

# Global Caching

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## Global Caching Main Menu

The Global Cache Main Menu is used to select the global caching function to be executed.

```

14:43:15          ***** A D A B A S CACHING FACILITY *****      2004-05-11
                                     - Global Cache Main Menu -      PCH0002
                                                                    Global Cache

          Code      Function
          ----      -
          D          Define RABNs to be Cached
          M          Global Cache Maintenance
          O          Maintain Cache Spaces
          P          Maintain Cache Parameters
          S          Cache Session Summary
          ?          Help
          .          Exit
          ----      -

Code ..... _
Cache Space No .. _____
DataBase ..... 1955   (WIS1955)

Command ==>
PF1----- PF2----- PF3----- PF4----- PF6----- PF7----- PF8----- PF12-----
Help              Exit                               Menu

```

The following function codes are available:

Code	Description
D	Define a new cache space for one or more RABNs
M	Perform global operations on all cache spaces defined for the database
O	Display and modify individual cache spaces defined for the database
P	Display and modify current settings of ADARUN parameters
S	Display summary cache session statistics

## Define RABNs to be Cached

Selecting option D from the Global Cache Main Menu displays a menu of functions for defining one or more RABNs to be cached:

```

14:57:55          ***** A D A B A S CACHING FACILITY *****          2004-05-11
                                     - Define RABNs to be Cached -                                     PCHD002
                                                                                                             Global Cache

                Code      Function
                ----      -
                A         Define Asso Cache
                D         Define Data Cache
                ?         Help
                .         Exit
                ----      -

Code ..... _
Memory Type ..... _
RABN Number From .. _____
RABN Number To .... _____
Cache Space No .... _____
Database ..... 1955   (WIS1955)

Command ==>
PF1----- PF2----- PF3----- PF4----- PF6----- PF7----- PF8----- PF12-----
Help              Exit                               Menu

```

Field	Description
Code	RABNs may be cached in Associator (option A) and/or Data Storage (option D) space. A separate operation is required for each type of caching.
Memory Type	The memory type can be extended memory (E), data space (D), hiperspace (H), virtual 64 backed by large pages (L), or virtual 64 (V). The choices available depend on the operating system configuration under which Adabas is running. Virtual 64 is only available for systems running z/OS version 1.2 or above on the appropriate hardware. Virtual 64 backed by large pages is only available for systems running z/OS Version 1.9 or above on the appropriate hardware.
RABN Number From...To	Specifying the start RABN (RABN Number From...) and the end RABN (RABN Number To...) defines a RABN range to be cached in the defined cache space. If only one RABN is to be cached, it is not necessary to specify an ending RABN number.
Cache Space No	<p>A cache space number (CSN) is a unique number called the RABN Range ID that will be assigned to the new RABN range. Valid values are 0 through 65535. If the number specified is already in use, the new RABN range definition is ignored and an error message is displayed on both DDPRINT and the operator console. If no number is provided or zero is specified, a CSN allocated by the nucleus will be returned.</p> <p><b>Note:</b> Cache Space Number (CSN) is a term retained for compatibility with earlier versions of Adabas Caching. However, the CSN now identifies the RABN Range ID to be used as there is no longer a direct correlation between cache spaces and RABN ranges.</p> <p>The settings for the cache spaces being defined correspond to those specified by the ADARUN parameters CASSODSP, CASSOEXT, CASSOHSP, CASSOV64; CDATADSP, CDATAEXT, CDATAHSP, and CDATAV64. If a cache space size greater than CASSOMAXS or CDATAMAXS is calculated based on the RABN range specified, you have the opportunity to change the relevant parameter value before the cache space is defined.</p> <p>The corresponding direct commands are</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p style="text-align: center;"><a href="#"><u>DEFINE</u> <u>CACHE</u></a></p> </div> <p>and</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p style="text-align: center;"><a href="#"><u>ADD</u> <u>CACHE</u></a></p> </div>

## Global Cache Maintenance

Selecting option M from the Global Cache Main Menu displays a menu of functions for maintaining cache spaces:

```

15:13:08          ***** A D A B A S C A C H I N G   F A C I L I T Y   *****      2004-05-11
                    - Global Cache Maintenance -                                PCHM002
                                                                                               Global Cache

                Code      Function
                ----      -
                D          Delete Cache
                M          Modify Cache
                E          Enable Cache
                S          Disable Cache
                ?          Help
                .          Exit
                ----      -

Code .....
Cache Space No .. ALL
Database ..... 1955   (WIS1955)

Command ==>
PF1----- PF2----- PF3----- PF4----- PF6----- PF7----- PF8----- PF12-----
Help                Exit                Menu

```

From this screen, global operations can be performed on *all* cache spaces defined for the database. The allowed functions are

D	Delete all cache spaces. Once deleted, spaces must be redefined using Main Menu function D or by restarting the Adabas nucleus with the relevant ADARUN parameters.
M	Move all cache spaces to the memory type (E for extended; D for data space; H for hiperspace; L for virtual 64 backed by large pages; V for virtual 64) you specify on the Memory Type window that appears.
S	Disable all cache spaces.
E	Start cache operation for all cache spaces.

The corresponding direct command is



These same functions can be performed on individual cache spaces using the Maintain Cache Spaces function (menu option O).

## Maintain Cache Spaces

Selecting option O from the Global Cache Main Menu displays a list of cache spaces currently allocated for the database:

```

15:16:05          ***** A D A B A S CACHING FACILITY *****      2004-05-11
DBID 1955          - Maintain Cache Spaces -                          PCHS002
                                                                Global Cache

Sel No   Mem.  Cach RABN Range          Last Activity   Stat Error Status
         Type Type From           To
-----
1 EXT   ASSO 281           801           2001-09-13 10:43 ALLO
2 EXT   DATA 1             630           2001-09-13 10:42 ALLO

Select DI(Display) EN(Enable) DS(Disable) DE>Delete) MO(Modify)

PF1----- PF2----- PF3----- PF4----- PF6----- PF7----- PF8----- PF12-----
Help                Exit       Refresh                Menu
    
```

**Note:**

If you specify the cache space number (CSN) on the Global Cache Main Menu along with function code O, the Cache Statistics screen for that CSN is displayed (DI) directly.

For each RABN range listed on the Maintain Cache Spaces screen, you can display and modify caching parameters by entering one of the following commands in the Select column:

Cmd	Action
MO	Move the selected cache space to the memory type (E for extended; D for data space; H for hiperspace; L for virtual 64 backed by large pages; V for virtual 64) you specify on the Memory Type window that appears.
DE	Delete the selected cache space. Once deleted, the space must be redefined using the Main Menu function D or the relevant ADARUN parameters.
DI	Display the detailed cache space statistics. The information provided is the same as that resulting from the CSTAT operator command.
DS	Disable the selected cache space.
EN	Start caching operation for the selected cache space.

The other columns on the Maintain Cache Spaces display contain the following information:

Column	Description
No.	Cache space number (CSN). This is actually a unique RABN Range ID as there is no longer a direct correlation between cache spaces and RABN ranges.
Memory Type	Caching type for each cache space: extended storage (EXT), data spaces (DS), hiperspaces (HS), virtual 64 backed by large pages (L64) or virtual 64 storage (V64).
Cache Type	Database component being cached in the cache space: Associator (ASSO), Data Storage (DATA), Work part 2 (WRK2), or Work part 3 (WRK3).
RABN Range	The starting (From...) and ending (To...) RABNs of the RABN range being cached in the cache space.
Last Activity	The date and time the cache space was last accessed.
Status	The current status of the cache space: disabled (DISA); unallocated (UNAL); or ALLC (allocated).
Error Status	If an error condition has occurred, the cause of the error will be displayed in this field.

## Cache Statistics

Entering DI in the Select column on the Maintain Cache Spaces screen or selecting option O and specifying a cache number on the Global Cache Main Menu displays the Cache Statistics screen for an individual cache space:

```

15:23:54          ***** A D A B A S C A C H I N G   F A C I L I T Y   *****      2004-05-11
DBID 1955                    - Cache Statistics -                                PCHS002
                                                                Global Cache

Cache Space No ..... 2
Memory Type ..... EXT
Cache Component ... DATA
RABN-range ..... 1 - 630
Last Activity ..... 2001-09-13 10:42:51
Cache Status ..... ALLOCATED
Cache Writes ..... 6322
Max. Cache used ... 236180
Cache Size ..... 1515520
Cache Efficiency .. 99.0 %
Cache Reads ..... 6273
Read EXCPS ..... 62
Total Reads ..... 6335
RABN's in Cache ... 49
RABN's/Cache Space. 314
RABN Index Size ... 2536 (bytes)

Elapsed Time per Cache Read Request
Max. ... 0.013168
Min. ... 0.000002
Avg. ... 0.000013

EXCIP Time <in microseconds>
Max. ... 0.007237
Min. ... 0.003476
Avg. ... 0.003923

Press ENTER to continue

```

The information displayed on this screen is the same as that displayed by the CSTAT operator command.

**Note:**

Values for Max. Cache used, Cache Size, RABNs in Cache, and RABNs/Cache Space represent bytes, but may be marked with a K (1 kilobyte=1024 bytes), M (1 megabyte=1,048,576 bytes), or G (1 gigabyte=1,073,741,824 bytes) indicator when the size of the value requires it.

## Maintain Cache Parameters

Selecting option P from the Global Cache Main Menu displays the current Adabas Caching (ADARUN) parameter values and allows you to change them:

```

15:28:46          ***** A D A B A S C A C H I N G   F A C I L I T Y   *****          2004-05-11
DBID 1955          - Maintain Cache Parameters -          PCHS002

Display Cache Space Stats. YES_          (CDISPSTAT)
Minimum Buff. Efficiency . _____0          (CDEMAND)
Elapsed Time (GETMAIN) .. _____900 sec          (CRETRY)
Time of Inactivity ..... _____7200 sec          (CCTIMEOUT)
Max. No. Permitted ..... 5          (CMAXCSPS)

Max. ASSO Cache Size ..... _____303104 _          (CASSOMAXS)
Max. DATA Cache Size ..... _____303104 _          (CDATAMAXS)
WORK Memory Type ..... EXT          (CWORKSTORAGE)
Percent WORK2 RABNs ..... 0 %          (CWORK2FAC)
Percent WORK3 RABNs ..... 0 %          (CWORK3FAC)

Read-ahead Caching
Number of Buffers ..... 0          (CBUFNO)
Command Types Excluded . _____          (CEXCLUDE)
                Included . P/L/H/F   PHYS/LOGI/HIST/FIND

PF1----- PF2----- PF3----- PF4----- PF6----- PF7----- PF8----- PF12-----
Help                Exit                Menu
    
```

**Notes:**

1. Values for Max. ASSO Cache Size and Max. DATA Cache Size represent bytes, but may be marked with a K (1 kilobyte=1024 bytes), M (1 megabyte=1,048,576 bytes), or G (1 gigabyte=1,073,741,824 bytes) indicator when the size of the value requires it.
2. If the ADACSH-related ADARUN parameters are changed, I CMS must be issued before each nucleus is started in a VM/ESA environment.

For more information about these parameters, see the section Adabas Caching Parameters.

## Global Cache Session Summary

Selecting option S from the Global Cache Main Menu displays a summary of information for the Adabas Caching session including cache statistics, read-ahead statistics, and allocation statistics for active and inactive cache spaces. This information is the same as that displayed when the CSUM command is issued.

15:31:08	*****	A D A B A S	CACHING FACILITY	*****	2011-02-04
DBID 1955			Cache Session Summary		PCHS002
					Global Cache
					Page 1
Cache Allocation Summary					
Current Adabas Buffer Efficiency .....				278.7	
Projected NON-CACHE Buffer Efficiency ..				11.3	
Number of Active RABN ranges .....				0	
Number of RABN ranges defined .....				2	
	---	ASSO	---	DATA	---
	---		---		WORK
	---		---		---
Cache Statistics					
Cache writes .....	127		6322		0
Read EXCPS .....	17		62		0
Cache reads .....	118		6273		0
Total reads .....	135		6335		0
Efficiency .....	87.4		99.0		0.0
Read Ahead Statistics					
RABN's read .....	0		0		
EXCPS .....	0		0		
Ave. blks/EXCP .....	0.0		0.0		next page

Page 2					
Cache Size Summary					
	---	ASSO	---	DATA	---
	---		---		WORK
	---		---		---
Max Cache Size .....	1,480	K	1,480	K	0 K
EXT Allocated .....	296	K	296	K	0 K
EXT Highest .....	296	K	296	K	
DSP Allocated .....	0	K	0	K	0 K
DSP Highest .....	0	K	0	K	
HSP Allocated .....	0	K	0	K	0 K
HSP Highest .....	0	K	0	K	
V64 Allocated .....	0		0		0 K
V64 Highest .....	0		0		
L64 Allocated .....	0		0		0 K
L64 Highest .....	0		0		
Allocation Statistics marked as K, M, or G.					

Help screens are available by pressing PF1 from each page of the Cache Session Summary report.