List Objects

This function invokes the **List Objects** screen where you can obtain statistical data on the directories of Natural objects currently loaded in the buffer pool (BP) or the BP cache (if used).

This section provides information on the statistical data displayed on the **List Objects** screen and the commands and functions available for selecting an object or a range of objects, manipulating their current status or navigating in the **List Objects** screen.

See also the function **Display Sorted Extract** for a sorted display of objects.

- Invoking List Objects

- Columns and Selection Options

- PF Keys and Direct Commands

- Line Commands

Invoking List Objects

▶ **To invoke the List Objects screen**

- In the SYSBPM **Main Menu**, in the **Code** field, enter function code L and specify the object(s): see the valid field input values described in the section *Invoking and Operating SYSBPM*.

  Or:
  Go directly to the list of objects in the buffer pool by entering the following SYSBPM direct command:

  ```
  DISPLAY LIST library-name object-name dbid fnr
  ```

  Or:
  Go directly to the list of objects in the BP cache by entering the following SYSBPM direct command:

  ```
  DISPLAY CLIST library-name object-name dbid fnr
  ```

A **List Objects** screen similar to the example below appears:

```
 17:13:17              ***** NATURAL SYSBPM UTILITY *****             2002-09-16
 BPNAME QA41GBP                   - List Objects -              Type Global Nat
 BPPROP OFF                                                     Loc DAEF QA41
 C  Library  Object    DBID  FNR Loc RLD Use Max  Reuse    TotalUC ObjSize Sto
    *_____  *_____   ___   ___ ___ ___ ___ ___  _____  _____ _____ ___
 __ SYSBPM   BPMCALL    10 1640 B        1   1                     5   8,516  12
 __ SYSBPM   BPMNSC     10  410 B            1                     4   3,380   4
 __ SYSDLINP PCNDL02   255  253 B   R        1                    19     292   4
 __ SYSLIBS  NAT00017   10  410 B            1                     1   5,000   8
 __ SYSLIB   ATEST      10 1640 B   R        1                   340  16,148  16
 __ SYSLIB   CATALL10   10  410 B            1                     1   4,256   8
 __ SYSBPM   BPM141-M   10 1640 B            1                     1   5,944   8
 __ SYSDLINS U246005   255  253 B   R        1                    14      52   4
 __ SYSBPM   MENU       10 1640 B            1                     5  10,392  12
 __ SYSLIBS  NAT00040   10  410 B            1                     1   2,816   4
 __ SYSLIBS  NAT00034   10  410 B            1                     1   2,672   4
 __ SYSDLIND DNDL01    255  253 B   R        3                    42     552   4
 __ SYSLIB   ACATALL    10  410 B            1                     3  55,728  56
 __ SYSDLINS U246004   255  253 B   R        2                    28     172   4


 Top of List
 Command ===>
 Enter-PF1---PF2---PF3---PF4---PF5---PF6---PF7---PF8---PF9---PF10--PF11--PF12---
      Help          Exit  Last  Cache --    -     +     ++          >     Canc
```

The **List Objects** screen lists all individual objects

1. currently loaded in the buffer pool (first part of the display) and

2. currently loaded in the BP cache (second part of the display).

The statistics displayed are snapshots of the contents of the buffer pool which are refreshed every time you press ENTER.

Note for GDA Objects Loaded in the Buffer Pool:

On the **List Objects** screen, two entries may be displayed for a GDA (global data area): one entry contains data in the GDA itself and the other entry contains the internal Natural symbol table for this GDA. This can happen if a program has been cataloged that references a GDA.

Columns and Selection Options

This section describes the columns and statistical data displayed on the **List Objects** screen, and the input field and values provided for specifying object selection criteria.

▶ **To specify selection criteria for the objects to be displayed**

- In the input fields underneath the column titles, enter a valid value or range as described for the relevant fields.

   The default value is a blank character or asterisk (*) which selects all objects.

Column	Explanation
C	In this column, you can enter a line command to perform a function for the object. See also *Line Commands*.
Library	The library from which the object was loaded. To specify selection criteria, see *Name and Range Specification*.
Object	The name of the object. To specify selection criteria, see *Name and Range Specification*.
DBID	The database ID of the Natural system file from which the object was loaded. To select objects of a specific database, enter a valid numeric value.
FNR	The file number of the Natural system file from which the object was loaded. To select objects of a specific file, enter a valid numeric value.

Column	Explanation
Loc	Location of the object: B Buffer pool. B/C Buffer pool and BP cache. C BP cache. C/B BP cache and buffer pool. If B is listed in the first position, the statistical data derive from the buffer pool. If C is listed first, the data derive from the BP cache. Additionally, depending on this positioning, different line commands apply to the fields on the statistics screen (see also *Line Commands*). To specify the object location(s), enter one of the values below: B Selects all objects loaded in the buffer pool only. B/C Selects all objects loaded in the buffer pool as well as in the BP cache. B* Selects all objects loaded in the buffer pool or in both the buffer pool and BP cache (B* = B + B/C). C Selects all objects loaded in the BP cache only. C/B Selects all objects loaded in the BP cache as well as in the buffer pool. C* Selects all objects loaded in the BP cache or in both the BP cache and buffer pool (C* = C + C/B).

Column	Explanation
RLD	Current status of the object in the buffer pool or the BP cache. A BP cache status only refers to object locking and is therefore only indicated underneath the **L** (Locked) of the **RLD** column.
	Buffer pool:
	R Marked as resident. Resident means that the object is not deleted from the buffer pool, not even if the relevant value in the **Use** column changes to 0 (zero) denoting that the object is no longer used.
	L Locked while load function is ongoing.
	D A Delete call for the object is pending. The object will be deleted from the buffer pool as soon as the value in the **Use** column changes to 0 (zero).
	BP cache:
	L Locked while load function is ongoing.
	D Locked for delete.
	To select all objects of a specific status, as described above, enter the code R, L or D.

Column	Explanation
Use	Buffer pool only.
	The number of Natural applications that are currently executing the object.
	To select objects, you can specify one of the following:
	value — A numeric value. Selects all objects with this number. Example: 10 Selected: 10
	>value — A numeric start value (>). Selects all objects with a number greater than *value*. Example: >10 Selected: 11, 21 Not selected: 10
	<value — A numeric end value (<). Selects all objects with a number less than *value*. Example: <10 Selected: 9, 8 Not selected: 10
Max	Buffer pool only.
	The maximum number of applications that have executed the object since it was loaded into the buffer pool.
	To select objects, see the valid input values in **Use** above.
Reuse	BP cache only.
	Indicates how many time the object has been loaded (reused) from the BP cache into the buffer pool.
	To select objects, see the valid input values in **Use** above.

Column	Explanation
TotalUC	Total Use Count: The total number of Locate calls of the object since it was loaded into the buffer pool.

If a BP cache is used, this value is not lost if the object is removed from the buffer pool and saved to the BP cache. Therefore, this value indicates the number of times the object has been used since it was loaded from the system file.

For buffer pool objects, this value is updated regularly. For BP cache objects, this value is only updated after the object was removed from the buffer pool and saved in the BP cache.

To select objects, you can specify one of the following:

value or >*value* — A numeric value or a numeric start value ($>$). Selects all objects with a number greater than or equal to *value*. Example: `>10` Selected: 10, 11, 21 Not selected: 9

<*value* — A numeric end value($<$). Selects all objects with a number less than *value* or equal to *value*. Example: `<10` Selected: 10, 9, 8 Not selected: 11 |
| **ObjSize** | The size of the object.

To select objects, see the valid input values in **TotalUC** above. |
| **Sto** | Storage that has to be allocated for the object in the buffer pool or BP cache. The text record size of the buffer pool is defined at buffer pool initialization.

To select objects, see the valid input values in **Use** above. |
| **BP Load Time*** | The date and time when the object was first loaded into the buffer pool.

This date and time will be kept until the object has been removed from both the buffer pool and BP cache (deletion from the BP cache only will not remove the display of date and time).

To select objects, see *Date Specification* and *Time Specification*. |

Column	Explanation
BP Last Action*	Buffer pool only. The date and time when the object was last used by an application. To select objects, see *Date Specification* and *Time Specification*.
BPC Load Time*	BP cache (BPC) only. The date and time when the object was first loaded into the BP cache. This date and time will be kept until the object has been removed from the BP cache. To select objects, see *Date Specification* and *Time Specification*.
BPC Last Get*	BP cache (BPC) only. The date and time when the object was last swapped from the buffer pool into the BP cache. This time stamp is also updated if the object was already available in the BP cache and had therefore not been written to the BP cache again. To select objects, see *Date Specification* and *Time Specification*.
BPC Last Put*	BP cache (BPC) only. The date and time when the object was last loaded from the BP cache into the buffer pool. To select objects, see *Date Specification* and *Time Specification*.
1.BPperiod*	BP cache (BPC) only. The time frame the object has been available in the buffer pool starting with the time the object was first loaded and ending with the time the object was first swapped from the buffer pool into the BP cache. After 24 hours, the display of the time frame is canceled and replaced by this sign: **:**:**.*
NatVers*	The Natural version number an object is cataloged with.

* press PF11 to display these columns as described in *PF Keys and Direct Commands*

This section covers the following topics:

- Name and Range Specification

- Date Specification

- Time Specification

Name and Range Specification

You can shorten the list of objects displayed on the **List Objects** screen by entering a name or a range of names in the input fields for **Library** and/or **Object**.

In the list of options below, *value* is any combination of one or more characters:

Input Value	Selected Libraries/Objects
*	All libraries/objects. This is the default.
value	All libraries/objects with a name equal to *value*.
*value**	All libraries/objects with a name that starts with *value*. Example: AB* Selected: AB, AB1, ABC, ABEZ Not selected: AA1, ACB
value?	All libraries/objects with a name that starts with *value* and ends with any single character for each question mark (?) entered. Example: ABC? Selected: ABCA, ABCZ Not selected: AXC, ABCAA
value?*value*? *value***value*? **value*?*value**	All items that match *value* combined with asterisk (*) and question mark (?) in any order. Example: A?C*Z Selected: ABCZ, AXCBBBZ, ANCZ Not selected: ACBZ, ABDEZ, AXCBBBZA
value>	All libraries/objects with a name greater than or equal to *value*. Example: AB> Selected: AB, AB1, BBB, ZZZZZZZ Not selected: AA1, AAB
value<	All libraries/objects with a name less than or equal to *value*. Example: AX< Selected: AB, AWW, AX Not selected: AXA, AY

Date Specification

You can shorten the list of objects displayed on the **List Objects** screen by entering a date, a range of dates, a special date or a range of special dates in the input fields for dates.

A date must be specified in the format *YYYYMMDD* (*YYYY* = year, *MM* = month, *DD* = day).

In the list of options below, *value* is any combination of one or more digits:

Input Value	Selected Objects
YYYYMMDD	All objects with a date equal to *YYYYMMDD*. Example: 20070630

Input Value	Selected Objects
*value****	All objects with a date that starts with *value*. Example: `2007*` Selected: 20070101 to 20071231 Not selected: 20061231, 20080101
value>	All objects with a date greater than or equal to *value*. Example: `2007>` Selected: 20070101 to 20070101 Not selected: 20061231
value<	All objects with a date less than *value*. Example: `2007<` Selected: 20060101 to 20061231 Not selected: 20070101, 20071231
Special Dates	

`TODAY`
 	
or
 	
`TO`+/-*n*
	All objects with the date of the current day or a day before or after the current day:
	
	`TODAY` All objects with the date of the current day.
	
	`TO`+/-*n* All objects with the date of the current day plus or minus *n* days.
	
	        Example: The current date is June 30th of 2007.
	        `TO-5` selects 20070625.

`YESTERDAY`	All objects with the date of the day before the current day. Example: The current date is June 30th of 2007. `YESTERDAY` selects 20070629.
`MONTH`	All objects with the date range of the current month. Example: The current month is June of 2007. `MONTH` selects 20070601 to 20070630.
`YEAR`	All objects with the date range of the current year. Example: The current year is 2007. `YEAR` selects 20070101 to 20071231.

Time Specification

You can shorten the list of objects displayed on the **List Objects** screen by entering a time or a range of times in the input fields for times.

The time must be specified in the format *HH*:*II*:*SS* (*HH* = hours, *II* = minutes, *SS* = seconds).

In the list of options below, *value* can be any combination of one or more digits:

Input Value	Selected Objects
HH:*II*:*SS*	All objects with a time equal to *HH*:*II*:*SS*. Example: `14:15:16`
*value**	All objects with a time that starts with *value*. Example: `13*` Selected: 13:00:00, 13:10:53, 13:59:59 Not selected: 12:59:59, 14:00:00
value>	All objects with a time greater than or equal to *value*. Example: `12:30>` Selected: 12:30:00, 12:30:01, 16:34:01 Not selected: 12:29:59
value<	All objects with a time less than *value*. Example: `12:30<` Selected: 12:29:59 Not selected: 12:30:00

PF Keys and Direct Commands

On the **List Objects** screen, 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. If chosen with the cursor on column **C**: lists all commands and functions available. If chosen with the cursor on the input fields underneath the column titles: lists all possible input values for object selection.
PF3	EXIT	Leaves the current function/screen and displays the previous screen.
PF4	LAST	Displays the SYSBPM direct command entered most recently.
PF5	CACHE	Only applicable if BP cache data exists. Scrolls to the top of the list with statistical data on BP cache objects.
PF6	–	Scrolls to the top of the list with statistical data on buffer pool objects.
PF7	–	Scrolls one page up in a list.
PF8	+	Scrolls one page down in a list.
PF9	++	Scrolls to the end of the list.
PF10	<	Scrolls left in the list.
	LEFT	Press PF11 to scroll to the right.
PF11	>	Scrolls right in the list and displays the additional screen columns: **BP Load Time**, **BP Last Action**, **BPC Load Time**, **BPC Last Get**, **BPC Last Put** and **1.BPperiod**.
	RIGHT	Press PF10 to scroll to the left.
PF12	CANCEL	Same as EXIT.
PF15	MENU	Invokes the SYSBPM **Main Menu**.

Line Commands

On the **List Objects** screen, in column **C**, for each object displayed, you can enter one of the line commands listed below:

Command	Function
CL	Buffer pool only. Releases an object marked as resident.
DE	Marks an object to be deleted from the buffer pool or BP cache. The object is deleted as soon as the relevant **Use** count changes to 0 (object no longer used). If issued for a buffer pool object, the object will be deleted from both the buffer pool and the BP cache. If issued for a BP cache object, the object will be deleted from the BP cache only.
HD	Buffer pool only. Displays in hexadecimal format the directory information of an object.
HE	Buffer pool only. Corresponds to the function **Hexadecimal Display** as described in the relevant section.
FO	Buffer pool only. Deletes an object immediately from the buffer pool, regardless of the relevant **Use** count.
LD	Corresponds to the function **Directory Information** as described in the relevant section.
RE	Buffer pool only. Marks an object as resident.
ZO	Zooms in the fields **Object**, **Use**, **Max**, **Reuse**, **TotalUC**, **ObjSize** and **Sto** and displays them in full length. To zoom out, press ENTER.

For each command entered, a confirmation message appears for the relevant line overwriting text of rows displayed on the screen. Possible messages are:

- Failed (in response to any function that has not been executed successfully),

- Deleted (in response to the command DE or FO),

- Released (in response to the command CL) and

- Resident (in response to the command RE).