

Resource Utilization

Selecting Resource Utilization (option "U") from the Session Monitoring menu invokes the Resource Utilization menu:

```

14:42:51          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
                      - Resource Utilization -                          PACU002

Code  Service                Code  Service
-----
C    Command usage          P    PLOG status
F    File usage             S    System status
H    High water marks (pools/queues)
L    Workpool (LWP) usage   T    Thread usage
N    Nucleus File Status   W    WORK status
?    Help                  X    Cluster usage
.    Exit

-----

Code ..... _
File Number .. 0
Database ID .. 1955   (WIS1955)           NucID .. 1022

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

```

The resource utilization displays provide a comprehensive overview of Adabas operation.

Each of the resource utilization options contain a refresh capability (PF4) that allows you to refresh the displayed values, a convenience for long-term monitoring of Adabas system functions.

This chapter covers the following topics:

- Command Usage
- File Usage
- High Water Marks
- Work Pool (LWP) Usage
- Nucleus File Status
- Protection Log (PLOG) Status
- System Status
- Thread Usage
- WORK Status

- Cluster Usage

Command Usage

Overall Command Usage (option "C") displays the total and average execution time of each Adabas command type issued during the current session and processed by the Adabas nucleus, and the total of all Adabas commands issued.

The equivalent direct command is

```
DISPLAY CMDUSAGE
```

```
14:44:36          ***** A D A B A S  BASIC  SERVICES  *****          2006-07-14
DBID 105          -  Command Usage  -          PACUC02

Total Commands .. 19051
CMD-Type I Nr.  CMDs   I Aver. Dur. I   CMD-Type I Nr.  CMDs   I Aver. Dur. I
-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
A1/4  I      592 I      0.7 I      BT   I          5 I
CL    I         1 I     49.3 I     ET   I         75 I
E1/4  I      119 I      7.4 I     L1/4 I       1570 I      1.1 I
L2/5  I         I         I     L3/6 I       9842 I      6.7 I
L9    I      473 I      2.3 I     LF   I          I         I
N1/2  I      204 I     10.3 I     OP   I         10 I      74.2 I
UC    I        70 I     11.3 I     RC   I       5732 I         I
RE    I         I         I     REST I         38 I         I
S1/4  I      320 I     21.0 I     S2   I          I         I
S5    I         I         I     S8   I          I         I
S9    I         I         I         I         I         I
```

File Usage

Overall File Usage (option "F") displays all files of the database used during the session and the number of accesses to each file.

The equivalent direct command is

```
DISPLAY FILUSAGE
```

```
14:45:31          ***** A D A B A S  BASIC  SERVICES  *****          2006-07-14
DBID 105          -  File Usage  -          PACUF12

Fnr  I Tot.  Cmds   Fnr  I Tot.  Cmds   Fnr  I Tot.  Cmds   Fnr  I Tot.  Cmds
-----|-----|-----|-----|-----|-----|-----|-----|-----|
  0 I   5898      9 I   345   17 I    24   50 I    62
100 I  7939   101 I  4752  110 I   39
```

If a file number other than zero is specified on the Resource Utilization menu, the File Usage display shows file use information for the specified file:

```

14:53:02          ***** A D A B A S  BASIC  SERVICES  *****          2006-07-14
DBID 105          -  File Usage  -          PACUF02

Usage Numbers for File 100  :    ACC Users .. 1          EXU Users ..
                             UPD Users ..          UTI Users ..
                             -- USERS --
      M  TID/User  Jobname      CPU-ID      VM-ID      Open Mode
      -  - - - - -  - - - - -  - - - - -  - - - - -  - - - - -
                             BADFAM 3  COMPLETE  999999999999          EXF UTI EXU

Mark entry with a 'S' to select a User
Total Users in this list for this file is 1          Page 1 of 1
    
```

High Water Marks

High Water Marks (option "H") displays the maximum percent of use of selected pools and queues in the current session, and the date and time when the high point was reached.

Values are displayed for the user, command, and hold queues; the ISN list and sequential command tables; the format and work pools; and the attached buffers (NAB).

These values are a good starting point when looking for a problem with limited buffer, pool, or queue space, or if you are looking for unused storage resources.

The equivalent direct command is

```

DISPLAY HWM
    
```

```

15:55:18          ***** A D A B A S  BASIC  SERVICES  *****          2006-07-14
DBID 105          -  High Water Marks  -          PACUH02

Pool / Queue      I      Size      I      Used      I %Used I      Date      Time      I
-----
Attached Buffer(NAB) I      204800 I      12032 I      5.8 I
Command Queue (NC) I      34560 I      384 I      1.1 I 2006-07-14 14:55:06 I
Format Pool (LFP) I      80000 I      4364 I      5.4 I 2006-07-14 14:25:23 I
Hold Queue (NH) I      350056 I      1736 I      0.4 I 2006-07-14 14:46:04 I
ISN-List Table (LI) I      50000 I      0 I      0.0 I
Seq. Cmd. Table(LQ) I      32000 I      440 I      1.3 I 2006-07-14 08:00:01 I
User Queue (NU) I      58644 I      2524 I      4.3 I 2006-07-14 14:44:26 I
Work Pool (LWP) I      250000 I      92256 I      36.9 I 2006-07-14 14:29:33 I
    
```

Work Pool (LWP) Usage

Work Pool (LWP) Usage (option "L") displays the length of the used and unused parts of the work pool as well as the length of the longest single unused part. These numbers can be used to tune the work pool length for the next session.

The equivalent direct command is

```
DISPLAY LWPUSAGE
```

```
16:06:30          ***** A D A B A S  BASIC  SERVICES  *****          2006-07-14
DBID 105                -  Workpool Usage  -                          PACUL02

Workpool (LWP)
Used part .....          1440 Bytes
Unused part .....        248288 Bytes
Biggest unused part ..    248288 Bytes
```

Nucleus File Status

Nucleus File Status (option "N") is the equivalent of the DNFV operator command.

```
16:09:17          ***** A D A B A S  BASIC  SERVICES  *****          2006-07-14
DBID 1955                -  Nucleus File Status  -                          PACUN02
NucID 1021

          Locking
File   NucID  Access count  Update count  State
-----
24          0           0           0 Access
25          0           0           0 Access, Update

Last page
PF1----- PF2----- PF3----- PF4----- PF7----- PF8----- PF9----- PF12-----
Help      Repos    Exit      Refresh   -         +         Menu
```

In an Adabas cluster environment, the file may be locked for exclusive use by another cluster nucleus. If this is the case and the file is in the nucleus file status table, the Locking NucID column for the file shows the ID of the nucleus that has exclusive control.

The Access count / Update count fields display the number of access or update users, respectively, that refer to the specified file in their user queue elements (UQEs). These users either have specified the file in an OP command with "R"-option or are using the file in an as yet incomplete transaction.

A State field indicates when the file is used for access only or for access and update. The State field indicates to what extent a nucleus can use a file on its own. If the requested use exceeds the given state, the nucleus must first communicate with the other nuclei in the cluster in order to upgrade the state.

Protection Log (PLOG) Status

Protection Log (PLOG) Status (option "P") displays the status of dual protection logs, if used.

The equivalent direct command is

```
DISPLAY PLOGSTATUS
```

```
16:16:37          ***** A D A B A S  BASIC SERVICES *****      2006-07-14
DBID 105                - PLOG Status -                          PACUP02

    The nucleus is currently writing on ..... 1
    Size of one PLOG area (in BLKs.) ..... 40
    Last block written ..... 25 ( 62 %)
    Number of switches since nucleus start .. 10
    Date/Time of last switch ..... 2006-07-14 10:31:12
```

System Status

System Status (option "S") displays I/O counts for the ASSO, DATA, WORK, and PLOG data sets; remote and local call distribution; and other current session status information.

Note:

For Adabas 7.4 and above, "Logical Reads" can now display up to 23 digits; "Logical Reads (binary)" has been discarded.

The equivalent direct command is

```
DISPLAY SYSTEMSTATUS
```

```

16:20:16          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
DBID 1955          - System Status -          PACUS02
NucID: 1022

          Physical
          Reads          Writes          Call Distribution
-----
ASSO          370          67  Remote Logical .....          0
DATA          3          18  Remote Physical .....          0
WORK          2          104 Local Logical .....          860
PLOG          67          Local Physical .....          0
Logical Reads:
.....
Buffer Efficiency ....          0.9  No. of HQEs active .....          0
                                         No. of UQEs in User Queue ..          2
Format Translations ..          51  No. of CQEs waiting in CQ ..          0
Format Overwrites ....          0
                                         Total intern. Autorestarts .          0
Throw Backs for ISN ..          0  No. of PLOG switches .....          0
Throw Backs for Space.          0  No. of Bufferflushes .....          18
                                         page 1 of 2

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

If you are running Adabas version 8.1, press PF8 to display an additional screen that indicates if one or more of the following are in progress:

- Online database save running;
- ADAEND in progress;
- Online file save running;
- READONLY/UTIONLY transition;
- READONLY status;
- Update processing suspended;
- ET-sync in progress;
- UTIONLY status; and
- Exclusive-DB-control utility running.

Otherwise, "Adabas operation normal" is displayed.

```
16:37:41          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
DBID 1955          - System Status -          PACUS02
NucID: 1021

                          Nucleus Status Flags
                          -----
                          Adabas operation normal

                                                                page 2 of 2

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

Thread Usage

Thread Usage (option "T") displays a table of all defined Adabas threads, the status of each, the command type currently in process in each active thread, and the number of commands processed by each thread in the current session.

The equivalent direct command is

```
DISPLAY THREADUSAGE
```

```

16:54:21          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
DBID 6              - Thread Usage -                               PACUT02

Nr. I Thread Status      I Command Type      I Wait Event      I Nr. CMDs  I
-----
 1 I Waiting for event    I Update            I Queued Event    I 39327     I
 2 I Waiting for event    I Update            I I/O              I 19228     I
 3 I Waiting for event    I Update            I I/O              I 16170     I
 4 I Waiting for event    I Update            I Async Work I/O   I 14376     I
 5 I Waiting for event    I Update            I Queued Event     I 13205     I
 6 I Waiting for event    I Update            I Async Work I/O   I 10461     I
 7 I Waiting for event    I Update            I PLOG I/O         I 9872      I
 8 I Waiting for event    I Update            I Queued Event     I 9904      I
 9 I Waiting for event    I Update            I Queued Event     I 8233      I
10 I Waiting for event    I Update            I Queued Event     I 8987      I
11 I Waiting for event    I Update            I Queued Event     I 8136      I
12 I Waiting for event    I Update            I Queued Event     I 7931      I
13 I Waiting for event    I Update            I Queued Event     I 7523      I
14 I Active               I Simple Cmd.       I                  I 7168      I
15 I Not active           I                    I                  I 6643      I

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

WORK Status

WORK status (option "W") displays the WORK area sizes (in blocks) for the

- data protection area (Work part 1; ADARUN LP parameter);
- area used for intermediate ISN lists (Work part 2; ADARUN LWKP2 parameter);
- area used for resulting ISN lists (Work part 3);

The equivalent direct command is

```

DISPLAY WORKSTATUS
    
```



```

16:57:32          ***** A D A B A S  BASIC  SERVICES  *****          2006-07-14
DBID 1955          - WORK Status -          PACUW02

          W O R K  Dataset
+-----+
I Protection Area          500 Blks I
I-----I
I Intermediate ISN Area          76 Blks I
I-----I
I Resulting ISN Area          1315 Blks I
I-----I
I Distributed Transaction Processing Area          500 Blks I
+-----+

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

```

If you have DTP=RM in your ADARUN parameter settings, and press PF4 on the new screen, then the new screen DTP Work Area displays (shown below):

```

17:04:47          ***** A D A B A S  BASIC  SERVICES  *****          2006-07-14
          - DTP Work Area -          PACUK02

          Code      Service
          -----
          D          Display PET-status users
          H          Display heuristically terminated users
          R          Display DTP rabns
          U          Work Part 4 usage
          X          Force heuristic BT/ET
          ?          Help
          .          Exit
          -----

Code ..... _
Selected User ....
Database ID ..... 1955 (WIS1955)

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

```

The DTP Work Area menu performs the following functions:

Function	Action
Display PET-status users	Displays the current environment of PET-status users. You can select one or more to display additional information.
Display heuristically terminated users	Displays a list of the heuristically terminated users. You can select one or more to display additional information.
Display DTP Rabns	Displays a list of allocated RABNs. You can select a user, display additional information, issue BT or ET, and display total RABNs for a user.
Work Part 4 Usage	Displays the breakdown of information of the Work Part 4.
Force Heuristic BT/ET	Issues a BT or ET for a selected user. Select the user through the "Display DTP RABNs" menu item.
PF2	Clears the selected user.

If you select Display PET-status users, the screen Display PET-Status Users displays (shown below):

```

17:17:39          ***** A D A B A S BASIC SERVICES *****          2006-07-14
DBID 1955          - Display PET-Status Users -          PACUKD2

Mark entries with 'D' (Display):

M I Global ID                      I RMID hex I
-----
_ I 000F710020640000B96353B18528B38200000000B96353B185286F02 I 044E0059 I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I
_ I

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

Cluster Usage

Note:

This option is only active in an Adabas nucleus cluster environment.

Cluster usage (option "X") displays nucleus cluster statistics that are equivalent of those displayed using the DXCACHE, DXLOCK, and DXFILE operator commands. See the *Adabas Cluster Services* documentation or the *Adabas Parallel Services* documentation for more information.

The equivalent direct command is

```

DISPLAY CLUSTERSTATUS
    
```

```

17:20:31          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
                                - Cluster Usage -                               PACUX02

                                Code   Service
                                ----   -
                                C     Cache statistics
                                F     File statistics
                                L     Lock statistics
                                ?     Help
                                .     Exit
                                ----   -

Code ..... _
File Number .. 0
Database ID .. 1955   (WIS1955)                               NucID .. 1021

Command ==>
PF1----- PF2----- PF3----- PF4----- PF6----- PF9----- PF10----- PF12-----
Help                Exit                Fuse         Flist         Menu
    
```

Cache Statistics

Choosing Cache Statistics (option "C") from the Cluster Usage menu displays the following menu:

```

17:24:23          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
                                - Cache Statistics -                               PACUX12

                                Code   Service
                                ----   -
                                K     Cast-out / Directory
                                P     Publishing requests
                                X     Individual cache blocks
                                .     Exit
                                ?     Help
                                ----   -

Code .....
Database ID .. 1955   (WIS1955)                               NucID .. 1021

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

Cast-out / Directory

Choosing Cast-out / Directory (option "K") from the Cache Statistics menu display the following:

```

17:31:23          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
DBID 1955          - Cast-out / Directory -          PACUX12
NucID 1021

      Cast-out Directory Reads          Directory Reads
      -----
Total .....          28          Total .....          5
  Sync .....          1          Sync .....          1
  Async ....          27          Async ....          4

      Unlock Cast-out Calls
      -----
Total .....          28
  Sync .....          1
  Async ....          27

PF1----- PF2----- PF3----- PF4----- PF7----- PF8----- PF9----- PF12-----
Help          Exit          Refresh          Detail          Menu
    
```

Counters have a multiplier column with the following values:

Value	The total shown is in ...
blank	bytes
K	kilobytes
M	megabytes
G	gigabytes
T	terabytes

If a number has a multiplier shown, it has been divided by the multiplier, showing the significant digits to 9 places with no decimal point.

Press PF9 to see the entire value. This value is the exact count up to 20 digits in length.

Publishing Requests

Choosing Publishing Requests (option "P") from the Cache Statistics menu display the following:

```

17:36:21          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
DBID  600          - Publishing Requests -          PACUX12
NucID  2

          Publishing Request Category
          -----
          Update sync .....          0
          BT or CL or ET ....          0
          Redo threshold ....          12
          Full bufferpool ...          10
          All blocks .....          2
          Specific RABN .....          8
          File DS blocks ....          4
          All DSST blocks ...          0
          File NI blocks ....          8

PF1----- PF2----- PF3----- PF4----- PF7----- PF8----- PF9----- PF12-----
Help       Exit       Refresh       Detail       Menu
    
```

All Cache Blocks

Choosing All Cache Blocks (option "X") from the Cache Statistics menu display the following:

```

17:43:05          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
DBID  1955        - All Cache Blocks -          PACUX12
NucID  1021

  Reads                                     Writes
  -----                                     -----
Total .....          167          Total .....          38,176
  Sync .....          24          Sync .....          15,148
  Async .....         143          Async .....          23,028

  In cache .....          49          Written .....          38,176
  Not in cache ..          118         Not written .....          0
  Struc. full ...          0          Struc. full .....          0

Cast-out Reads                               Other
  -----                                     -----
Total .....          212          Validates .....          187,677
  Sync .....          212          Invalid .....          43
  Async .....          0          Deletes .....          0
                                         Timeouts .....          0
                                         Redo processes .....          0

PF1----- PF2----- PF3----- PF4----- PF7----- PF8----- PF9----- PF12-----
Help       Repos     Exit       Refresh   PrevBlk   NxtBlk   Detail   Menu
    
```

Use PF7 and PF8 to scroll through the cache blocks; use PF2 to reposition.

Statistics are displayed for the following:

- All cache blocks;


```

17:52:02          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
DBID 1955          - File 25 Statistics -          PACUX22
NucID 1021
  Reads                                     Writes
  -----                                     -----
Total .....                67          Total .....                20,157
  Sync .....                0           Sync .....                7,583
  Async .....               67          Async .....               12,574

  In cache .....           0           Written .....            20,157
  Not in cache ..         67          Not written .....         0
  Struc. full ...         0           Struc. full .....         0

Cast-out Reads                               Other
  -----                                     -----
Total .....                78          Validates .....          79,248
  Sync .....                78          Invalid .....            0
  Async .....                0          Deletes .....            0
                                           Timeouts .....           0
                                           Redo processes .....      0

PF1----- PF2----- PF3----- PF4----- PF7----- PF8----- PF9----- PF12-----
Help      Repos      Exit      Refresh      Detail      Menu
  
```

Lock Statistics

Choosing Lock Statistics (option "L") from the Cluster Usage menu displays the following menu:

```

17:58:16          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
                                           - Lock Statistics -          PACUX32

Code  Service                                     Code  Service
-----
A    Buffer flush lock                             J    Global update command sync lock
B    Cancel lock                                  K    Hold ISN lock
C    Checkpoint lock                             L    New-Data-RABN lock
D    DSF lock                                    M    Online save lock
E    ETID lock                                   N    Parameter lock
F    File-lock-table lock                       O    Recovery lock
G    FST lock                                    P    RLOG lock
H    GCB lock                                    Q    Security lock
I    Global ET sync lock                        R    Spats lock
.    Exit                                        S    Unique descriptor lock
?    Help

-----
Code ..... _
Database ID .. 1955 (WIS1955)                   NucID .. 1021

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

Each of the options on the Lock Statistics menu displays statistics for a particular lock. For each lock, the screen displays obtain and release information about the various types of that lock that are currently in use by a cluster nucleus:

- The system may obtain locks conditionally or unconditionally, synchronously or asynchronously. A conditional request for a lock may be granted or rejected.
- Releases may be issued synchronously or asynchronously.

Hold ISN Lock

Choosing Hold ISN Lock (option "J") from the Lock Statistics menu displays the following:

```

18:08:16          ***** A D A B A S  BASIC  SERVICES *****          2006-07-14
DBID  1955                - Hold ISN Lock -                PACUX32
NucID 1021

      Obtains                                Releases
-----                                -----
Conditional ....          16,017          Issued .....          16,017
  Granted .....          16,017            Sync .....          15,971
  Rejected ....           0            Async .....           46
Unconditional ..           0

Sync .....                158
Async .....              15,859

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

Use PF7 and PF8 to scroll through the locks; use PF2 to reposition.