M21 System Activity Analysis

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Chapter 1. Overview

This document describes the program that is used to monitor and report on activity within the M21 system.

Chapter 2. mpsar - M21 System Activity Reporter

mpsar formats the output from the cumulative activity counters stored in the system memory and updated by the running M21 system or cumulative activity counters stored in a file that was written by *mpctl* . *mpsar* is normally called using the shell script *m21sar* .

The format of the options to control the behaviour of mpsar is as follows:

mpsar PARAMETERS [INTERVAL] [ITERATION]

Where:

INTERVAL is the amount of time in seconds to wait between samples of the counters.

ITERATION is the number of times to sample the counters.

INTERVAL and **ITERATION** are only valid with the **-d** option. The differences in the counters from one sample to the next are reported when both **INTERVAL** and **ITERATION** are specified. If either is missing then the current values of the counter are reported.

The possible values of the **PARAMETERS** are as follows:

Table 2-1.

Parameter	Description
-B	Show buffer wait counts.
-FN	Where **N** is a date and time to start reporting from. The format of **N** is a 2 - 12 character string **CCYYMMDDhhmm** . If the length is 2 it will be taken as **mm** , 4 as **hhmm** , 6 as **DDhhmm** , 8 as **MMDDhhmm** , 10 as **YYMMDDhhmm** , and 12 as **CCYYMMDDhhmm** . See the **-T** option. This option is not valid when using the **-d** option.
-JN	Show counter for only one job, where **N** is the job number. This option is not valid when using the **-f** option.
-TN	Where **N** is a date and time to stop reporting at. The format of **N** is a 2 - 12 character string **CCYYMMDDhhmm** . If the length is 2 it will be taken as **mm** , 4 as **hhmm** , 6 as **DDhhmm** , 8 as **MMDDhhmm** , 10 as **YYMMDDhhmm** , and 12 as **CCYYMMDDhhmm** . See the **-F** option. This option is not valid when using the **-d** option.
-W	Show waits on locks counters.

-a	The same as specifying all of the following options: **-B** , **-W** , **-af** , **-b** , **-c** , **-j** , **-l** , **-r** , **-t** , **-u** , **-w** , **-z** .
-af	Show all function type counters.
-b	Show Before Image Logging block write counters.
-c	Show MUMPS commands counter and CPU TIME. For systems with multiple CPUs this is all CPUs combined.
-dNAME	Where **NAME** is the full path name of the database to be accessed by *mpsar* . **NAME** should not contain any file extensions, i.e. NOT *NAME.cfg* . This option is mutually exclusive with the **-f** option.
-fNAME	Use file **NAME** for input. This option is mutually exclusive with the **-d** option.
-if	Show integer function counters.
-j	Show **SET** and **KILL** counters and journal file write counters.
-l	Show lock and spinlock counters.
-lf	Show logical function counters.
-m	Show the number of modified blocks in the buffer pools and the number of blocks that have been changed since the last full concurrent backup on a per volume basis. This option is not valid when using the **-f** option.
-mf	Show mixed function counters.
-nf	Show numeric function counters.
-p	Show counters based on a count per second.
-r	Show logical and physical block reads from the database and file and tape read counters.
-sf	Show string function counters.
-t	Show block read and write by type counters.
-u	Show the Before Image Logging process, disk write processes and journal writer process wake up counters.
-w	Show logical and physical block write to the data base and file and tape write counters.

-z	Show **ZJOB** s started, executed, kept and active counters.

Examples

Show current values of all counters.

```
mpsar -d/m21/db00/testdb -a
```

Show command counter and all function counters at 5 second intervals for 6 iterations.

```
mpsar -d/m21/db00/testdb -c -af 5 6
```

Show before image write counters, journal **SET** s and **KILL** s, write counters and **ZJOB** counters from a file.

```
mpsar -f/m21/db00/testdb.s20 -b -j -z
```

Sample Output

Full -a

```
COMMANDS: ___5364660
CPU TIME: 0:18:49
FUNCTIONS  INT: ____203037  LOG: ___4685575  MIX: ____247984
           NUM: ___2337644  STR: ___1493441
BIL BLOCKS: _____7660  WRITES: _____2646
JOURNAL SETS: _____76088  KILLS: _____479  WRITES: _____6631
LOCK CALLS:     __16391520  WAITS: _____11566
SPINLOCK CALLS: __31785240  DELAY1: _____9126  DELAY2: _____121
WAKEUPS (mpctl) JNL: _____2107  BIL: _____9585  DSK: _____36576
WAKEUPS (mpmse) JNL: _____1093  BIL: _____703
ZJOB STARTS: _____45870  EXECS: _____23  KEPT: ___2  ACTIVE: ___5
GET BUFFER:  _____3736  FREE BUFFER: _____0
GET DATA:     _____1159 _31.02%  CYCLE: _____0
GET GENERAL: _____121 __3.24%  CYCLE: _____0
GET HOG:      _____2456 _65.74%  CYCLE: __1294
GOT DATA/GENERAL: _____0  GOT DATA/HOG: _____0
GOT HOG/GENERAL: _____0  GOT HOG/DATA: _____0
GOT GENERAL/DATA: _____0
BUFFER WAITS: _____0  OVER 5 SECONDS: _____0
WAIT BIL GEN: _____3  BUF: _____42  MAP: _____0
WAIT JNL GEN: _____7  BUF: _____892
WAIT BUF BLK: _____37  HQ: _____1
WAIT BLK MAP: _____0
Block Logical Reads:
 UNKNOWN) _____0     GDIR) ____695250  POINTER) ____241457
```

```
     GDATA) _____263009    GXDATA) _____0       RDIR) ____285592
    RTNHDR) _____142792   RTNDATA) _____0     MAPBLK) _____6197
   JRNLBLK) _____0    SEQBLK) _____0     SPLDIR) _____0
    SPLBLK) _____0    VOLHDR) _____0     UCIBLK) _____0

Block Physical Reads:
   UNKNOWN) _____257      GDIR) _____3    POINTER) _____1148
     GDATA) _____1283    GXDATA) _____0       RDIR) _____7
    RTNHDR) _____105   RTNDATA) _____0     MAPBLK) _____5
   JRNLBLK) _____0    SEQBLK) _____0     SPLDIR) _____0
    SPLBLK) _____0    VOLHDR) _____0     UCIBLK) _____0

Block Physical Reads Percent Type:
   UNKNOWN) _____9.15      GDIR) _____0.11    POINTER) _____40.88
     GDATA) _____45.69    GXDATA) _____0.00       RDIR) _____0.25
    RTNHDR) _____3.74   RTNDATA) _____0.00     MAPBLK) _____0.18
   JRNLBLK) _____0.00    SEQBLK) _____0.00     SPLDIR) _____0.00
    SPLBLK) _____0.00    VOLHDR) _____0.00     UCIBLK) _____0.00

Block Physical Reads Percent Hits:
   UNKNOWN) _____0.00      GDIR) ____100.00    POINTER) _____99.52
     GDATA) _____99.51    GXDATA) _____0.00       RDIR) ____100.00
    RTNHDR) _____99.93   RTNDATA) _____0.00     MAPBLK) _____99.92
   JRNLBLK) _____0.00    SEQBLK) _____0.00     SPLDIR) _____0.00
    SPLBLK) _____0.00    VOLHDR) _____0.00     UCIBLK) _____0.00

Block Physical Writes:
   UNKNOWN) _____0      GDIR) _____16    POINTER) _____3566
     GDATA) _____79791    GXDATA) _____0       RDIR) _____2
    RTNHDR) _____4   RTNDATA) _____0     MAPBLK) _____6197
   JRNLBLK) _____0    SEQBLK) _____0     SPLDIR) _____0
    SPLBLK) _____0    VOLHDR) _____0     UCIBLK) _____0

Block Physical Writes Percent Type:
   UNKNOWN) _____0.00       GDIR) _____0.02    POINTER) _____3.98
     GDATA) _____89.08    GXDATA) _____0.00       RDIR) _____0.00
    RTNHDR) _____0.00    RTNDATA) _____0.00     MAPBLK) _____6.92
   JRNLBLK) _____0.00    SEQBLK) _____0.00     SPLDIR) _____0.00
    SPLBLK) _____0.00    VOLHDR) _____0.00     UCIBLK) _____0.00

File Reads _____4K    Tape Reads _____0K
Logical Reads:
  00) ___1480041  ___11562.8M   01) _____137020  _____1070.4M
  02) _____10228  _____79.9M   03) _____7008  _____54.7M

Physical Reads:
  00) _____1889  _____14.7M   01) _____593  _____4.6M
  02) _____205  _____1.6M   03) _____121  _____0.9M

Percent Hits:
  00) _____99.87                  01) _____99.57
  02) _____98.00                  03) _____98.27

File Writes _____0K    Tape Writes _____0K
Logical Writes:
  00) _____23384  _____182.6M   01) _____22812  _____178.2M
  02) _____22573  _____176.3M   03) _____20807  _____162.5M

Physical Writes:
```

```
00) _____3287 _____25.6M  01) _____3168 _____24.7M
02) _____2394 _____18.7M  03) _____1675 _____13.0M

Percent Hits:
 00) _____85.94              01) _____86.11
 02) _____89.39              03) _____91.95

Modified buffers:
 00) _____96              01) _____99
 02) _____95              03) _____99

MBM PRIMARY:
 00) _____214  01) _____204  02) _____209  03) _____195

MBM FOR FULL:
 00) _____214  01) _____204  02) _____209  03) _____195

MBM FOR INCREMENTAL:
 00) _____214  01) _____204  02) _____209  03) _____195
```

OPTION: -B

```
GET BUFFER:  _____3736  FREE BUFFER: _____0
GET DATA:    _____1159 _31.02%  CYCLE: _____0
GET GENERAL: _____121 __3.24%  CYCLE: _____0
GET HOG:     _____2456 _65.74%  CYCLE: __1294
GOT DATA/GENERAL: _____0  GOT DATA/HOG: _____0
GOT HOG/GENERAL:  _____0  GOT HOG/DATA: _____0
GOT GENERAL/DATA: _____0
BUFFER WAITS: _____0  OVER 5 SECONDS: _____0
```

OPTION: -W

```
WAIT BIL GEN: _____3  BUF: _____42  MAP: _____0
WAIT JNL GEN: _____7  BUF: _____892
WAIT BUF BLK: _____37  HQ: _____1
WAIT BLK MAP: _____0
```

OPTION: -af

```
FUNCTIONS  INT: ____203037  LOG: ___4685575  MIX: ____247984
           NUM: ___2337644  STR: ___1493441
```

OPTION: -b

```
BIL BLOCKS: _____7660  WRITES: _____2646
```

OPTION: -c

```
COMMANDS: ___5364660
CPU TIME: 0:18:49
```

OPTION: -if

```
FUNCTIONS  INT: _____203037
```

OPTION: -j

```
JOURNAL SETS: _____76088  KILLS: _____479  WRITES: _____6631
```

OPTION: -l

```
LOCK CALLS:      __16391520  WAITS:  _____11566
SPINLOCK CALLS: __31785240  DELAY1: _____9126  DELAY2: _____121
```

OPTION: -lf

```
FUNCTIONS  LOG: ___4685575
```

OPTION: -m

```
MBM PRIMARY:
 00) _____214   01) _____204   02) _____209   03) _____195

MBM FOR FULL:
 00) _____214   01) _____204   02) _____209   03) _____195

MBM FOR INCREMENTAL:
 00) _____214   01) _____204   02) _____209   03) _____195
```

OPTION: -mf

```
FUNCTIONS  MIX: _____247984
```

OPTION: -nf

```
FUNCTIONS  NUM: ___2337644
```

OPTION: -r

```
File Reads _____4K   Tape Reads _____0K
Logical Reads:
 00) ___1480041 ___11562.8M  01) _____137020 _____1070.4M
 02) _____10228 _____79.9M  03) _____7008 _____54.7M

Physical Reads:
 00) _____1889 _____14.7M  01) _____593 _____4.6M
 02) _____205 _____1.6M  03) _____121 _____0.9M

Percent Hits:
 00) _____99.87             01) _____99.57
 02) _____98.00             03) _____98.27
```

OPTION: -sf

```
FUNCTIONS  STR: ___1493441
```

OPTION: -t

```
Block Logical Reads:
 UNKNOWN) _____0       GDIR) _____695250  POINTER) _____241457
   GDATA) _____263009     GXDATA) _____0     RDIR) _____285592
  RTNHDR) _____142792    RTNDATA) _____0    MAPBLK) _____6197
 JRNLBLK) _____0     SEQBLK) _____0    SPLDIR) _____0
  SPLBLK) _____0     VOLHDR) _____0    UCIBLK) _____0

Block Physical Reads:
 UNKNOWN) _____257       GDIR) _____3  POINTER) _____1148
   GDATA) _____1283     GXDATA) _____0     RDIR) _____7
  RTNHDR) _____105    RTNDATA) _____0    MAPBLK) _____5
 JRNLBLK) _____0     SEQBLK) _____0    SPLDIR) _____0
  SPLBLK) _____0     VOLHDR) _____0    UCIBLK) _____0

Block Physical Reads Percent Type:
 UNKNOWN) _____9.15      GDIR) _____0.11  POINTER) _____40.88
   GDATA) _____45.69    GXDATA) _____0.00     RDIR) _____0.25
  RTNHDR) _____3.74   RTNDATA) _____0.00    MAPBLK) _____0.18
 JRNLBLK) _____0.00    SEQBLK) _____0.00    SPLDIR) _____0.00
  SPLBLK) _____0.00    VOLHDR) _____0.00    UCIBLK) _____0.00

Block Physical Reads Percent Hits:
 UNKNOWN) _____0.00      GDIR) ____100.00  POINTER) _____99.52
   GDATA) _____99.51    GXDATA) _____0.00     RDIR) ____100.00
  RTNHDR) _____99.93   RTNDATA) _____0.00    MAPBLK) _____99.92
 JRNLBLK) _____0.00    SEQBLK) _____0.00    SPLDIR) _____0.00
  SPLBLK) _____0.00    VOLHDR) _____0.00    UCIBLK) _____0.00

Block Physical Writes:
 UNKNOWN) _____0       GDIR) _____16  POINTER) _____3566
   GDATA) _____79791    GXDATA) _____0     RDIR) _____2
  RTNHDR) _____4    RTNDATA) _____0    MAPBLK) _____6197
 JRNLBLK) _____0     SEQBLK) _____0    SPLDIR) _____0
```

```
      SPLBLK) _____0     VOLHDR) _____0     UCIBLK) _____0

   Block Physical Writes Percent Type:
    UNKNOWN) _____0.00     GDIR) _____0.02   POINTER) _____3.98
      GDATA) _____89.08   GXDATA) _____0.00     RDIR) _____0.00
     RTNHDR) _____0.00   RTNDATA) _____0.00   MAPBLK) _____6.92
    JRNLBLK) _____0.00    SEQBLK) _____0.00   SPLDIR) _____0.00
     SPLBLK) _____0.00    VOLHDR) _____0.00   UCIBLK) _____0.00
```

OPTION: -u

```
   WAKEUPS (mpctl) JNL: _____2107  BIL: _____9585  DSK: _____36576
   WAKEUPS (mpmse) JNL: _____1093  BIL: _____703
```

OPTION: -w

```
   File Writes _____0K    Tape Writes _____0K
   Logical Writes:
    00) _____23384 _____182.6M  01) _____22812 _____178.2M
    02) _____22573 _____176.3M  03) _____20807 _____162.5M

   Physical Writes:
    00) _____3287 _____25.6M  01) _____3168 _____24.7M
    02) _____2394 _____18.7M  03) _____1675 _____13.0M

   Percent Hits:
    00) _____85.94               01) _____86.11
    02) _____89.39               03) _____91.95

   Modified buffers:
    00) _____96               01) _____99
    02) _____95               03) _____99
```

OPTION: -z

```
   ZJOB STARTS: _____45870  EXECS: _____23  KEPT: ___2  ACTIVE: ___5
```