

# BP Cache Statistics

The **BP Cache** function only applies to a buffer pool of the type Natural.

This function invokes the **BP Cache Statistics** menu which is used to obtain statistical information on the BP cache.

Note that the **BP Cache** function can only be executed if a BP cache has been installed when initializing a global buffer pool (no BP cache support for local buffer pools).

## ▶ To invoke BP Cache Statistics

- In the SYSBPM **Main Menu**, enter the following function code:

```
c
```

Or:

Enter the following SYSBPM direct command:

```
DISPLAY CSTATISTICS
```

The **BP Cache Statistics** menu appears.

The functions available in the **BP Cache Statistics** menu and the commands provided on the screens that are invoked by these functions are explained in this section.

- General BP Cache Statistics
- BP Cache Call Statistics
- BP Cache Hash Table Statistics
- Performance Hints
- PF Keys and Direct Commands

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## General BP Cache Statistics

This function displays addresses and statistics regarding the activity of the BP cache.

### ▶ To invoke General BP Cache Statistics

- In the **BP Cache Statistics** menu, enter the following function code:

```
G
```

Or:

Enter the following SYSBPM direct command:

```
DISPLAY CGENERAL
```

The **General BP Cache Statistics** screen appears.

The statistics displayed on the **General BP Cache Statistics** screen are snapshots of the buffer pool, which are refreshed each time you press ENTER. The following information is displayed:

Field	Explanation
<b>Dataspace - Name</b>	The name of the dataspace where the BP cache resides.
<b>Dataspace - SToken</b>	The term SToken (for Space Token) identifies a dataspace.
<b>Dataspace - ALET</b>	The term ALET (for Address List Entry Token) identifies an index for accessing the dataspace.
<b>Dataspace - Size (MB)</b>	The size of the BP cache in MB.
<b>Dataspace - Current state</b>	The status of the BP cache:  not initialized  locked for init  closed  free for operation  undefined
<b>Dataspace - Initialization</b>	The date and time when the BP cache was initialized.
<b>Internal buffer offsets - Header buffer</b>	The header of the BP cache which contains general BP cache information.
<b>Internal buffer offsets - Hash buffer</b>	Contains the hash table (see also <i>BP Cache Hash Table Statistics</i> ).
<b>Internal buffer offsets - Directory buffer</b>	The address of the BP cache directory section relative to the beginning of the BP cache.  Each Natural object loaded in the BP cache requires a directory entry that contains information on this object. The space for these directory entries is acquired from the BP cache itself.

Field	Explanation
<b>Internal buffer offsets - Text buffer</b>	<p>The address of the text buffer relative to the beginning of the BP cache.</p> <p>After allocating the space for all other buffers, the remaining space is divided into text records with a size of 4 KB.</p> <p>An object can occupy one or more text records, depending on its size.</p>
<b>Tot. Text Records</b>	<p>The total number of text records in the BP cache.</p> <p>The number of text records depends on the BP cache size. The text record size for the BP cache is 4 KB.</p>
<b>Insert position</b>	<p>The index number of the text record into which the next object will be inserted.</p> <p>Objects will be inserted into the BP cache when they have to be removed from the buffer pool.</p>
<b>Reuse cycles</b>	<p>The number of times the BP cache has been completely reused.</p> <p>Every time the BP cache is full, the BP cache manager reuses the BP cache from the start and overwrites the object(s) from there. The objects will remain in the BP cache until the BP cache is used again.</p>
<b>Objects - Max Loaded</b>	The maximum number of objects currently loaded in the BP cache.
<b>Objects - Loaded</b>	The number of objects currently loaded in the BP cache.

## BP Cache Call Statistics

This function provides statistical information on the loading (put), retrieving (get) and deleting of objects into/from the BP cache. This information also serves as an indicator of BP cache performance.

### To invoke BP Cache Call Statistics

- In the **BP Cache Statistics** menu, enter the following function code:

L

Or:

Enter the following SYSBPM direct command:

DISPLAY CLOAD

The **BP Cache Call Statistics** screen appears.

The statistics displayed on the **BP Cache Call Statistics** screen are snapshots of the buffer pool which are refreshed each time you press ENTER. The following information is displayed:

<b>Field</b>	<b>Explanation</b>
<b>Search calls</b>	<p>The number of Search calls the buffer pool sent to the BP cache while attempting to find an object in the BP cache.</p> <p>If an object is found, a Search call results in a Get call.</p>
<b>Get calls (from BP cache)</b>	<p>The number of Get calls the buffer pool sent to the BP cache while attempting to load an object from the BP cache into the buffer pool.</p>
<b>Get calls - successful</b>	<p>The number of successful Get calls the BP cache performed, that is, the number of objects the BP cache swapped into the buffer pool.</p> <p>A Get call is successful if an object the buffer pool attempted to load is actually loaded from the BP cache into the buffer pool.</p> <p>A Get call is unsuccessful, for example, if an object was deleted after it was found by the Search call.</p>
<b>Put calls (to BP cache)</b>	<p>The number of Put calls the buffer pool sent to the BP cache while attempting to swap an object from the buffer pool into the BP cache.</p>
<b>Put calls - successful</b>	<p>The number of Put calls that resulted in an object to swapped from the buffer pool into the BP cache.</p>
<b>Put calls - obj. already cached</b>	<p>The number of Put calls the buffer pool sent to the BP cache for objects that were already loaded in the BP cache.</p>
<b>Delete calls</b>	<p>The number of Delete calls the buffer pool sent to the BP cache while attempting to delete an object from the BP cache.</p> <p>A Delete call requests either a single object or a range of objects (see also the section <i>Delete Objects</i>).</p>
<b>Delete calls - successful</b>	<p>The number of successful Delete calls the buffer pool sent to the BP cache.</p> <p>A Delete call is successful if at least one object is actually deleted from the BP cache.</p> <p>A Delete call is unsuccessful if the object requested was not loaded in the BP cache and hence could not be deleted.</p> <p>Compared with the total number of Delete calls, the number of successful Delete calls can be very low. This happens, for example, if several Natural objects are cataloged with the CATALOG command. In this case, for every object cataloged successfully, Natural sends a Delete call to the BP cache. However, at the time the Delete call is sent, most of the cataloged objects are usually not loaded in the BP cache and the delete attempt fails.</p>

Field	Explanation
<b>Initialization</b>	The date and time when the BP cache was initialized.
<b>Last reuse cycle</b>	The load date and time of the object that was most recently overwritten.  An object is overwritten in the BP cache when its space has to be reused in order to load another object. The object that was loaded first in the BP cache will be swapped first. This means the load date and time of the object that has been in the BP cache longest corresponds to the date and time in <b>Last reuse cycle</b> .
<b>Last access</b>	The date and time when the buffer pool last accessed the BP cache.
<b>Last Put (to BP cache)</b>	The date and time when the buffer pool last sent a Put call to the BP cache.
<b>Last Get (from BP cache)</b>	The date and time when the buffer pool last sent a Get call to the BP cache.
<b>Last Delete</b>	The date and time when the buffer pool last sent a Delete call to the BP cache.

## BP Cache Hash Table Statistics

This function displays statistics about hash table slots and collisions per slot. The statistics determine the efficiency of the hash algorithm used.

### To invoke BP Cache Hash Table Statistics

1. In the **BP Cache Statistics** menu, enter the following function code:

H

Or:

Enter the following SYSBPM direct command:

DISPLAY CHASH

The **Cache Hash Table Collisions** screen appears.

The statistics displayed on the **Cache Hash Table Collisions** screen are snapshots of the hash table which are refreshed every time you press ENTER. The following information is displayed:

Field	Explanation
<b>Total Number of Slots</b>	The total number of hash table slots; that is, the total possible entries that link the object name with the location of the object.  The number of slots, that is, the size of the hash table will be calculated internally depending on the number of text records.
<b>Number of Slots used</b>	The number of slots that have one or more entries.
<b>Number of Slots free</b>	The number of slots that have no entry.
<b>Max. Collisions per Slot</b>	The maximum number of collisions of all slots.  The maximum number of collisions is the longest possible search path for an object.
<b>Collisions</b>	The number of possible collisions.  0 (zero) means no collision or one entry. When there are more than 5 collisions, the number of collisions will be specified in ranges (for example, 6 - 10).
<b>Number of Slots</b>	The number of slots grouped by their number of collisions.  For example, if the number of collisions is 3, the search algorithm must side step a maximum of 3 times to find an object. In addition, the percentage of these slots related to all slots used is displayed.
<b>Number of Slots Totaled</b>	The same values as <b>Number of Slots</b> , but the values are totaled.

## Performance Hints

See *Performance Hints* in the section *Buffer Pool Statistics*.

## PF Keys and Direct Commands

On BP cache statistics screens, you can use the PF keys or SYSBPM direct commands listed in the table below. An underlined portion of a command represents its minimum abbreviation. For further commands, see *SYSBPM Direct Commands*.

PF Key	Command	Function
PF1		Provides SYSBPM help information: see also <i>Online Help</i> .
PF3	<u>EXIT</u>	Leaves the current function/screen and displays the previous screen.
PF4	LAST	Displays the SYSBPM direct command entered most recently.
PF6	FLIP	Switches the PF-key line: toggles between the display of PF1 to PF12 and PF13 to PF24.
PF8 (CLoad)	<u>DISPLAY</u> <u>CLOAD</u>	Only applies to the <b>General BP Cache Statistics</b> screen.  Displays the <b>BP Cache Call Statistics</b> screen.
PF8 (CGen)	<u>DISPLAY</u> <u>CGENERAL</u>	Only applies to the <b>BP Cache Call Statistics</b> screen.  Displays the <b>General BP Cache Statistics</b> screen.
PF12	<u>CANCEL</u>	Same as EXIT.
PF15	MENU	Invokes the SYSBPM <b>Main Menu</b> .