

# Using the GUI Version of the Buffer Pool Monitor

This chapter covers the following topics:

- Starting and Terminating the Buffer Pool Monitor
- Elements of the Natural Buffer Pool Monitor Window
- Disconnecting and Connecting a Buffer Pool
- Shutting Down a Buffer Pool Server
- Starting a Buffer Pool Server
- Changing the Properties of the Buffer Pool Monitor
- Global Information
- Buffer Pool Content
- Graphic Analyzer
- Reports

See also *Natural Buffer Pool* which provides general information on the buffer pool and explains how to start the buffer pool.



**Warning:**

**This utility should not be generally accessible to all users of Natural, because its use can cause damage to the work of other users of the buffer pool.**

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## Starting and Terminating the Buffer Pool Monitor

A Natural folder automatically appears in the **Programs** folder of the **Start** menu after Natural has been installed. It contains the shortcuts for Natural, including the Buffer Pool Monitor.

 **To start the Buffer Pool Monitor**

- From the Windows **Start** menu choose **Programs > Software AG Natural *n.n* > Buffer Pool Monitor**.

The **Natural Buffer Pool Monitor** window appears.

**Note:**

The buffer pool can also be started using the executable file *natbpmong.exe* which is stored in the Natural *bin* directory.

► **To terminate the Buffer Pool Monitor**

- From the **Monitor** menu, choose **Exit**.

Or:

Press ALT+F4.

Or:

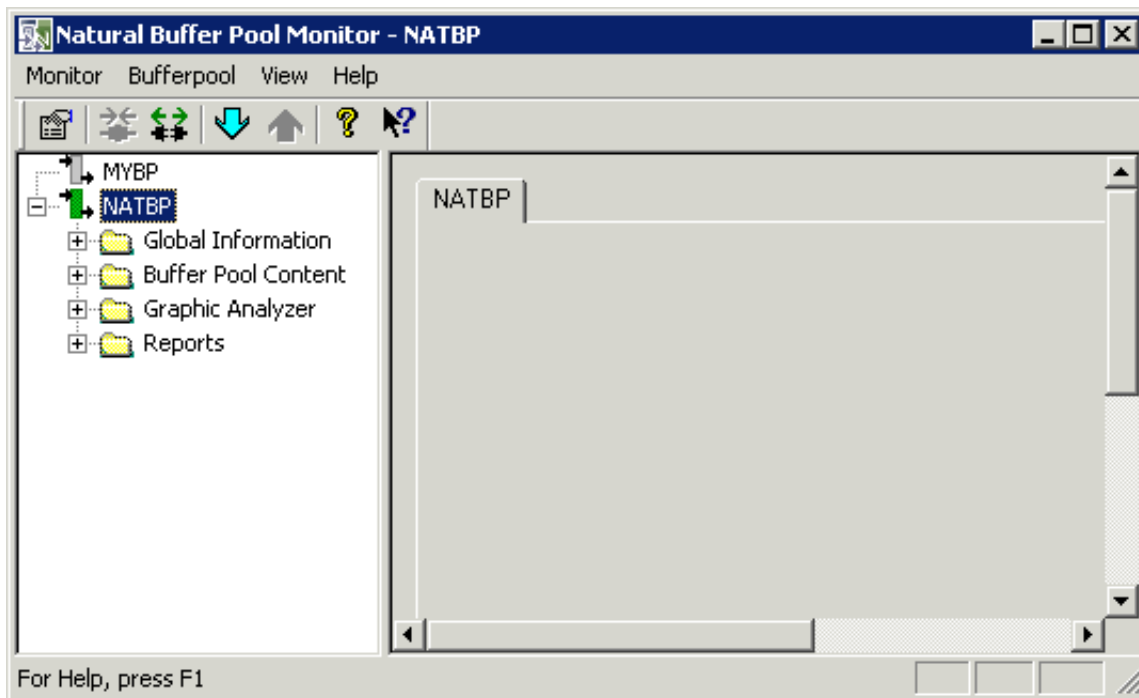
From the Control menu, choose **Close**.

Or:

Choose the corresponding standard button at the right of the title bar.

## Elements of the Natural Buffer Pool Monitor Window

When you start the Buffer Pool Monitor, it automatically tries to connect to Natural's default buffer pool NATBP. The name of the buffer pool which is currently used is shown in the title bar. It is also selected in the tree.



The following topics are covered below:

- Menu Bar
- Toolbar
- Tree
- Status Bar

## Menu Bar







The following menus are available:

| Menu              | Using the commands in this menu, you can ...   |
|-------------------|--|
| <b>Monitor</b>    | Change the properties or exit the Buffer Pool Monitor.                                 |
| <b>Bufferpool</b> | Disconnect and connect a buffer pool. Shut down and start the buffer pool server.      |
| <b>View</b>       | Show or hide the various elements of the <b>Natural Buffer Pool Monitor</b> window.    |
| <b>Help</b>       | Invoke the online documentation and display information about the Buffer Pool Monitor. |

## Toolbar

You can execute the most important functions using a toolbar button. When you move the mouse pointer over a toolbar, a brief description for the button is shown in the status bar.

The following toolbar buttons are available:

-  Change properties
-  Connect to another buffer pool
-  Disconnect current buffer pool
-  Shutdown buffer pool server
-  Start buffer pool server
-  Display online help

### To switch the toolbar display on and off

- From the **View** menu, choose **Toolbar**.

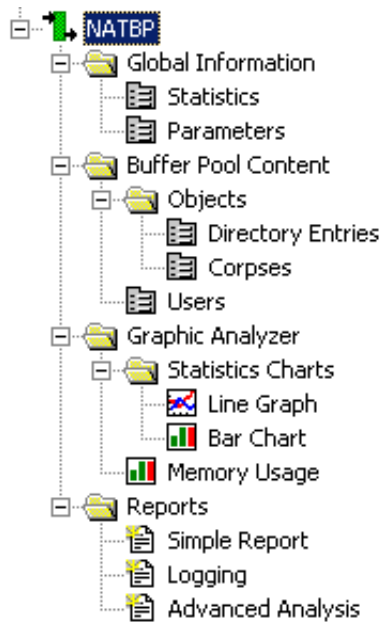
When the toolbar is displayed in the **Natural Buffer Pool Monitor** window, a check mark is shown next to this menu command.

## Tree

The tree on the left side of the **Natural Buffer Pool Monitor** window shows all buffer pools currently assigned in the local configuration file. See *Buffer Pool Assignments* in the *Configuration Utility* documentation.

Only one buffer pool can be monitored at a time. If you want to connect to a different buffer pool, see *Connecting and Disconnecting a Buffer Pool*.

When all nodes for the buffer pool which is currently used (**NATBP** in the example below) are expanded, the tree looks as follows.



When you select a node in the tree, the corresponding page is shown on the right side of the window. See the following sections for a detailed description of each page:

- Global Information
- Buffer Pool Content
- Graphic Analyzer
- Reports

## Status Bar

The status bar is the horizontal information line at the bottom of the **Natural Buffer Pool Monitor** window. It shows short help texts for the commands in the menu bar and toolbar.

### ▶ To switch the status bar display on and off

- From the **View** menu, choose **Status Bar**.

When the status bar is displayed in the **Natural Buffer Pool Monitor** window, a check mark is shown next to this menu command.



## Disconnecting and Connecting a Buffer Pool

Only one buffer pool can be connected at a time. To switch to another buffer pool in the environment, you disconnect the currently used buffer pool and then connect to the new buffer pool.

### Note:

When you connect to another buffer pool, the previously connected buffer pool is automatically disconnected. Thus, it is not necessary to use the **Disconnect** command first.

The icon next to a buffer pool name indicates one of the following states:

-  The Buffer Pool Monitor is connected to the buffer pool (green icon).
-  The Buffer Pool Monitor is not connected to the buffer pool (gray icon).

#### To disconnect the currently used buffer pool

1. Select the name of the currently connected buffer pool in the tree.
2. From the **Monitor** menu, choose **Disconnect**.

Or:

Invoke the context menu and choose **Disconnect**.

Or:

Choose the following toolbar button:



The tree for this buffer pool is no longer shown.

#### To connect a buffer pool

1. Select the name of a buffer pool in the tree.
2. From the **Monitor** menu, choose **Connect**.

Or:

Invoke the context menu and choose **Connect**.

Or:

Choose the following toolbar button:



The tree for this buffer pool is shown.

## Shutting Down a Buffer Pool Server

When you are connected to a buffer pool, you can shut it down. This is only possible if the buffer pool has not been started via the buffer pool service.

For example, if you want to initialize the buffer pool, you shut it down and then restart it.

The buffer pool server will not shut down as long as any Natural process is still connected. It will only shut down after the last process has disconnected from the buffer pool. As long as processes are connected, the buffer pool status is "shutdown pending"; this is indicated in the tree, next to the buffer pool name.

### ▶ To shut down the buffer pool server

1. Select the name of the currently connected buffer pool in the tree.
2. From the **Monitor** menu, choose **Shutdown Server**.

Or:

Invoke the context menu and choose **Shutdown Server**.

Or:

Choose the following toolbar button:



The tree for this buffer pool is no longer shown.

## Starting a Buffer Pool Server

A buffer pool server can only be started via the Buffer Pool Monitor if a buffer pool server has not yet been started.

### ▶ To start a buffer pool server

1. Select the name of a buffer pool in the tree.
2. From the **Monitor** menu, choose **Start Server**.

Or:

Invoke the context menu and choose **Start Server**.

Or:

Choose the following toolbar button:



The buffer pool server is started.

This does not automatically connect the buffer pool. You have to connect it manually as described in *Disconnecting and Connecting a Buffer Pool*.

## Changing the Properties of the Buffer Pool Monitor

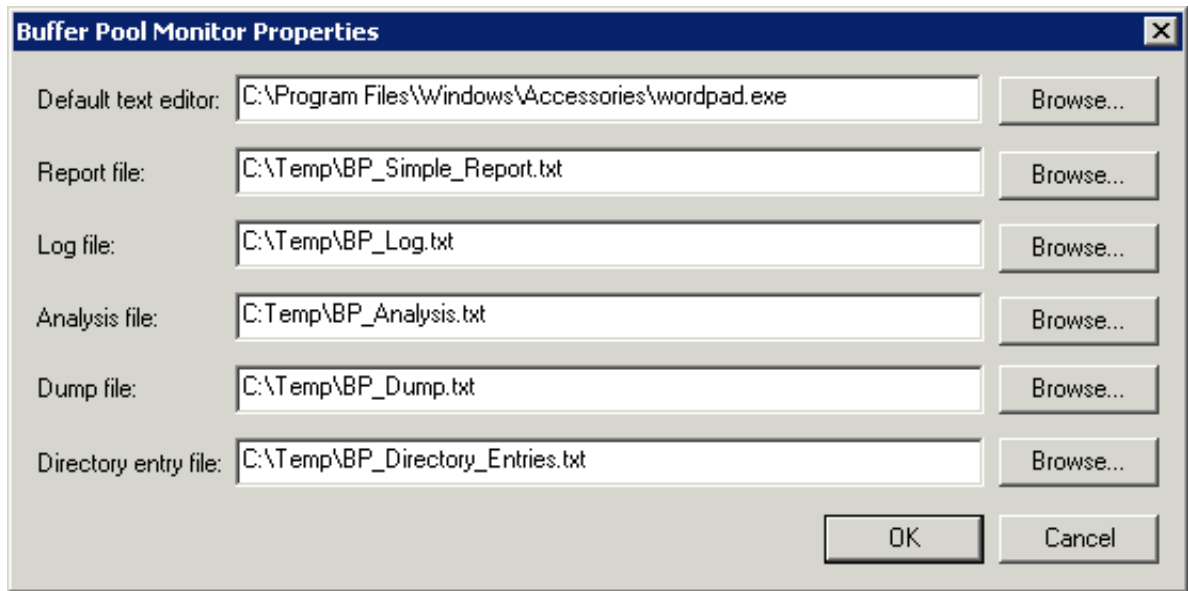
You can define the files that are to be provided as the defaults on several pages of the Buffer Pool Monitor. You can also define the default text editor that is to be used.

### ▶ To change the properties

1. From the **Monitor** menu, choose **Properties**.

The following dialog box appears. By default, a temporary directory is defined for the current user.

Example: when you have defined your own temporary directory, the dialog box may look as follows:



You can change the following information:

- The default text editor to be used for opening the text files on the pages listed below.
  - The report file to be used on the **Simple Report** page.
  - The log file to be used on the **Logging** page.
  - The analysis file to be used on the **Advanced Analysis** page.
  - The dump file to be used on the **Advanced Analysis** page.
  - The directory entry file to be used on the **Directory Entries** page.
2. If you want to change an entry, specify the path and file name in the corresponding text box.

Or:

Choose the corresponding **Browse** button to select the file from a dialog box.

3. Choose the **OK** button.

## Global Information

When you expand the **Global Information** node in the tree, you can display statistical data of the buffer pool and its parameters.

The following pages are available:

- Statistics
- Parameters

## Statistics

The following page appears when you select **Statistics** in the tree.

The screenshot shows the 'Statistics' tab of the Buffer Pool Monitor GUI. It contains the following data:

| General information |        |                    |                     |
|---------------------|--------|--------------------|---------------------|
| BPID:               | NATBP  | Active since:      | 7-APR-2005 11:48:25 |
| Shutdown status:    | active | Last time cleared: | 7-APR-2005 11:48:25 |

| Memory allocation    |                 |           |  |
|----------------------|-----------------|-----------|--|
| Allocated memory:    | 107,360 bytes   | 104.84 KB |  |
| Smallest allocation: | 20 bytes        | 0.02 KB   |  |
| Largest allocation:  | 28,844 bytes    | 28.17 KB  |  |
| Free memory:         | 3,038,380 bytes | 2.90 MB   |  |
| Smallest contiguous: | 6,252 bytes     | 6.11 KB   |  |
| Largest contiguous:  | 3,032,128 bytes | 2.89 MB   |  |

| Object loading statistics |    |
|---------------------------|----|
| Stored objects:           | 0  |
| Loaded objects:           | 11 |
| Activated objects:        | 21 |
| Aborted loads:            | 1  |

| Locate statistics        |           |
|--------------------------|-----------|
| Attempted locates:       | 23        |
| Attempted fast locates:  | 8         |
| Successful fast locates: | 5         |
| Percent successful:      | 62.500000 |

| User statistics    |  |   |
|--------------------|--|---|
| Current users:     |  | 2 |
| Peak users:        |  | 2 |
| Dead users purged: |  | 0 |

| Object use statistics |  |   |
|-----------------------|--|---|
| Dormant objects:      |  | 9 |
| Active objects:       |  | 1 |
| Generating objects:   |  | 0 |
| Obsolete objects:     |  | 0 |

| Object size statistics |              |          |
|------------------------|--------------|----------|
| Largest object:        | 28,828 bytes | 28.15 KB |
| Smallest object:       | 144 bytes    | 0.14 KB  |
| Total object sizes:    | 92,605 bytes | 90.43 KB |

| General loading statistics |  |          |
|----------------------------|--|----------|
| Objects purged:            |  | 0        |
| Peak parallel activations: |  | 1        |
| Object reuse factor:       |  | 1.909091 |

At the bottom of the window, there are three controls: a 'Clear counters' button, a 'Refresh' button, and a checked 'Automatic refresh' checkbox.

This page shows general information about the buffer pool and detailed information about memory, users and objects. It shows the same information as the `STATUS` command of the `NATBPMON` utility; see *Statistical Information About the Buffer Pool* for further information.

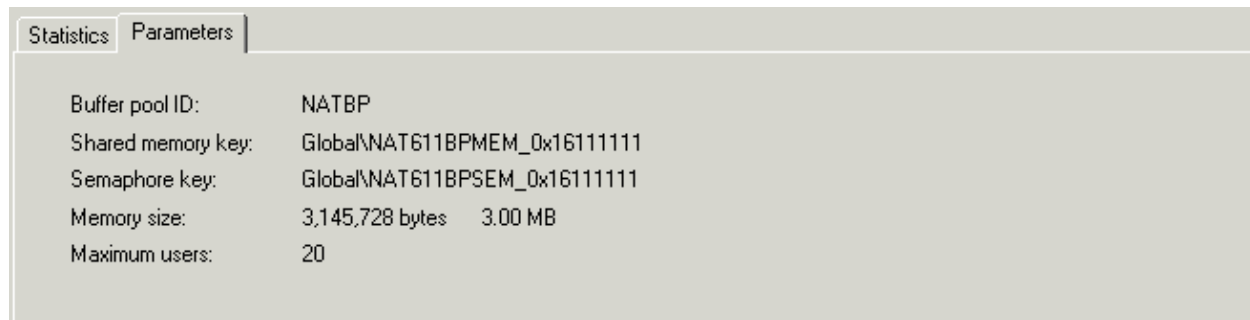
When the **Automatic refresh** check box is selected, the page is automatically refreshed every second. When this check box is not selected, you have to refresh the values manually by choosing the **Refresh** button.

When you choose the **Clear counters** button, the internal statistics of the buffer pool are reset to zero.



## Parameters

The following page appears when you select **Parameters** in the tree.



This page shows the same information as the `PARAM` command of the `NATBPMON` utility; see *Displaying the Buffer Pool Settings*.

## Buffer Pool Content

When you expand the **Buffer Pool Content** node in the tree, you can display details about the Natural objects which have been loaded into the buffer pool, as well as the users who are accessing them.

The following pages are available:

- Directory Entries
- Corpses
- Users

### Directory Entries

The following page appears when you expand the **Objects** node in the tree and select **Directory Entries**.

| Nr | DBID | FNR | (L)ibrary | (N)ame   | (K)ind | (T)ype | User | Peak user | Usages | Generated | Size (byt... | GP version |
|----|------|-----|-----------|----------|--------|--------|------|-----------|--------|-----------|--------------|------------|
| 1  | 99   | 102 |           | 0        | D      |        | 0    | 0         | 0      | false     | 604          |            |
| 2  | 99   | 102 | SYSLIB    | 0        | D      |        | 0    | 0         | 0      | false     | 27100        |            |
| 3  | 99   | 102 | SYSTEM    | 0        | D      |        | 0    | 0         | 0      | false     | 23644        |            |
| 4  | 99   | 102 | SYSSAT    | 1        | D      |        | 0    | 0         | 0      | false     | 28828        |            |
| 5  | 99   | 102 | SYSSAT    | 2        | D      |        | 0    | 0         | 0      | false     | 8380         |            |
| 6  | 99   | 102 | @         |          | D      |        | 0    | 0         | 0      | false     | 144          |            |
| 7  | 99   | 102 | SYSLIB    | @        | D      |        | 0    | 0         | 0      | false     | 144          |            |
| 8  | 99   | 102 | SYSSAT    | @        | D      |        | 0    | 0         | 0      | false     | 144          |            |
| 9  | 99   | 102 | SYSTEM    | @        | D      |        | 0    | 0         | 0      | false     | 144          |            |
| 10 | 99   | 102 | SYSSAT    | ES_INTRN | G      | 4      | 1    | 0         | 0      | false     | 3473         | 6.1.1.12   |

This page provides a table containing information on all currently loaded directory entries. It shows the same information as the DIR command of the NATBPMON utility; see also *Displaying the Objects in the Buffer Pool*.

The following command buttons are provided:

| Command Button                      | Description  |
|-------------------------------------|--|
| <b>Refresh directory entries</b>    | Updates the table.   |
| <b>Delete all directory entries</b> | Deletes all Natural objects which are currently loaded in the buffer pool. |

When the mouse is positioned over the table, you can invoke a context menu containing the following commands:

| Command in Context Menu | Description                                |
|-------------------------|--|
| <b>Select all</b>       | Selects all entries in the table.          |
| <b>Delete</b>           | Deletes the selected entries in the table. |

## Filter options

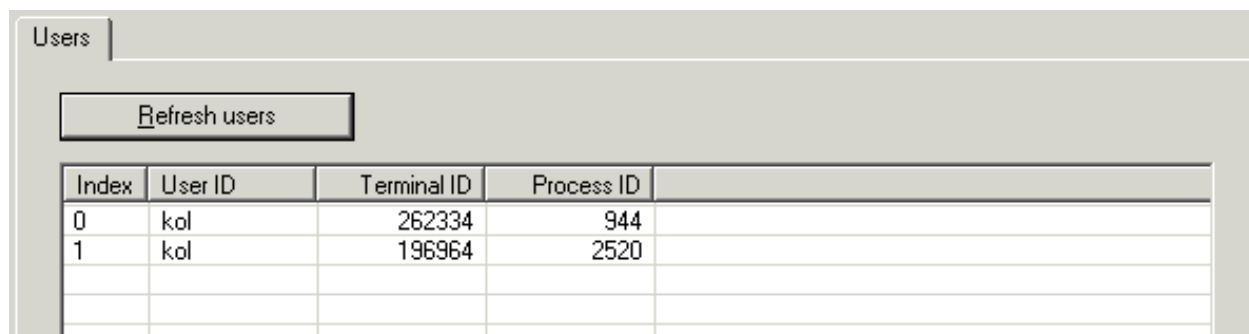
Using a filter, you can reduce the number of directory entries that are shown in the table.

### To define a filter

1. Activate the **Use filter** check box.
2. Specify the filter criteria in the text boxes **DBID**, **FNR**, **Library**, **Name**, **Kind** and/or **Type**.

For example, to display all programs in the libraries starting with "MY", specify "MY\*" in the **Library** text box, and "P" in the **Type** text box.





| Index | User ID | Terminal ID | Process ID |
|-------|---------|-------------|------------|
| 0     | kol     | 262334      | 944        |
| 1     | kol     | 196964      | 2520       |
|       |         |             |            |
|       |         |             |            |

This page shows a table containing information on the users who are currently using the buffer pool.

You can use the **Refresh users** button to update the table.

## Graphic Analyzer

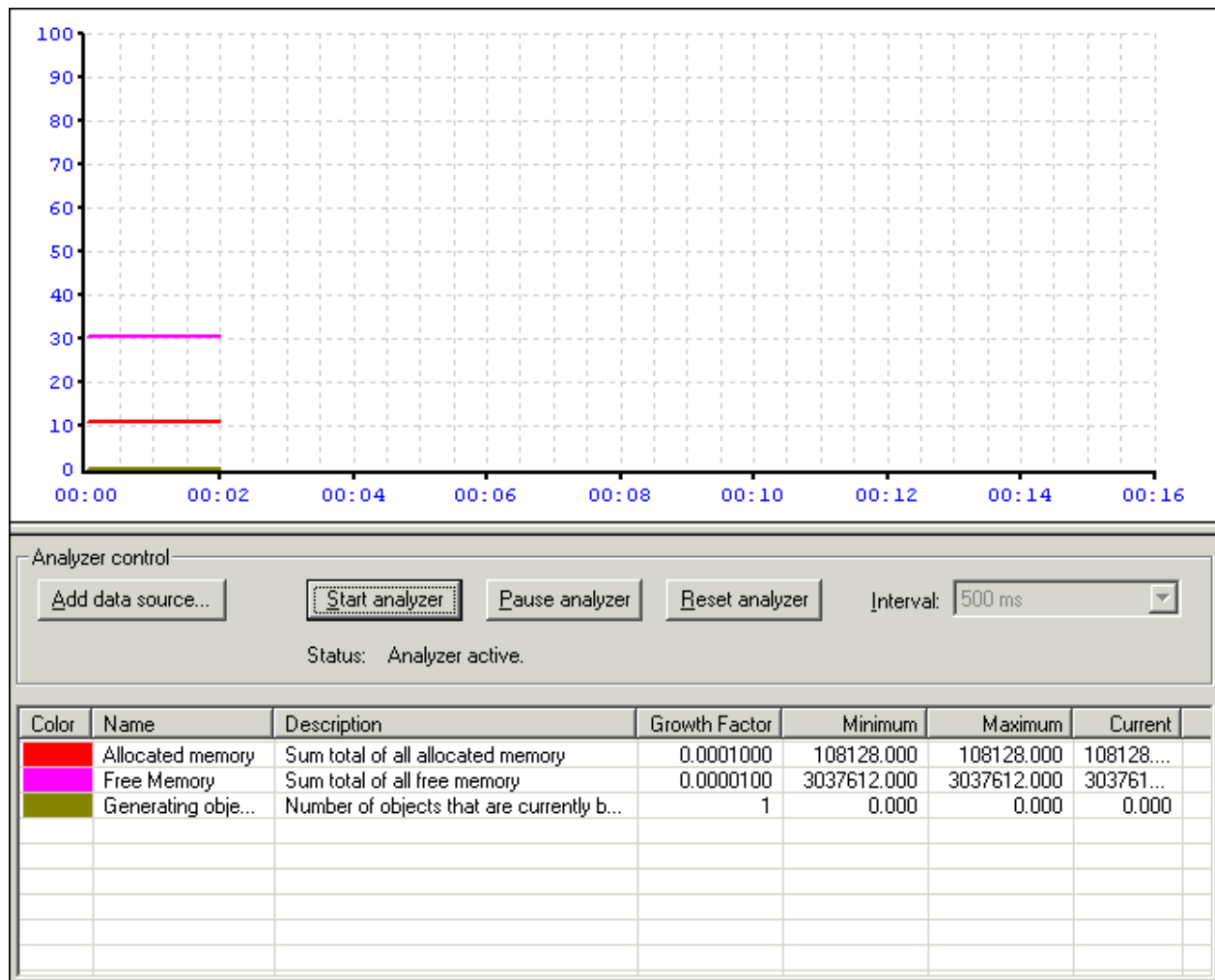
When you expand the **Graphic Analyzer** node in the tree, you can display graphical representations of the statistical numbers and a direct view on what is taking place inside the buffer pool memory.

The following pages are available:

- Line Graph
- Bar Chart
- Memory Usage

### Line Graph

The following page appears when you expand the **Statistics Charts** node in the tree and select **Line Graph**. When you have added data sources and have started the analyzer, this page may look as follows:



The line graph and the bar chart are both working with the same statistical data sources. When you apply one of the following actions to the line graph, this action is also applied to the bar chart, and vice versa:

- add, modify or delete a data source,
- start, pause or reset the analyzer,
- adjust the update interval.

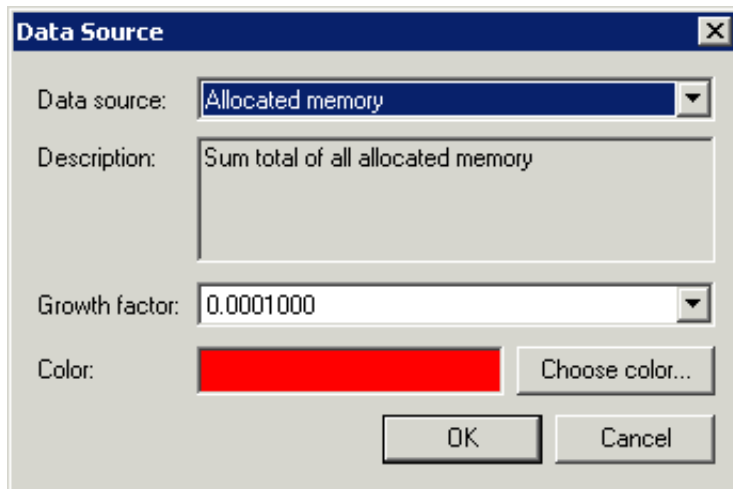
**Note:**

The analyzer is also used on the **Memory Usage** page.

▶ **To add data sources**

1. Choose the **Add data source** button.

The **Data Source** dialog box appears.



- From the **Data source** drop-down list box, select the data source that is to be shown in the chart.

A description is shown for the selected data source.

- Optional. From the **Growth factor** drop-down list box, select the required value for the selected data source.

This adjusts the range on the y-axis. The current value of the data source is multiplied by that factor to accomplish an appropriate representation on the chart.

- Optional. If you want to define a different color for the selected data source, choose the **Choose color** button.

The standard Windows **Color** dialog box appears in which you can select or define another color to be used for the data source.

- Choose the **OK** button to add the data source to the table which is shown at the bottom of the page. The data source is then available for both the line graph and the bar chart.

The table shows the color, name, description and growth factor of each data source that you have added. It also shows the minimum, maximum and current values of the data source.

- Optional. Repeat the above steps, if you want to add further data sources to the table.

### ▶ Managing the defined data sources

- Select a data source in the table and invoke the context menu.

The context menu contains the following commands:

| Command in Context Menu | Description  |
|-------------------------|--|
| <b>Properties</b>       | Invokes the <b>Data Source</b> dialog box for the selected data source. In this case, the dialog box can only be used to define another color. |
| <b>Select all</b>       | Selects all data sources in the table.   |
| <b>Delete</b>           | Deletes the selected data source(s) in the table.  |

2. Choose one of the above commands.

### ▶ To adjust the update interval

- From the **Interval** drop-down list box, select the update time (different values are provided for updating in milliseconds, seconds or minutes).

The update interval is adjusted for the charts.

#### Note:

The **Interval** drop-down list box is only available when the analyzer is inactive.

### ▶ To start the analyzer

- When all required data sources have been added to the table, choose the **Start analyzer** button.

This starts the analyzer in all charts. The graphical representation of the selected data sources is painted in the line graph and in the bar chart.

### ▶ To pause the analyzer

- Choose the **Pause analyzer** button.

This freezes the current state of the graphical representation in all charts.

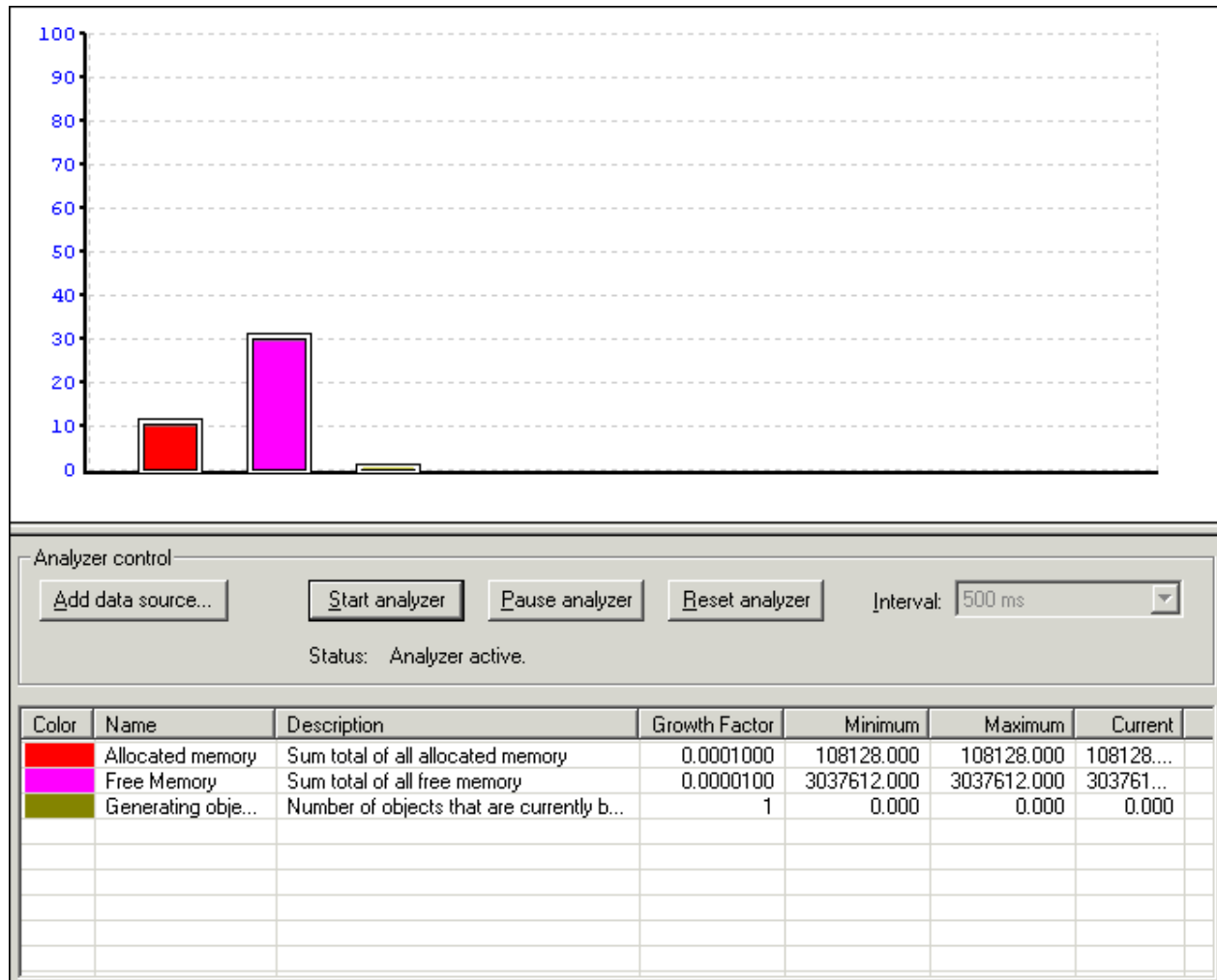
### ▶ To reset the analyzer

- Choose the **Reset analyzer** button.

This resets the graphical representation in all charts. For the line graph and bar chart, the minimum, maximum and current values are reset in the table. The time base which is shown in the line graph is also reset.

## Bar Chart

The following page appears when you expand the **Statistics Charts** node in the tree and select **Bar Chart**. When you have added data sources and have started the analyzer, this page may look as follows:

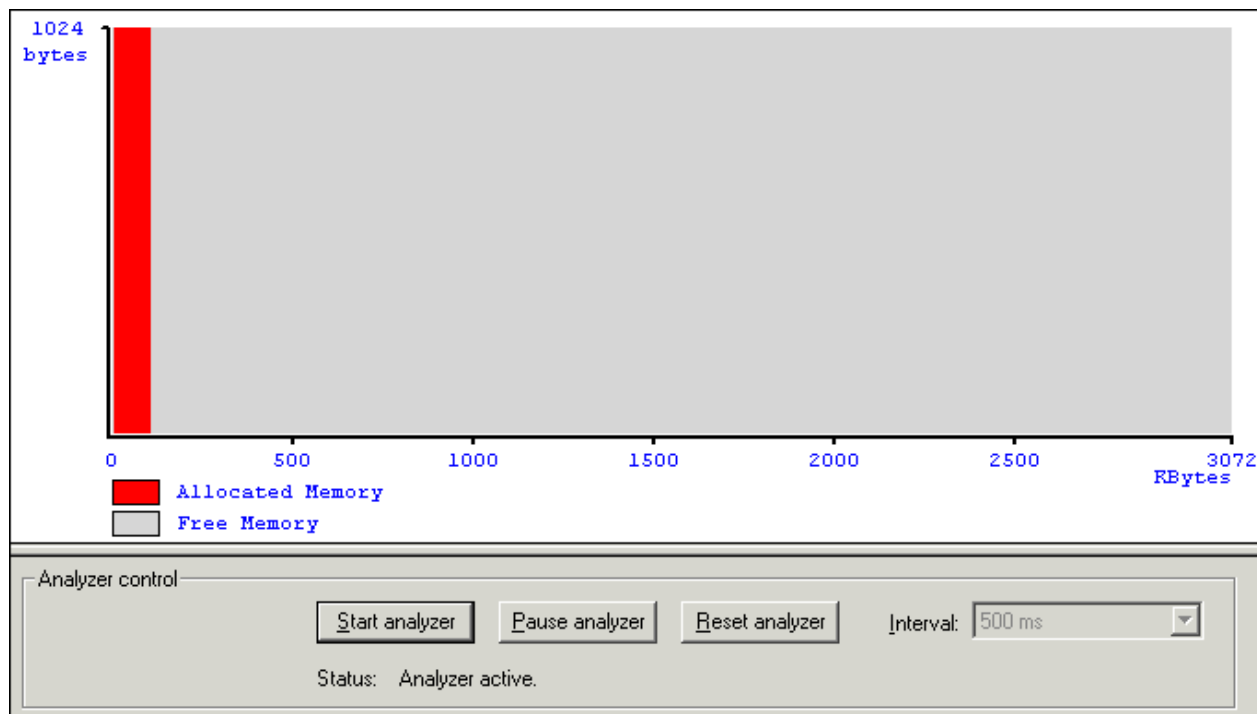


When you apply an action to the line graph, this action is also applied to the bar chart, and vice versa. See *Line Graph* for detailed information on how to add, modify and delete data sources, how to start, pause and reset the analyzer, and how to adjust the update interval.

## Memory Usage

The following page appears when you select **Memory Usage** in the tree.





This chart simply shows the structure of the buffer pool memory. It shows allocated and free memory.

When the analyzer is active for a line graph or bar chart, it is also active on this page, and vice versa. See *Line Graph* for detailed information on how to start, pause and reset the analyzer, and how to adjust the update interval.

## Reports

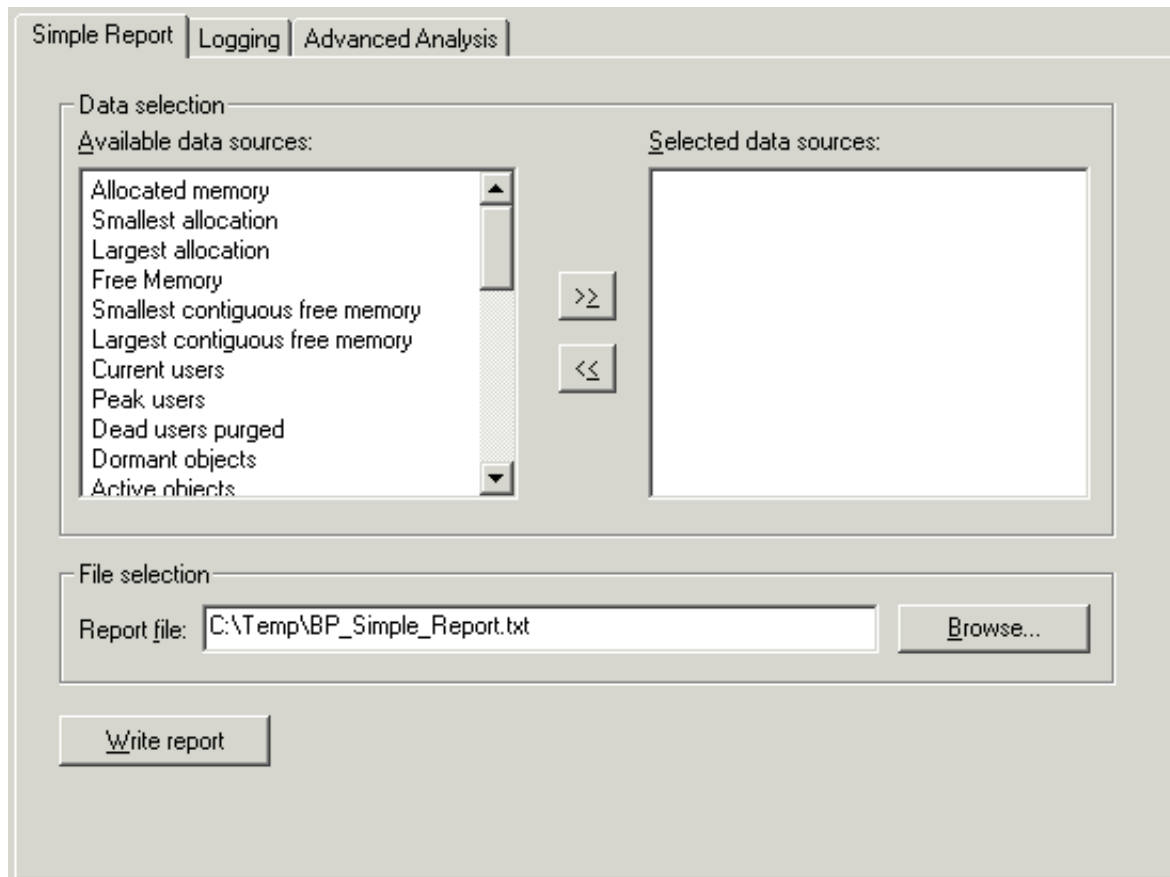
When you expand the **Reports** node in the tree, several pages are available. They can be used to write certain types of information about the buffer pool into a file.

The following pages are available:

- Simple Report
- Logging
- Advanced Analysis

### Simple Report

The following page appears when you select **Simple Report** in the tree.



You can write a report which contains information on the data sources that you select on this page.

▶ **To select the data sources and write the report**

1. Select one or more data sources in the **Available data sources** list box.
2. Choose the >> button.

The selected data sources are moved to the **Selected data sources** list box.

**Note:**

If you have accidentally moved the wrong data source to the **Selected data sources** list box, you can move it back to the **Available data sources** list box by choosing the << button.

3. Optional. In the **Report file** text box, specify the path to the file to which the report is to be written.

Or:

Choose the **Browse** button to select the file from a dialog box.

**Note:**

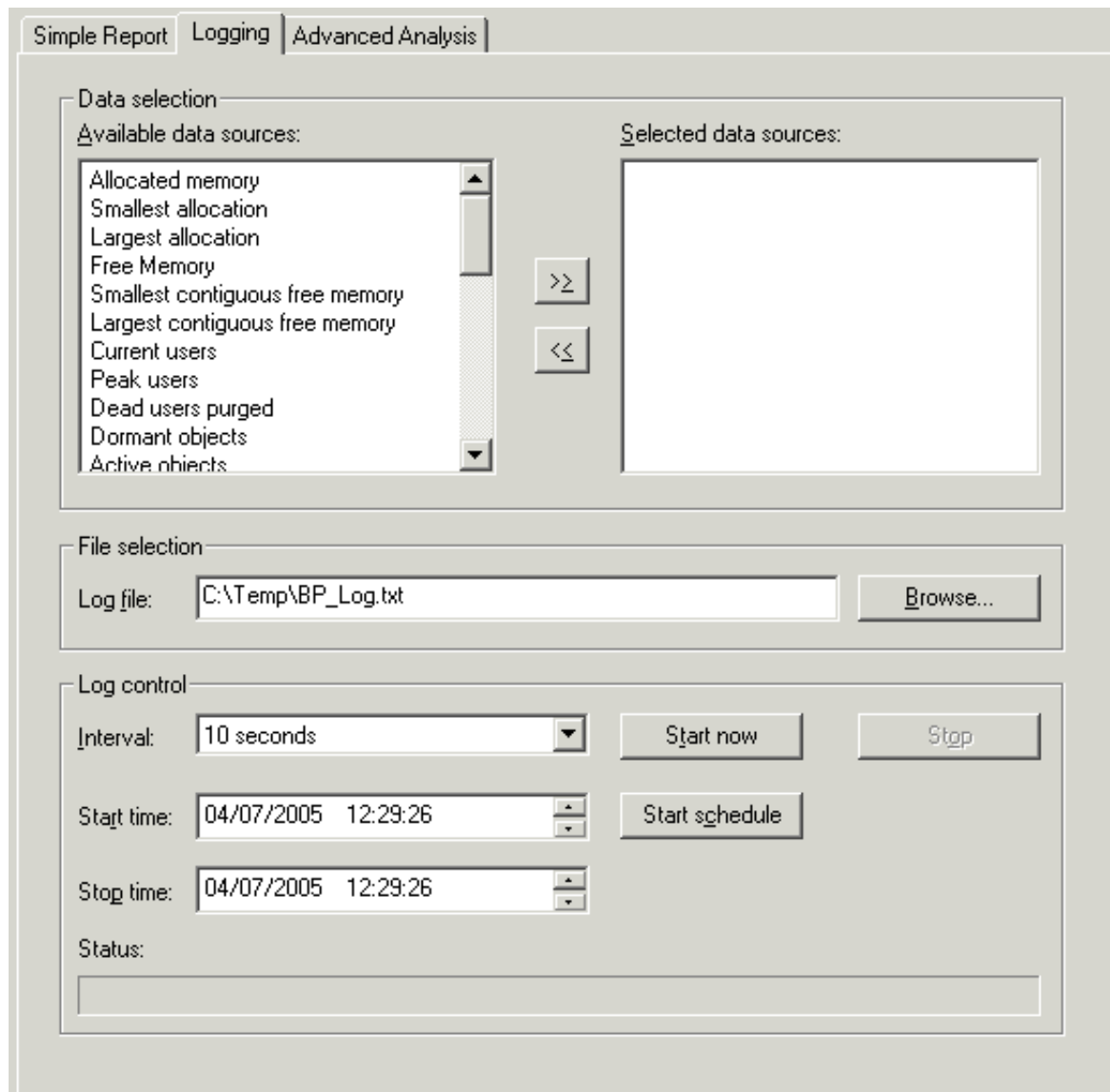
By default, the **Report file** text box contains the path to the file which has been defined in the properties.

4. Choose the **Write report** button.

The report is written to the specified file. The content of this file is automatically shown in the text editor which has been defined in the properties.

## Logging

The following page appears when you select **Logging** in the tree.



The upper part of this page contains the same information as the **Simple Report** page. The only difference is that a different log file is used by default.

In addition to selecting the data sources in upper part of this page, you can decide whether the log file is to be written immediately (manually) or whether it is to be scheduled for a specific time range.

### ▶ To start the logging process manually

1. Select all data sources and (optionally) the log file as described for the **Simple Report** page.

2. From the **Interval** drop-down list box, select the interval which determines how often the log information is to be written to the file.
3. Choose the **Start now** button to start writing information to the log file.

A status message indicating the number of done circles and the elapsed time is shown at the bottom of the **Log control** group box.

4. Choose the **Stop** button to stop writing information to the log file.

When the logging process has been stopped, the content of the log file is automatically shown in the text editor which has been defined in the properties.

### **To schedule the log process for a specific time range**

1. Select all data sources and (optionally) the log file as described for the **Simple Report** page.
2. From the **Interval** drop-down list box, select the interval which determines how often the log information is to be written to the file.
3. Specify a start date and time.
4. Specify a stop date and time.
5. Choose the **Start schedule** button.

A status message is shown at the bottom of the **Log control** group box. It indicates the time that is to elapse until the log process is started. When the start time is reached, a different status message is shown which indicates the number of done circles and the elapsed time.

#### **Note:**

You can choose the **Stop** button to cancel the schedule before the specified start time.

When the stop time is reached (or when you choose the **Stop** button after the start time has been reached), the content of the log file is automatically shown in the text editor which has been defined in the properties.

## **Advanced Analysis**

The following page appears when you select **Advanced Analysis** in the tree. It provides information for the Software AG support team.

#### **Important:**

Do not use this page unless you are requested to do so by Software AG Support.

Simple Report | Logging | **Advanced Analysis**

Analysis

Choose types:  Global pool structures  
 Memory slots  
 Node list array

Analysis file:

Buffer pool memory dump

Dump file: