File Level Caching

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File-Level Caching Main Menu

If the ADARUN CFILE parameter has been specified, the File Level Main Menu appears when you select Caching Facility from the main menu:

```
13:59:12          *****  A D A B A S  CACHING  FACILITY  *****        2004-05-11
                         - File Level Main Menu -                      PCF0002
                                                                      File Level


                      Code    Function
                      ----    ------------------------
                       D      Define File Cache
                       F      Files with Caching
                       M      Maintain File Cache
                       O      Maintain Cache Spaces
                       P      Maintain Cache Parameters
                       S      Cache Session Summary
                       ?      Help
                       .      Exit
                      ----    ------------------------
            Code .......... _
            DataBase ...... 1955   (WIS1955)



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

The following functions are available:

Code	Description
D	Define a new cache space for one or more files
F	Display detailed cache space statistics for a file
M	Enable, disable, or delete caching for one or more files
O	Enable, disable, or delete caching for the Work dataset
P	Display and modify current settings of ADARUN parameters
S	Display summary cache session statistics

Notes:

1. Although it is possible to define different cache spaces for the Associator and Data Storage of a single file using a separate ADARUN CFILE parameter for each, it is not possible to do so using Adabas Online System functions or operator commands. To define both Associator and Data Storage caching for a file using Adabas Online System functions or operator commands, you must use the BOTH option that uses the same caching parameters for both.
2. Once file level caching has been defined for a file using the ADARUN CFILE parameter, Adabas Online System functions, or operator commands, it is not possible to change the caching parameters without first deleting the defined cache space and then adding a new cache space with the different parameters. For example, if you have Data Storage caching defined for a file and you want to add Associator caching, you must first delete the Data Storage cache space and redefine caching for the file using the BOTH option.

Define File Cache

Selecting option D from the File Level Main Menu displays a menu of functions used to define a new cache space for one or more files:

```
 13:32:45            *****  A D A B A S   CACHING   FACILITY  *****       2004-05-11
                            - Define File Cache -                         PCFD002
                                                                         File Level
                       Code     Function
                       ----     -------------------------
                        A       Define Asso Cache
                        B       Define Asso and Data Cache
                        D       Define Data Cache
                        ?       Help
                        .       Exit
                       ----     -------------------------


       Code .............. _
       Memory Type ....... _
       File Number ....... 0____  - _____
       Class of Service .. _
       Database .......... 1955   (WIS1955)



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

Field	Description
Code	One or more files may be defined for Associator (option A), Data Storage (option D), or both (option B). No RABN ranges need to be specified: RABNs are added automatically. The file number may be any file within the database maximum files value.
Memory Type	The memory type may be extended (E), data space (D), hiperspace (H), virtual 64 backed by large pages (L), or virtual 64 (V), depending on the operating system environment.
File Number	The file or file range for which caching is to be defined.
Class of Service	The class of service. Possible values are: ● 1: cache up to 100% of the file ● 2: cache up to 75% of the file ● 3: cache up to 50% of the file ● 4: cache up to 25% of the file ● 5: cache up to 10% of the file

Files With Caching

Selecting option F from the File Level Main Menu displays a list of files that use caching:

```
13:37:48          *****  A D A B A S  CACHING  FACILITY  *****       2004-05-11
DBID 1955                    - Files with Caching -                   PCFF002
                                                                      File Level
Sel   File   File Name                     Cache Type   State
---   -----  -----------------------       ---------    -------------
         0   Unassigned RABNs              Asso/Data    Not accessed
         1   EMPLOYEES                     Asso/Data    Active
         2   VEHICLES                      Asso/Data    Active
         3 - 5 not loaded
         6   EXPANDED                      Asso/Data    Not accessed
         7   EXPANDED                      Asso/Data    Not accessed
         8 - 9 not loaded
        10   TRIGGER-FILE                  Asso/Data    Not accessed
        11 - 18 not loaded
        19   CHECKPOINT                    Asso/Data    Active
        20 - 25 not loaded



 Specify 'DI' (Display), EN (Enable) DE (Delete) or DS (Disable) for a file


Command ==>
PF1----- PF2------ PF3------ PF4------ PF6----- PF7----- PF8----- PF12-----
Help     Repos     Exit      Refr      --                +        Menu
```

Entering DI in the Sel column for a file displays detailed cache space statistics for that file.

The information displayed on the resulting Statistics screen is the same as that provided by the CFSTAT command.

```
13:41:59           *****  A D A B A S  CACHING  FACILITY  *****        2004-05-11
DBID 1955                        - Statistics -                        PCFF002
                                                                       File Level
File 1    EMPLOYEES
  Memory type ....... DSP
  Cache component ... Data  Class 1 (100%)
  RABN range ........ DS Blks       271 - 320
  Last activity ..... 2001-09-13  09:24:06
  Cache status ...... ALLOCATED
  Cache writes ......    12579
  Max. Cache used ...   231360        Elapsed time per Cache read request
  Cache Size ........  5118840            Max. ...    0.143685
  Cache efficiency ..     99.6 %          Min. ...    0.000002
  Cache reads .......    12547            Avg. ...    0.000029
  Read EXCPS ........       49
  Total reads .......    12596        EXCP Time (in microseconds)
  RABN's in Cache ...       32            Max. ...    0.049367
  RABN's/Cache Space.     1060            Min. ...    0.003509
  RABN Index Size ...      216 (bytes)    Avg. ...    0.009183


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

Each file may have several screens for each of the following:

AS	Unassigned Associator
AC	Address Converter
A2	Secondary ISNs
NI	Normal Index
UI	Upper Index
DS	Data Storage

The example screen shown here provides information for one DS extent of file number 1.

Maintain File Cache

Selecting option M from the File Level Main Menu displays a menu of functions used to enable, disable, or delete caching for one or more files:

```
13:43:56           *****  A D A B A S  CACHING  FACILITY  *****        2004-05-11
                        - Maintain File Cache -                        PCFM002
                                                                      File Level
                   Code     Function
                   ----     ------------
                    D       Delete Cache
                    E       Enable Cache
                    S       Disable Cache
                    ?       Help
                    .       Exit
                   ----     ------------

          Code ......... _
          File Number .. 0____ - _____
          Database ..... 1955   (WIS1955)




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

This following functions are available:

D	Delete all cache spaces for a particular file or range of files
E	Enable all cache spaces for a particular file or range of files
S	Disable all cache spaces for a particular file or range of files

Maintain Cache Spaces

Selecting option O from the File Level Main Menu displays the Work cache spaces:

```
13:45:34          *****  A D A B A S  CACHING  FACILITY  *****     2004-05-11
DBID 1955                    - Maintain Cache Spaces -              PCHS002
                                                                   File Level
Sel No    Mem. Cach RABN Range            Last Activity    Stat Error Status
          Type Type From     To
-- -----  ---- ---- -------------------- ---------------- ---- ----------------
   64001 EXT  WRK2 202      211                           UNAL
   64002 EXT  WRK3 222      2392                          UNAL




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


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

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

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 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	Enable 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 location 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: 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.

Work Cache Space Statistics

Entering DI in the Select column on the Maintain Cache Spaces screen displays the Cache Statistics screen for an individual Work cache space:

```
13:47:03           *****  A D A B A S  CACHING  FACILITY  *****      2004-05-11
DBID 1955                      - Cache Statistics -                  PCHS002
                                                                    File Level
Cache Space No ......   1
  Memory Type ....... EXT
  Cache Component ... WRK2
  RABN-range ........ 202 - 211
  Last Activity .....
  Cache Status ...... UNALLOCATED
  Cache Writes ......         0
  Max. Cache used ...         0          Elapsed Time per Cache Read Request
  Cache Size ........     57344              Max. ...     0.000000
  Cache Efficiency ..       0.0 %           Min. ...     0.000000
  Cache Reads .......         0              Avg. ...     0.000000
  Read EXCPS ........         0
  Total Reads .......         0          EXCP Time <in microseconds>
  RABN's in Cache ...         0              Max. ...     0.000000
  RABN's/Cache Space.        10              Min. ...     0.000000
  RABN Index Size ...        56 (bytes)     Avg. ...     0.000000


  Press ENTER to continue
```

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

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.

Maintain Cache Parameters

Selecting option P from the File Level Main Menu displays the current setting of the Adabas Caching (ADARUN) parameters and allows you to change them:

```
14:00:14            *****  A D A B A S   CACHING   FACILITY  *****        2004-05-11
DBID 1955                    - Maintain Cache Parameters -               PCFP002

 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 ..... ___1024000 _                    (CASSOMAXS)
 Max. DATA Cache Size ..... ___1024000 _                    (CDATAMAXS)
 WORK Memory Type ......... EXT                             (CWORKSTORAGE)
 Percent WORK2 RABNs ......  50 %                           (CWORK2FAC)
 Percent WORK3 RABNS ......  50 %                           (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
```

Note:
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. In the example screen, the value 1,024,000 may also be designated as 1000 K.

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

Cache Session Summary

Selecting option S from the File Level 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.

```
14:19:37          *****  A D A B A S  CACHING  FACILITY  *****          2004-05-11
DBID 1955                   - Cache Session Summary -                    PCF0002
                                                                         File Level
 Cache Allocation Summary                                                Page 1
   Current Adabas Buffer Efficiency .......          473.2
   Estimated NON-CACHE Buffer Efficiency ..           10.6
   Number of Active Cache Spaces ..........             10
   Number of Cache Spaces defined ........             15

                         --- ASSO ---       --- DATA ---       --- WORK ---
 Cache Statistics
   Cache writes .......            214            12596                0
   Read EXCPS .........             17               62                0
   Cache reads ........            203            12548                0
   Total reads ........            220            12610                0
   Efficiency .........           92.2             99.5              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 .....        5,000 K          5,000 K          5,884 K
   EXT Allocated ......            0 K              0 K              0 K
   EXT Highest ........            0 K              0 K
   DSP Allocated ......        1,000 K          1,000 K              0 K
   DSP Highest ........        1,000 K          1,000 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.