Vehicle Spy has 4 options for when to save data.
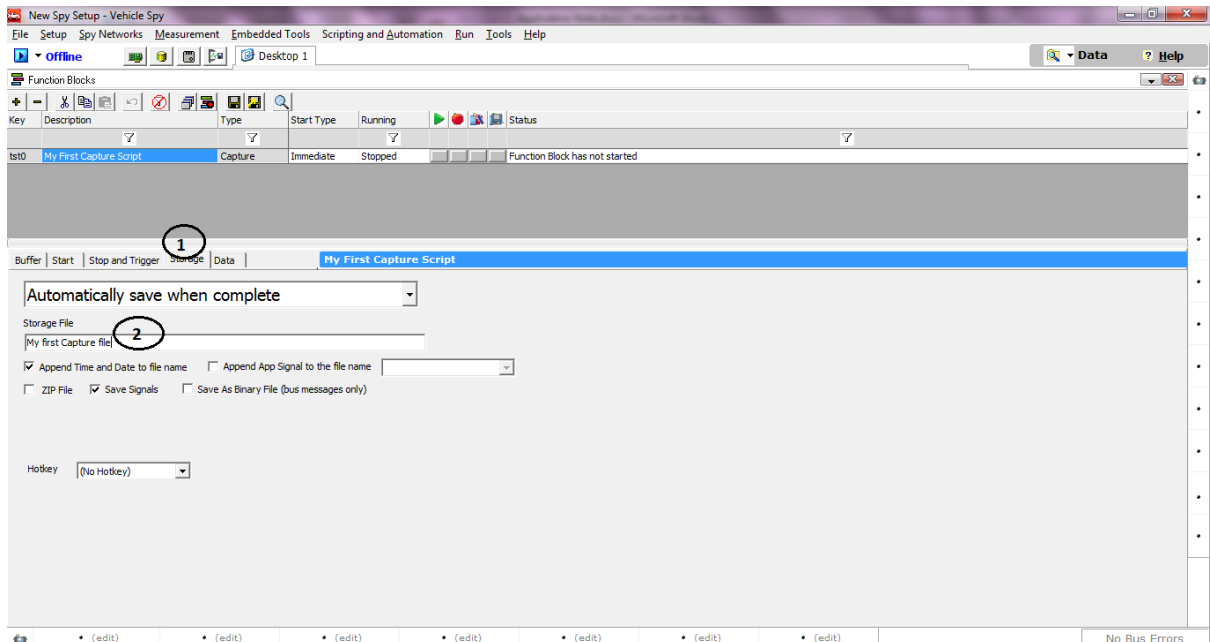

Figure 7: Data Storage Capture Function Block Option

The first option is "Manual Save". Selecting this option sets Vehicle Spy to save data only when the user clicks the save icon for the function block or when save is called in a script function block.

The next method is "Automatically save when complete". This option instructs Vehicle Spy to save the data automatically when the function block finishes. This is the default option for this setting.

Another choice is to "Save when expression is true". When this option is selected, an option for a save expression appears. Click the Fx button to display the Expression Builder. When the function block is finished and the entered expression is true, the data for the function block will be saved. This type of capturing can be useful in situations where you only want to save the data if a condition is invalid. Refer Figure 7.

The Storage File field is where the name of the file that is to be saved is entered. The file will automatically be saved to the Data Directory of the currently "logged on" user.

Below the Storage File box a few check boxes can be found. These check boxes tell Vehicle Spy how to save the data. Table 1 describes each check box.

Option	Function
Append Time and Date to file name	Adds the date and time to the filename every time the file is saved. This is very useful if the same function block is capturing multiple buffers because it keeps the file names unique.
Append App Signal to the file name	This option will add the value of a application signal to the filename. This option is also used to keep file names unique. The advantage of this is that the user can control what is appended. The appended signal could keep track of test runs, for example.
Zip file	This option will use ZIP compression on the file after it is saved. This keeps the size of the file small. When using this option, Vehicle Spy will need a little more time to complete saving the file.
Save Signals	With the Save Signals checkbox checked, signal information will get saved with message information. Un-checking this box will not save the signal information and make the captured file smaller.
Save As Binary File	Checking this option will save the capture file as a binary file instead of an ASCII type .csv file. The binary file will need to be

converted with Vehicle Spy before it can be viewed. The advantage of this option is that data saving is very fast and the files are smaller. The disadvantage of this option is that signals are not saved with the data.
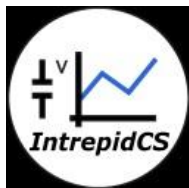
2.2.6 View Capture Function Block Data:

The "Data" tab in the function block setup dialog lets the user see what messages are being captured when the function block is running. If there is a filter, then the filtered data will be shown. Refer Figure.8

Figure 8: Data Capture Function Block Option.

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