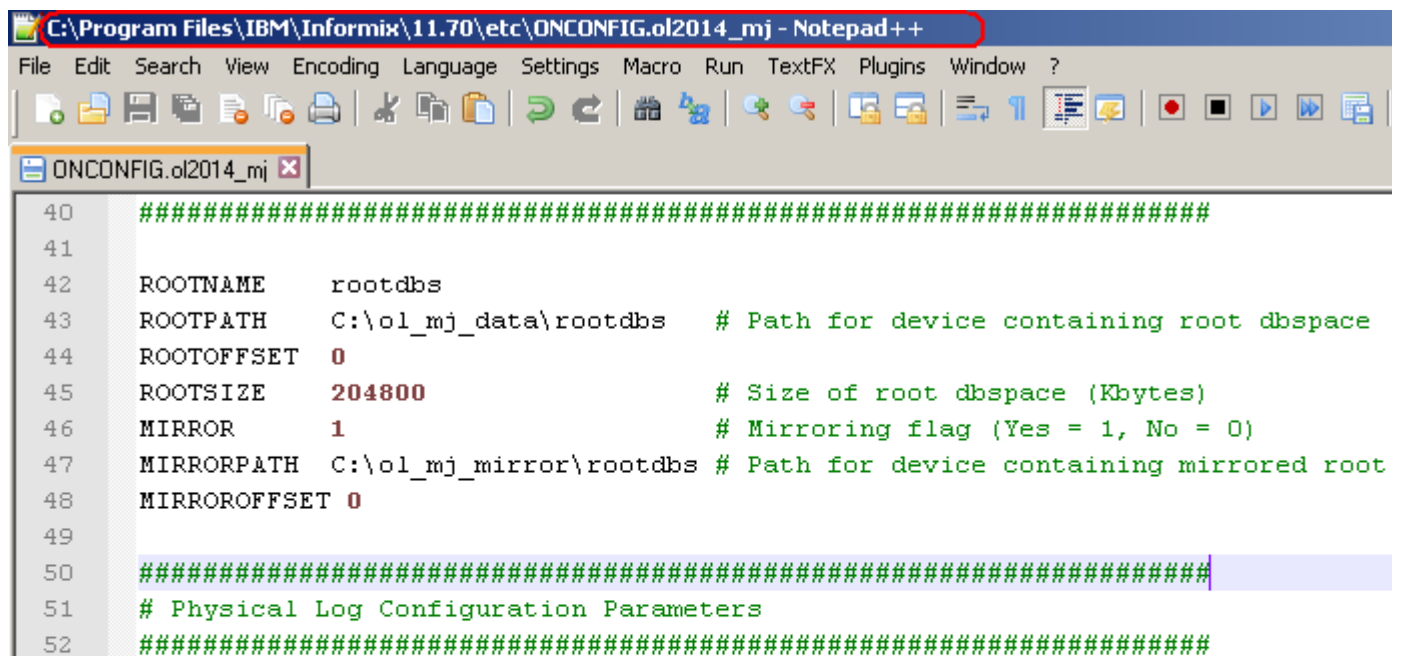


Michał Janiec

Organizacja systemów zarządzania bazą danych Informix

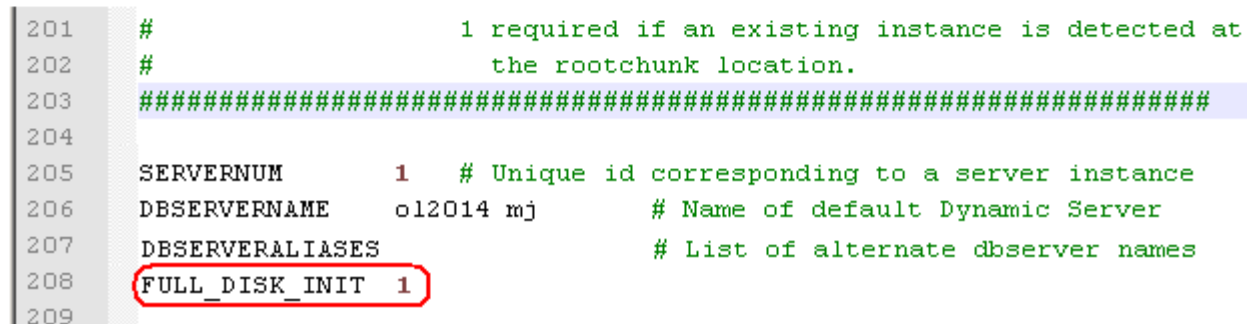
1. Tworzenie instancji

- Tworzenie instancji
Użyłem aplikacji Server Instance Manager; wybierając opcję Create New custom.
Postępowałem zgodnie z kreatorem, jako nazwę instancji podałem ol2014_mj.
- Konfiguracja rootdbs



```
40 #####
41
42 ROOTNAME      rootdbs
43 ROOTPATH      C:\ol_mj_data\rootdbs  # Path for device containing root dbspace
44 ROOTOFFSET    0
45 ROOTSIZE      204800                 # Size of root dbspace (Kbytes)
46 MIRROR        1                     # Mirroring flag (Yes = 1, No = 0)
47 MIRRORPATH    C:\ol_mj_mirror\rootdbs # Path for device containing mirrored root
48 MIRROROFFSET  0
49
50 #####
51 # Physical Log Configuration Parameters
52 #####
```

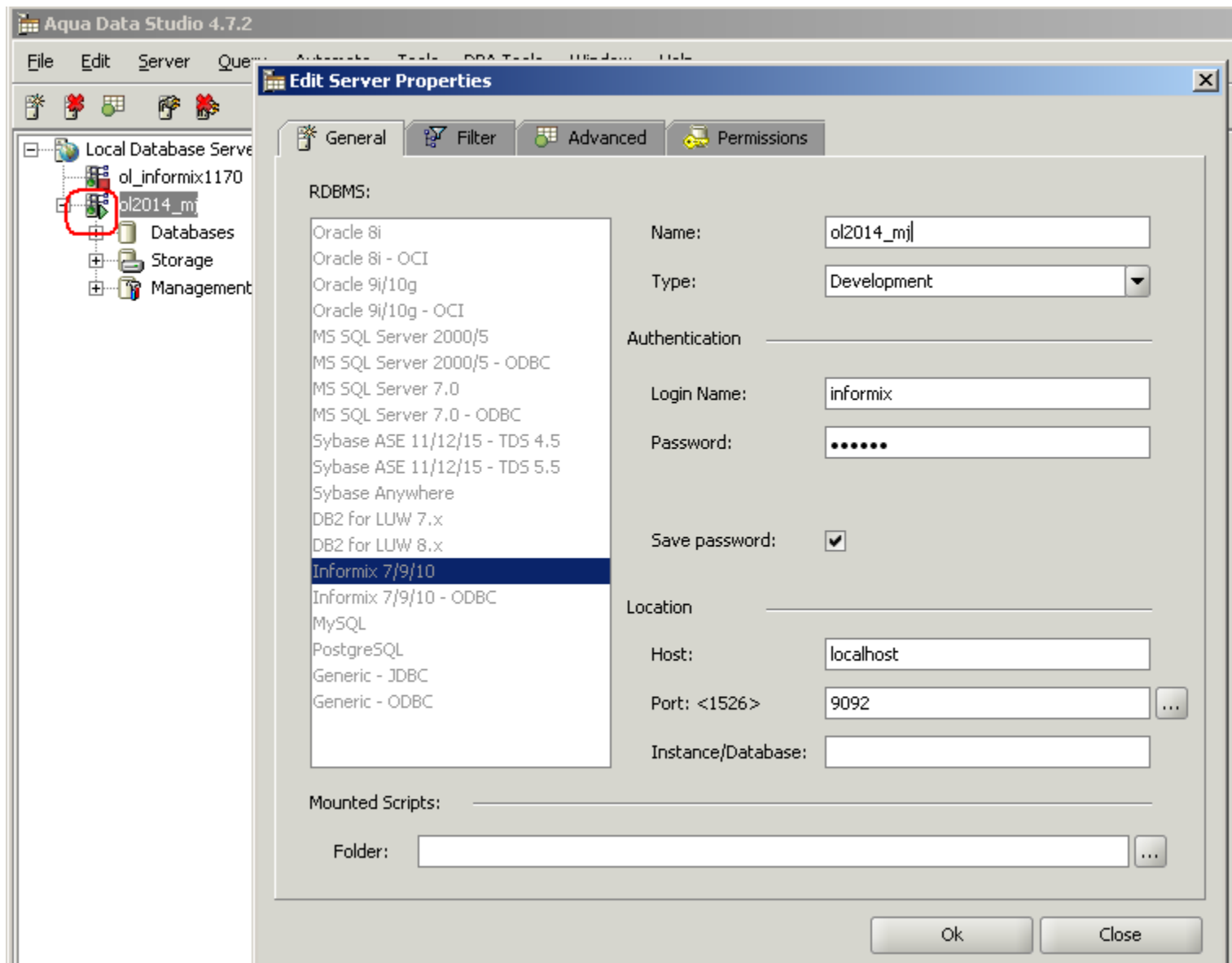
Below



```
201 #           1 required if an existing instance is detected at
202 #           the rootchunk location.
203 #####
204
205 SERVERNUM      1 # Unique id corresponding to a server instance
206 DBSERVERNAME   ol2014 mj           # Name of default Dynamic Server
207 DBSERVERALIASES # List of alternate dbserver names
208 FULL_DISK_INIT 1
209
```

```
ol2014_mj - oninit -ivy
C:\Program Files\IBM\Informix\11.70>oninit -ivy
Reading configuration file 'C:\PROGRA~1\IBM\Informix\11.70/etc/ONCONFIG.ol2014_mj'...succeeded
Checking config parameters...succeeded
Allocating and attaching to shared memory...succeeded
Creating resident pool 4944 kbytes...succeeded
Allocating 40016 kbytes for buffer pool of 4K page size...succeeded
Creating infos file "C:\PROGRA~1\IBM\Informix\11.70/etc/.infos.ol2014_mj"...succeeded
Linking conf file "C:\PROGRA~1\IBM\Informix\11.70/etc/.conf.ol2014_mj"...succeeded
Initializing rhead structure...succeeded
Writing to infos file...succeeded
Initialization of Encryption...succeeded
Initializing ASF...succeeded
Initializing Dictionary Cache and SPL Routine Cache...succeeded
Bringing up ADM VP...succeeded
Creating VP classes...succeeded
Onlining 0 additional cpu vps...succeeded
Onlining 1 IO vps...succeeded
Forking main_loop thread...succeeded
Initializing DR structures...succeeded
Forking 1 'soctcp' listener threads...succeeded
Starting tracing...succeeded
Initializing 8 flushers...succeeded
Initializing log/checkpoint information...succeeded
Initializing dbspaces...succeeded
Opening primary chunks...succeeded
Opening mirror chunks...succeeded
```

weryfikacja:



```
C:\Program Files\IBM\Informix\11.70>onstat -d

IBM Informix Dynamic Server Version 11.70.TC2DE -- On-Line -- Up 00:10:12 -- 78208 Kbytes

Dbspaces
address number flags fchunk nchunks pgsz flags owner name
0EE0C820 1 0x40002 1 1 4096 M BA informix rootdbs
1 active, 2047 maximum

Chunks
address chunk/dbs offset size free bpages flags pathname
0EE0C990 1 1 0 51200 18410 PO-B-D C:\ol_mj_data\rootdbs
0EE0CB70 1 1 0 51200 0 MO-B-D C:\ol_mj_mirror\rootdbs
1 active, 32766 maximum

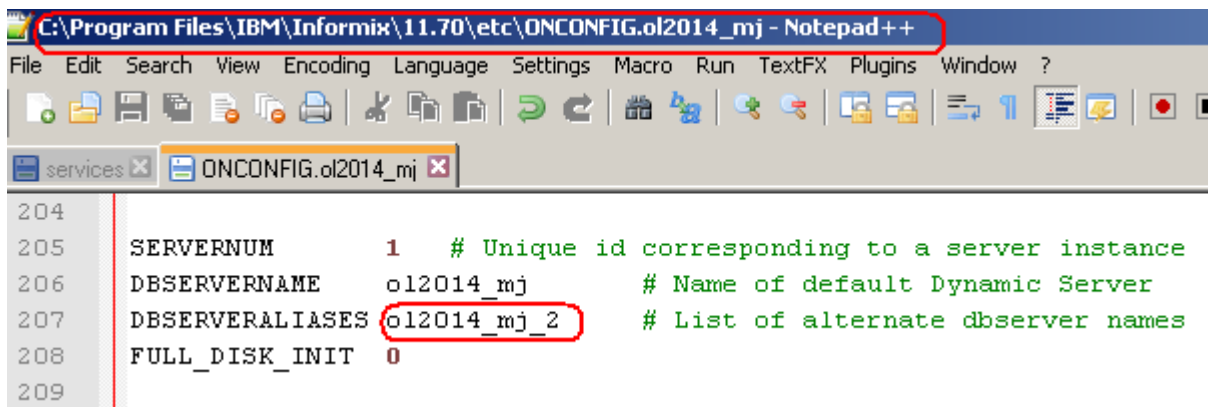
NOTE: The values in the "size" and "free" columns for DSpace chunks are
displayed in terms of "pgsize" of the DSpace to which they belong.

Expanded chunk capacity mode: always

C:\Program Files\IBM\Informix\11.70>
```

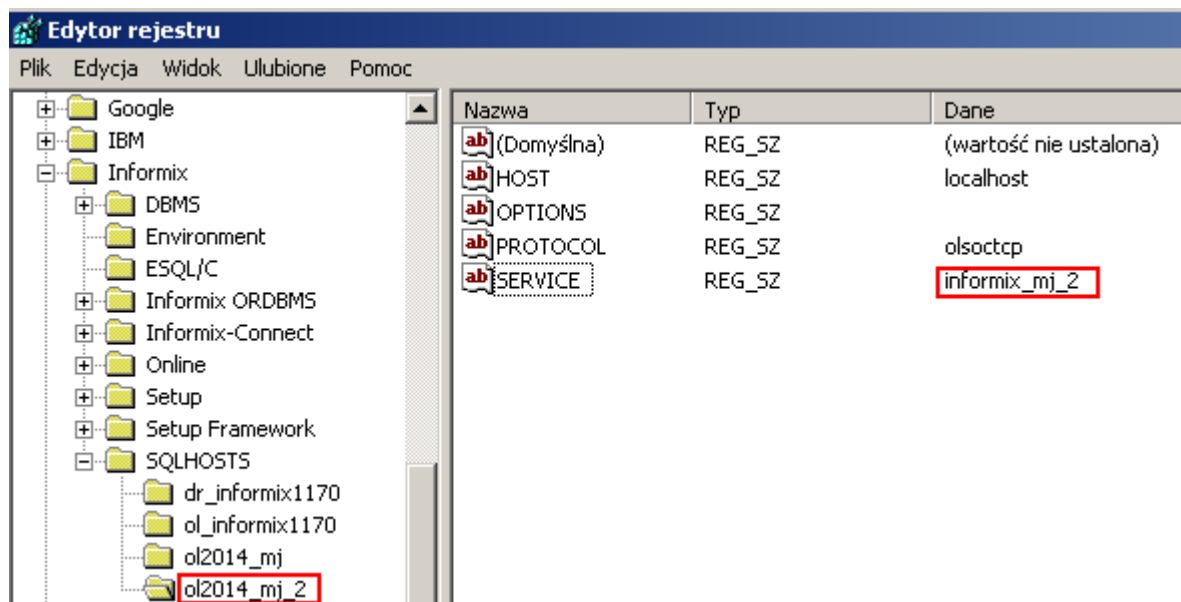
2. Konfiguracja połączeń

- Aby utworzyć nowe połączenie należy dokonać konfiguracji w rejestrze Windows, ale aby informix mógł je zauważyć należy najpierw dodać alias do nazwy serwera, który potem będzie fragmentem klucza rejestru.



```
C:\Program Files\IBM\Informix\11.70\etc\ONCONFIG.ol2014_mj - Notepad++
File Edit Search View Encoding Language Settings Macro Run TextFX Plugins Window ?
services ONCONFIG.ol2014_mj
204
205 SERVERNUM 1 # Unique id corresponding to a server instance
206 DBSERVERNAME ol2014_mj # Name of default Dynamic Server
207 DBSERVERALIASES ol2014_mj_2 # List of alternate dbserver names
208 FULL_DISK_INIT 0
209
```

- Znaczenie kluczy jest dość intuicyjne (olsotcp – OnLine dynamic server: SOcket: TCP), wartość pola SERVICE to nazwa symboliczna portu zdefiniowana w pliku services.



Sprawdzenie stanu serwera: włączony. Należy go zresetować (aby obsłużył nowe połączenie)

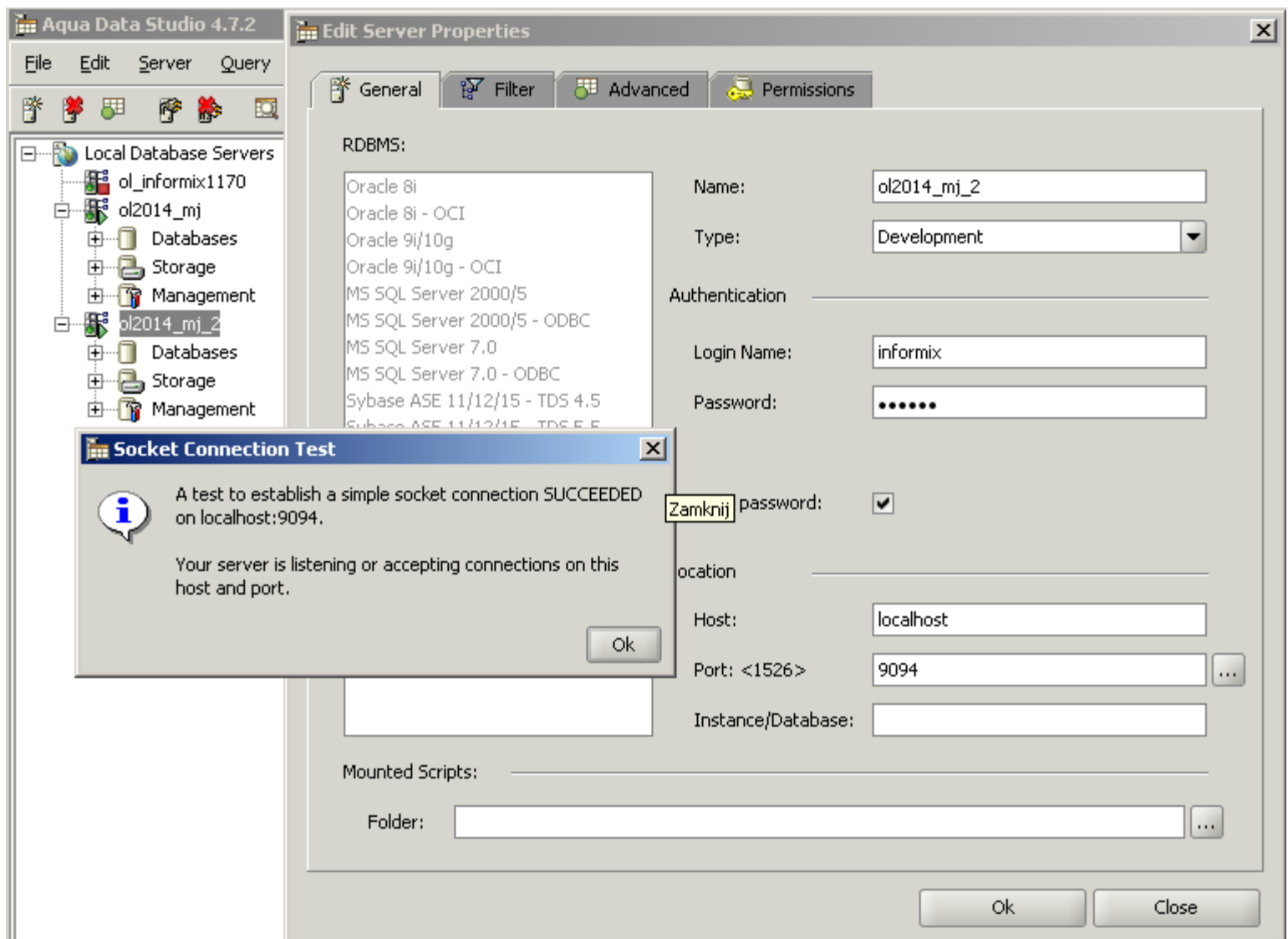
```

ol2014_mj
C:\Program Files\IBM\Informix\11.70>onstat -
IBM Informix Dynamic Server Version 11.70.TC2DE -- On-Line -- Up 00:00:17 -- 78208 Kbytes

C:\Program Files\IBM\Informix\11.70>onmode -ky
C:\Program Files\IBM\Informix\11.70>onstat -
shared memory not initialized for INFORMIXSERVER 'ol2014_mj'
C:\Program Files\IBM\Informix\11.70>starts ol2014_mj
C:\Program Files\IBM\Informix\11.70>onstat -
IBM Informix Dynamic Server Version 11.70.TC2DE -- Fast Recovery -- Up 00:00:09 -- 78208 Kbytes
C:\Program Files\IBM\Informix\11.70>_

```

Skonfigurowane drugie połączenie.



3. Zarządzanie przestrzenią dyskową

- Utworzenie przestrzeni danemj1 – najpierw tworze na dysku odpowiednie puste pliki.
Następnie:

```
C:\Program Files\IBM\Informix\11.70>onspaces -c -d danemj1 -p C:\ol_mj_data\danemj1_1 -o 0 -s 51200
Verifying physical disk space, please wait ...
Space successfully added.

** WARNING ** A level 0 archive of Root DBSpace will need to be done.

C:\Program Files\IBM\Informix\11.70>onspaces -a danemj1 -p C:\ol_mj_data\danemj1_2 -o 0 -s 20480
Verifying physical disk space, please wait ...
Chunk successfully added.
```

- danemj2

```
C:\Program Files\IBM\Informix\11.70>onspaces -c -d danemj2 -p C:\ol_mj_data\danemj2_1 -o 0 -s 40960
-m C:\ol_mj_mirror\danemj2_1 0
Verifying physical disk space, please wait ...
Verifying physical disk space, please wait ...
Space successfully added.

** WARNING ** A level 0 archive of Root DBSpace will need to be done.

C:\Program Files\IBM\Informix\11.70>onspaces -a danemj2 -p C:\ol_mj_data\danemj2_2 -o 0 -s 51200 -m
C:\ol_mj_mirror\danemj2_2 0
Verifying physical disk space, please wait ...
Verifying physical disk space, please wait ...
Chunk successfully added.
```

- logmj

```
C:\Program Files\IBM\Informix\11.70>onspaces -c -d logmj -p C:\ol_mj_data\logmj -o 0 -s 30720
-m C:\ol_mj_mirror\logmj 0
Verifying physical disk space, please wait ...
Verifying physical disk space, please wait ...
Space successfully added.
```

- tmp1_mj, tmp2_mj

```
C:\Program Files\IBM\Informix\11.70>onspaces -c -d tmp1_mj -p C:\ol_mj_tmp\tmp1_mj -o 0 -s 30720
Verifying physical disk space, please wait ...
Space successfully added.

** WARNING ** A level 0 archive of Root DBSpace will need to be done.

C:\Program Files\IBM\Informix\11.70>onspaces -c -d tmp2_mj -p C:\ol_mj_tmp\tmp2_mj -o 0 -s 30720
Verifying physical disk space, please wait ...
Space successfully added.
```

- utworzenie baz danych

```
C:\Program Files\IBM\Informix\11.70>dbaccess - -
> create database db1_mj in danemj1;

Database created.

> create database db2_mj in danemj2;

Database closed.

Database created.

> _
```

- fds

- weryfikacja

```

C:\Program Files\IBM\Informix\11.70>onstat -d

IBM Informix Dynamic Server Version 11.70.TC2DE -- On-Line -- Up 00:05:30 -- 78208 Kbytes

Dbspaces
address number flags fchunk nchunks pgsz flags owner name
OEE0C820 1 0x60002 1 1 4096 M BA informix rootdbs
OEE0C870 2 0x60001 2 2 4096 N BA informix danemj1
OEE0C8F8 3 0x60002 4 2 4096 M BA informix danemj2
OEE0C908 4 0x60002 6 1 4096 M BA informix logmj
OEE0C9D8 5 0x60001 7 1 4096 N BA informix tmp1_mj
OF3BC018 6 0x60001 8 1 4096 N BA informix tmp2_mj
6 active, 2047 maximum

Chunks
address chunk/dbs offset size free bpages flags pathname
OEE0C990 1 1 0 51200 18410 PO-B-D C:\ol_mj_data\rootdbs
OEE0CB70 1 1 0 51200 0 MO-B-D C:\ol_mj_mirror\rootdbs
OF3BC188 2 2 0 12800 11729 PO-B-D C:\ol_mj_data\danemj1_1
OF3BC368 3 2 0 5120 5117 PO-B-D C:\ol_mj_data\danemj1_2
OF3BC548 4 3 0 10240 9169 PO-B-D C:\ol_mj_data\danemj2_1
OF3BD018 4 3 0 10240 0 MO-B-D C:\ol_mj_mirror\danemj2_1
OF3BC728 5 3 0 12800 12797 PO-B-D C:\ol_mj_data\danemj2_2
OF3BD1F8 5 3 0 12800 0 MO-B-D C:\ol_mj_mirror\danemj2_2
OF3BC908 6 4 0 7680 7627 PO-B-D C:\ol_mj_data\logmj
OF3BD3D8 6 4 0 7680 0 MO-B-D C:\ol_mj_mirror\logmj
OF3BCAE8 7 5 0 7680 7627 PO-B-D C:\ol_mj_tmp\tmp1_mj
OF3BCCC8 8 6 0 7680 7627 PO-B-D C:\ol_mj_tmp\tmp2_mj
8 active, 32766 maximum

NOTE: The values in the "size" and "free" columns for Dbspace chunks are
displayed in terms of "pgsize" of the Dbspace to which they belong.

Expanded chunk capacity mode: always

C:\Program Files\IBM\Informix\11.70>_

```

4. Zarządzanie logami

- Log fizyczny:

```

C:\Program Files\IBM\Informix\11.70>onparams -p -s 20000 -d logmj
Do you really want to change the physical log? (y/n)y
Log operation started. To monitor progress, use the onstat -l command.
** WARNING ** Because the physical log has been modified, a level 0 archive
must be taken of the following spaces before an incremental archive will be
permitted for them: logmj
(see Dynamic Server Administrator's manual)

```

- Dodanie nowych logów logicznych + powiększenie db spaca:

```

C:\Program Files\IBM\Informix\11.70>onparams -a -d logmj -s 10000
Log operation started. To monitor progress, use the onstat -l command
Logical log successfully added.

C:\Program Files\IBM\Informix\11.70>onparams -a -d logmj -s 10000
Log operation started. To monitor progress, use the onstat -l command
Cannot add a logical log.
ISAM error: DBSpace is full.

C:\Program Files\IBM\Informix\11.70>onspace -a logmj -p C:\ol_mj_data\logmj_2 -o 0 -s 40960 -m C:\ol_mj_mirror\logmj_2 0
Verifying physical disk space, please wait ...
Verifying physical disk space, please wait ...
Chunk successfully added.

C:\Program Files\IBM\Informix\11.70>onparams -a -d logmj -s 10000
Log operation started. To monitor progress, use the onstat -l command.
Logical log successfully added.

C:\Program Files\IBM\Informix\11.70>onparams -a -d logmj -s 10000
Log operation started. To monitor progress, use the onstat -l command.
Logical log successfully added.

C:\Program Files\IBM\Informix\11.70>onparams -a -d logmj -s 10000
Log operation started. To monitor progress, use the onstat -l command.
Logical log successfully added.

```

- Usunięcie starych logów:
- 1 raz onmode -l aby przewinąć log
- a następnie 6 razy onparams -d -l [numer_logu] -y
- Weryfikacja

```

C:\Program Files\IBM\Informix\11.70>onstat -l

IBM Informix Dynamic Server Version 11.70.TC2DE -- On-Line -- Up 00:55:30 -- 78208 Kbytes

Physical Logging
Buffer bufused  bufsize  numpages  numwrits  pages/io
P-1  0          32       217       26       8.35
      phybegin      physize  phypos   phyused   %used
      6:53         5000    99       7        0.14

Logical Logging
Buffer bufused  bufsize  numrecs  numpages  numwrits  recs/pages  pages/io
L-1  0          16       17023    1373     1215       12.4       1.1
      Subsystem    numrecs  Log Space used
      OLDRSAM      17002   1641680
      HA           21      924

address  number  flags  uniqid  begin      size  used  %used
0F9F47C8 7       U-B---- 17      6:5053    2500  7     0.28
0FA64748 8       U-B---- 18      9:3       2500  5     0.20
0F920F40 9       U-B---- 19      9:2503    2500  23    0.92
0F9F49A0 10      U---C-L 20      9:5003    2500  6     0.24
4 active, 4 total

```

5. Zarządzanie przestrzenią dyskową 2

- Tryby logowania:
 - no logging - oczywisty
 - unbuffered – logi od razu zapisywane na dysk
 - buffered – logi buforowane w pamięci
 - ansi compilant
 - All statements are automatically contained in transactions.
 - All databases use unbuffered logging.
- Utworzenie tabeli
`create table tab1_mj (id int primary key, name char(1200));`

```
C:\Program Files\IBM\Informix\11.70>onstat -l

IBM Informix Dynamic Server Version 11.70.TC2DE -- On-Line -- Up 12 days 08:08:31 -- 78208 Kbytes

Physical Logging
Buffer bufused  bufsize  numpages  numwrits  pages/io
P-2  0          32        587       53        11.08
      phybegin      physize  phypos    phyused   %used
      6:53         5000    496      0         0.00

Logical Logging
Buffer bufused  bufsize  numrecs  numpages  numwrits  recs/pages  pages/io
L-3  0          16        59512    5979      5360       10.0       1.1
      Subsystem    numrecs  Log Space used
      OLDRSAM      59477   6471032
      HA           35      1540

address number  flags  uniqid  begin      size  used  %used
OF9F47C8 7      U---C-L 21     6:5053    2500  2112  84.48
OFA64748 8      U-B---- 18     9:3       2500  5      0.20
OF920F40 9      U-B---- 19     9:2503    2500  23     0.92
OF9F49A0 10     U-B---- 20     9:5003    2500  2500  100.00
4 active, 4 total
```

```
C:\Program Files\IBM\Informix\11.70>onstat -d

IBM Informix Dynamic Server Version 11.70.TC2DE -- On-Line -- Up 12 days 08:13:22 -- 78208 Kbytes

Dbspaces
address number  flags  fchunk  nchunks  pgsz  flags  owner  name
OEE0C820 1      0x70002 1       1        4096  M BA  informix rootdbs
OEE0C1988 2      0x60001 2       2        4096  N BA  informix danemj1
OEE0C1AF8 3      0x60002 4       2        4096  M BA  informix danemj2
OEE0C1C68 4      0x70002 6       2        4096  M BA  informix logmj
OEE0C1DD8 5      0x60001 7       1        4096  N BA  informix tmp1_mj
OF3C1018 6      0x60001 8       1        4096  N BA  informix tmp2_mj
6 active, 2047 maximum

Chunks
address chunk/dbs  offset  size  free  bpages  flags  pathname
OEE0C990 1      1      0      51200 45596  PO-B-D C:\ol_mj_data\rootdbs
OEE0CB70 1      1      0      51200 0      MO-B-D C:\ol_mj_mirror\rootdbs
OF3C1188 2      2      0      12800 1233   PO-B-D C:\ol_mj_data\danemj1_1
OF3C1368 3      2      0      5120  5117   PO-B-D C:\ol_mj_data\danemj1_2
OF3C1548 4      3      0      10240 9169   PO-B-D C:\ol_mj_data\danemj2_1
OF3C2018 4      3      0      10240 0      MO-B-D C:\ol_mj_mirror\danemj2_1
OF3C1728 5      3      0      12800 12797  PO-B-D C:\ol_mj_data\danemj2_2
OF3C21F8 5      3      0      12800 0      MO-B-D C:\ol_mj_mirror\danemj2_2
OF3C1908 6      4      0      7680  127    PO-B-D C:\ol_mj_data\logmj
OF3C23D8 6      4      0      7680  0      MO-B-D C:\ol_mj_mirror\logmj
OF3C1AE8 7      5      0      7680  7627   PO-B-D C:\ol_mj_tmp\tmp1_mj
OF3C1CC8 8      6      0      7680  7627   PO-B-D C:\ol_mj_tmp\tmp2_mj
OF9E5648 9      4      0      10240 2737   PO-B-D C:\ol_mj_data\logmj_2
OFB69B98 9      4      0      10240 0      MO-B-D C:\ol_mj_mirror\logmj_2
9 active, 32766 maximum
```

NOTE: The values in the "size" and "free" columns for DBspace chunks are displayed in terms of "pgsz" of the DBspace to which they belong.

Expanded chunk capacity mode: always

- Warto zauważyć że zmienił się używany chunk.
- Widzimy listę przestrzeni i chunków a także informację o ich zajętości, a także mapowanie dbs do chunków i chunków do plików. Więcej informacji można uzyskać przy pomocy polecenia `oncheck -pR`

```

Log file number      10
Unique identifier    20
Log file flags       0x5      Log file in use
&                  Log file has been backed up
Physical location    9:5003
Log size             2500 (p)
Number pages used    2500
Date/Time file filled 06/09/2014 23:50:29
Time stamp           0x566f7

addr      stamp    chksum  nslots  type  frptr  frcnt  next    prev
9:5003    300730    853c   0       900   4096   644    0       0    14    0
9:5004    300735    853e   0       900   4096   524    0       0    14    1

```

- Wolne miejsce (w stronach, jedna strona 4kB). Wolna przestrzeni ze względu na dbs.

dbs	chnk	space
rootdbs	rootdbs	45596
rootdbs	all	45596
danemj1	danemj1_1	1233
danemj1	danemj1_2	5117
danemj1	all	6350
danemj2	dabemj2_1	0
danemj2	Danemj2_2	9169
danemj2	all	12797
etc...		

- Rozmiar tabeli:
- `oncheck -pt db1_mj:tab1_mj`

```

C:\Program Files\IBM\Informix\11.70>oncheck -pt db1_mj:tab1_mj
0

TBLspace Report for db1_mj:informix.tab1_mj

Physical Address      2:35
Creation date         05/28/2014 17:31:42
TBLspace Flags        801      Page Locking
                                TBLspace use 4 bit bit-maps

Maximum row size      1204
Number of special columns 0
Number of keys         0
Number of extents     7
Current serial value   1
Current SERIAL8 value  1
Current BIGSERIAL value 1
Current REFID value    1
Pagesize (k)          4
First extent size     8
Next extent size      1024
Number of pages allocated 10240
Number of pages used   9767
Number of data pages   9765
Number of rows         29293
Partition partnum      2097184
Partition lockid       2097184

```

- z raportu wynika że tabela zajmuje 7 extendów i ~1024. rozmiary ekstenów zaczynają się od 4(stron). Rozmiary kolejnych extentów rosną wykładniczo zaczynając od 4. i.e. 4, 8, 16... etc

```

C:\Program Files\IBM\Informix\11.70>dbaccess db1_mj -
Database selected.

> create table tab2_mj (id int primary key, name char(2400))
> ;

Table created.

```

- utworzenie tabeli tab2_mj

- Dodałem 10 wierszy do tab2_mj i 5000 do tab1_mj
- tab1_mj zajmuje już 9 extentów i 2 fragmenty (drugi 7 extentów)

```

Index 101_2 fragment partition danemj1 in DBspace danemj1

Physical Address      2:36
Creation date         05/28/2014 17:31:42
TBLspace Flags        801      Page Locking
                        TBLspace use 4 bit bit-maps

Maximum row size      1204
Number of special columns 0
Number of keys         1
Number of extents      7
Current serial value   1
Current SERIAL8 value  1
Current BIGSERIAL value 1
Current REFID value    1
Pagesize (k)          4
First extent size      4
Next extent size       128
Number of pages allocated 256
Number of pages used   209
Number of data pages   0
Number of rows         0
Partition partnum      2097185
Partition lockid       2097184

Extents
  Logical Page    Physical Page    Size Physical Pages
      0           2:1071            4           4
      4           2:1331            4           4
      8           2:1463            8           8
     16           2:1983           16          16
     32           2:2895           32          32
     64           2:4719           64          64
    128           2:8367          128         128

```

TBLspace Report for db1_mj:informix.tab1_mj

```

Physical Address      2:35
Creation date         05/28/2014 17:31:42
TBLspace Flags        801      Page Locking
                        TBLspace use 4 bit bit-maps

Maximum row size      1204
Number of special columns 0
Number of keys         0
Number of extents      9
Current serial value   1
Current SERIAL8 value  1
Current BIGSERIAL value 1
Current REFID value    1
Pagesize (k)          4
First extent size      8
Next extent size       2048
Number of pages allocated 13501
Number of pages used   11670
Number of data pages   11668
Number of rows         35002
Partition partnum      2097184
Partition lockid       2097184

Extents
  Logical Page    Physical Page    Size Physical Pages
      0           2:1075           256          256
     256          2:1335           128          128
     384          2:1471           512          512
     896          2:1999           896          896
    1792          2:2927          1792         1792
    3584          2:4783          3584         3584
    7168          2:8495          3072         3072
   10240          2:11587         1213         1213
   11453          3:3            2048         2048

```

Aby przeczytać stronę trzeba najpierw poznać row id:

```
> SELECT FIRST 5 rowid FROM tab1_mj;
```

rowid
257
258
259
513
514

```
C:\Program Files\IBM\Informix\11.70>oncheck -pp db1_mj:tab1_mj 514
```

addr	stamp	chksum	nslots	flag	type	frpitr	frcnt	next	prev
2:1077	387043	e3d1	3	801	DATA	3636	444	0	0

slot	ptr	len	flg
1	24	1204	0
2	1228	1204	0
3	2432	1204	0


```
slot 1:
```

0:	0	0	2	c6	6d	6a	5f	64	61	74	61	21	20	20	20	20	...
16:	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	...
32:	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	...
48:	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	...
64:	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	...
80:	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	...

...Fmj_data!

- Analogicznie druga tabelka.
- Usuwanie wierszy

```
> delete from tab1_mj where id between 100 and 2000;
```

1901 row(s) deleted.

```
IBM Informix Dynamic Server Version 11.70.FCDEL - on line - up 12 days 05:51:41 - 76266 Kbytes
```

Dbspaces

address	number	flags	fchunk	nchunks	pgsize	flags	owner	name
0EE0C820	1	0x70002	1	1	4096	M BA	informix	rootdbs
0EE0C198	2	0x60001	2	2	4096	N BA	informix	danemj1
0EE0C1AF	3	0x60002	4	2	4096	M BA	informix	danemj2
0EE0C1C6	4	0x70002	6	2	4096	M BA	informix	logmj
0EE0C1DD	5	0x60001	7	1	4096	N BA	informix	tmp1_mj
0F3C1018	6	0x60001	8	1	4096	N BA	informix	tmp2_mj

6 active, 2047 maximum

Chunks

address	chunk/dbs	offset	size	free	bpages	flags	pathname
0EE0C990	1	0	51200	45588		P0-B-D	C:\ol_mj_data\rootdbs
0EE0CB70	1	0	51200	0		M0-B-D	C:\ol_mj_mirror\rootdbs
0F3C1188	2	0	12800	0		P0-B-D	C:\ol_mj_data\danemj1_1
0F3C1368	3	0	5120	3069		P0-B-D	C:\ol_mj_data\danemj1_2
0F3C1548	4	0	10240	9169		P0-B-D	C:\ol_mj_data\danemj2_1
0F3C2018	4	0	10240	0		M0-B-D	C:\ol_mj_mirror\danemj2_1
0F3C1728	5	0	12800	12797		P0-B-D	C:\ol_mj_data\danemj2_2
0F3C21F8	5	0	12800	0		M0-B-D	C:\ol_mj_mirror\danemj2_2
0F3C1908	6	0	7680	127		P0-B-D	C:\ol_mj_data\logmj
0F3C23D8	6	0	7680	0		M0-B-D	C:\ol_mj_mirror\logmj
0F3C1AE8	7	0	7680	7627		P0-B-D	C:\ol_mj_tmp\tmp1_mj
0F3C1CC8	8	0	7680	7627		P0-B-D	C:\ol_mj_tmp\tmp2_mj
0F9E5648	9	0	10240	2737		P0-B-D	C:\ol_mj_data\logmj_2
0FB69B98	9	0	10240	0		M0-B-D	C:\ol_mj_mirror\logmj_2

9 active, 32766 maximum

- nie przybyło wolnego miejsca
- oncheck -pt db1_mj:tab1_mj
- tu również nie zaobserwowałem zwolnienia miejsca.

- Usuwanie danych: `truncate table tab1_mj`
-
-
- Tym razem pamięć została rzeczywiście zwolniona.
- Znacząco wzrosła przestrzeń w chunku `danemj1_1` a więc także w dbs `danemj1`
- Tabela `tab1_mj` mieści się teraz w jednej tylko stronie i wykorzystuje tylko jeden extend

```
> CREATE TABLE tab_frag1_mj(id INT PRIMARY KEY, nazwa CHAR(200), kod
Table created.
> ALTER FRAGMENT ON TABLE tab_frag1_mj INIT FRAGMENT BY EXPRESSION
> PARTITION kod_a kod = 'A' IN danemj1,
> PARTITION kod_b kod = 'B' IN danemj1,
> PARTITION kod_c kod = 'C' IN danemj2;
Alter fragment completed.
```

- Następnie wygenerowałem potrzebne dane. Raport lokacji dyskowej jest dość długi. Zawiera zarówno `danemj1` jak i `danemj2`. W szczególności `kod_a`, `kod_b` znajdują się w `danemj1` a `kod_c` w `danemj2`

```
Table fragment partition kod_b in DBspace danemj1

Physical Address      2:44
Creation date         06/10/2014 02:17:12
TBLspace Flags       801          Page Locking
                                TBLspace use 4 bit bit-maps
Maximum row size      205
Number of special columns 0
Number of keys         0
Number of extents      4
Current serial value    1
Current SERIAL8 value   1
Current BIGSERIAL value 1
Current REFID value     1
Pagesize (k)           4
First extent size      8
Next extent size       256
Number of pages allocated 2816
Number of pages used    2633
Number of data pages    2632
Number of rows          50000
Partition partnum      2097193
Partition lockid       2097192
```

```
TBLspace Report for db1_mj:informix.tab1_mj

Physical Address      2:35
Creation date         05/28/2014 17:31:42
TBLspace Flags        801      Page Locking
                               TBLspace use 4 bit bit-maps

Maximum row size      1204
Number of special columns 0
Number of keys         0
Number of extents     1
Current serial value   1
Current SERIAL8 value  1
Current BIGSERIAL value 1
Current REFID value    1
Pagesize (k)          4
First extent size      8
Next extent size      2048
Number of pages allocated 256
Number of pages used   1
Number of data pages   0
Number of rows         0
Partition partnum      2097184
Partition lockid       2097184
```

- Zmiana partycji

```
> ALTER FRAGMENT ON TABLE tab_frag1_mj MODIFY PARTITION
> kod_b TO PARTITION kod_b kod = 'B' IN danemj2;

Alter fragment completed.
```

```
Table fragment partition kod_b in DBspace danemj2

Physical Address      4:35
Creation date         06/10/2014 02:46:16
TBLspace Flags        801      Page Locking
                               TBLspace use 4 bit bit-maps

Maximum row size      205
Number of special columns 0
Number of keys         0
Number of extents     2
Current serial value   1
Current SERIAL8 value  1
Current BIGSERIAL value 1
Current REFID value    1
Pagesize (k)          4
First extent size      8
Next extent size      256
Number of pages allocated 2816
Number of pages used   2633
Number of data pages   2632
Number of rows         50000
Partition partnum      3145760
Partition lockid       2097192

Extents
  Logical Page    Physical Page    Size Physical Pages
      0             4:1455           8             8
      8             4:1471        2808           2808
```

Kod b jest teraz w danemj2.

6. Archiwizacja i odtwarzanie

1. Skonfiguruj i wykonaj backup danych

1. Stworzyłem folder `C:\ol_mj_backup` i ustawiłem go jako target dla dwóch ustawień związanych z archiwizacją (ONCONFIG.ol2014_mj).:

```
TAPEDEV C:\ol_mj_backup  
LTAPEDEV C:\ol_mj_backup
```

2. restart onmode -ky; starts ol2014_mj

3. Wykonanie backupu ontape -s -L 0 -d

```
C:\Program Files\IBM\Informix\11.70>ontape -s -L 0 -d  
10 percent done.  
20 percent done.  
30 percent done.  
100 percent done.  
File created: C:\ol_mj_backup\akademia-3ef320_1_L0
```

2. Backup logów

```
C:\Program Files\IBM\Informix\11.70>ontape -a  
Performing automatic backup of logical logs.  
Do you want to back up the current logical log? (y/n) y  
File created: C:\ol_mj_backup\akademia-3ef320_1_Log0000000022  
Program over.
```

3. Wygenerowałem dane

4. Checkpoint


```

C:\Program Files\IBM\Informix\11.70>onmode -c
C:\Program Files\IBM\Informix\11.70>onstat -R
IBM Informix Dynamic Server Version 11.70.TC2DE -- On-Line -- Up 00:20:32 -- 78208 Kbytes
Buffer pool page size: 4096

8 buffer LRU queue pairs
# f/m pair total % of length priority levels
0 f 1250 100.0% 1250 1246 4
1 m 0 0.0% 0 0 0
2 f 1250 100.0% 1250 1246 4
3 m 0 0.0% 0 0 0
4 f 1250 100.0% 1250 1248 2
5 m 0 0.0% 0 0 0
6 f 1250 100.0% 1250 1248 2
7 m 0 0.0% 0 0 0
8 f 1250 100.0% 1250 1247 3
9 m 0 0.0% 0 0 0
10 f 1250 100.0% 1250 1248 2
11 m 0 0.0% 0 0 0
12 f 1250 100.0% 1250 1246 4
13 m 0 0.0% 0 0 0
14 f 1250 100.0% 1250 1249 1
15 m 0 0.0% 0 0 0
0 dirty, 10000 queued, 10000 total, 16384 hash buckets, 4096 buffer size
start clean at 60.000% (of pair total) dirty, or 750 buffs dirty, stop at
50.000%

```

5. Backup logów: `ontape -a`

6. Za-symuluj awarię: `onmode -ky`. Następnie usuwam plik `damemj1_1`

```

C:\Program Files\IBM\Informix\11.70>starts ol2014_mj
C:\Program Files\IBM\Informix\11.70>onstat -
IBM Informix Dynamic Server Version 11.70.TC2DE -- On-Line (CKPT INP) -- Up 00:01:11 -- 78208 Kbytes
Blocked:OVERRIDE_DOWN_SPACE

```

7.

```
C:\Program Files\IBM\Informix\11.70>onstat -d

IBM Informix Dynamic Server Version 11.70.TC2DE -- On-Line (CKPT INP) -- Up 00:02:31 -- 78208 Kbytes
Blocked:OVERRIDE_DOWN_SPACE

Dbspaces
address  number  flags      fchunk    nchunks   pgsize    flags      owner      name
OEE0C820 1          0x40002    1          1          4096      M BA      informix   rootdbs
OEE0C1908 2          0x40005    2          2          4096      ND BA      informix   danemj1
OEE0C1A78 3          0x40002    4          2          4096      M BA      informix   danemj2
OEE0C1BE8 4          0x40002    6          2          4096      M BA      informix   logmj
OEE0C1D58 5          0x40001    7          1          4096      N BA      informix   tmp1_mj
OF3BE018 6          0x40001    8          1          4096      N BA      informix   tmp2_mj
6 active, 2047 maximum

Chunks
address  chunk/dbs  offset    size      free      bpages    flags  pathname
OEE0C990 1          1          0          51200     45588     PO-B-D C:\ol_mj_data\rootdbs
OEE0CB70 1          1          0          51200     0          MO-B-D C:\ol_mj_mirror\rootdbs
OF3BE188 2          2          0          12800     0          PD-B-- C:\ol_mj_data\danemj1_1
OF3BE368 3          2          0          5120     0          PD-B-- C:\ol_mj_data\danemj1_2
OF3BE548 4          3          0          10240     5969      PO-B-D C:\ol_mj_data\danemj2_1
OF3BF1F8 4          3          0          10240     0          MO-B-D C:\ol_mj_mirror\danemj2_1
OF3BE728 5          3          0          12800     12797     PO-B-D C:\ol_mj_data\danemj2_2
OF3BF3D8 5          3          0          12800     0          MO-B-D C:\ol_mj_mirror\danemj2_2
OF3BE908 6          4          0          7680     127        PO-B-D C:\ol_mj_data\logmj
OF3BF5B8 6          4          0          7680     0          MO-B-D C:\ol_mj_mirror\logmj
OF3BEAE8 7          5          0          7680     7627      PO-B-D C:\ol_mj_tmp\tmp1_mj
OF3BECC8 8          6          0          7680     7627      PO-B-D C:\ol_mj_tmp\tmp2_mj
OF3BF018 9          4          0          10240     2737      PO-B-D C:\ol_mj_data\logmj_2
OF3BF798 9          4          0          10240     0          MO-B-D C:\ol_mj_mirror\logmj_2
9 active, 32766 maximum
```

8. Warto zauważyć że danemj1 ma flagę D.

```
C:\Program Files\IBM\Informix\11.70>onmode -ky
```

```
C:\Program Files\IBM\Informix\11.70>ontape -r
```

```
Restore will use level 0 archive file C:\ol_mj_backup\akademia-3ef320_1_L0. Press Return to continu
```

Archive Tape Information

```
Tape type:      Archive Backup Tape
Online version: IBM Informix Dynamic Server Version 11.70.TC2DE
Archive date:   Tue Jun 10 03:19:07 2014
User id:       informix
Terminal id:    AKADEMIA-3EF320
Archive level:  0
Tape device:    C:\ol_mj_backup\
Tape blocksize (in k): 16
Tape size (in k): 2147483647
Tape number in series: 1
```

Spaces to restore:1 [rootdbs
]

2 [danemj1
]

3 [danemj2
]

4 [logmj
]

5 [tmp1_mj
]

6 [tmp2_mj
]

Archive Information

IBM Informix Dynamic Server Copyright 2001, 2011 IBM Corporation.

Initialization Time 05/25/2014 10:16:55

System Page Size 4096

Version 25

Index Page Logging OFF

Archive CheckPoint Time 06/10/2014 03:19:07

Dbspaces

number	flags	fchunk	nchunks	flags	owner	name
1	70002	1	1	M BA	informix	rootdbs
2	60001	2	2	N BA	informix	danemj1
3	60002	4	2	M BA	informix	danemj2
4	70002	6	2	M BA	informix	logmj
5	60001	7	1	N BA	informix	tmp1_mj
6	60001	8	1	N BA	informix	tmp2_mj

Chunks

chk/dbs	offset	size	free	bpages	flags	pathname
1 1	0	51200	45588		PO-B-	C:\ol_mj_data\rootdbs
1 1	0	51200	0		MO-B-	C:\ol_mj_mirror\rootdbs
2 2	0	12800	10421		PO-B-	C:\ol_mj_data\danemj1_1

3	2	0	5120	5117	PO-B- C:\ol_mj_data\danemj1_2
4	3	0	10240	5969	PO-B- C:\ol_mj_data\danemj2_1
4	3	0	10240	0	MO-B- C:\ol_mj_mirror\danemj2_1
5	3	0	12800	12797	PO-B- C:\ol_mj_data\danemj2_2
5	3	0	12800	0	MO-B- C:\ol_mj_mirror\danemj2_2
6	4	0	7680	127	PO-B- C:\ol_mj_data\logmj
6	4	0	7680	0	MO-B- C:\ol_mj_mirror\logmj
7	5	0	7680	7627	PO-B- C:\ol_mj_tmp\tmpl_mj
8	6	0	7680	7627	PO-B- C:\ol_mj_tmp\tmp2_mj
9	4	0	10240	2737	PO-B- C:\ol_mj_data\logmj_2
9	4	0	10240	0	MO-B- C:\ol_mj_mirror\logmj_2

Continue restore? (y/n)y

Do you want to back up the logs? (y/n)y

File created: C:\ol_mj_backup\akademia-3ef320_1_Log0000000021

File created: C:\ol_mj_backup\akademia-3ef320_1_Log0000000022

File created: C:\ol_mj_backup\akademia-3ef320_1_Log0000000023

File created: C:\ol_mj_backup\akademia-3ef320_1_Log0000000024

Log salvage is complete, continuing restore of archive.

Physical restore failed - Cannot Open Primary Chunk 'C:\ol_mj_data\danemj1_1'.

Program over.

C:\Program Files\IBM\Informix\11.70>starts ol2014_mj

C:\Program Files\IBM\Informix\11.70>onstat -d

IBM Informix Dynamic Server Version 11.70.TC2DE -- Fast Recovery -- Up 00:00:26 -- 78208 Kbytes

Dbspaces

address	number	flags	fchunk	nchunks	pgsize	flags	owner	name
0EE0C820	1	0x70402	1	1	4096	MP BA	informix	rootdbs
0EEC1908	2	0x60005	2	2	4096	ND BA	informix	danemj1
0EEC1A78	3	0x60006	4	2	4096	MD BA	informix	danemj2
0EEC1BE8	4	0x70006	6	2	4096	MD BA	informix	logmj
0EEC1D58	5	0x60005	7	1	4096	ND BA	informix	tmpl_mj
0F3C3018	6	0x60005	8	1	4096	ND BA	informix	tmp2_mj

6 active, 2047 maximum

Chunks

address	chunk/dbs	offset	size	free	bpages	flags	pathname
0EE0C990	1	1	0	51200	45588	PI-B-D	C:\ol_mj_data\rootdbs
0EE0CB70	1	1	0	51200	0	MI-B-D	C:\ol_mj_mirror\rootdbs

0F3C3188	2	2	0	12800	0	PD-B-- C:\ol_mj_data\danemj1_1
0F3C3368	3	2	0	5120	0	PD-B-- C:\ol_mj_data\danemj1_2
0F3C3548	4	3	0	10240	5969	PI-B-D C:\ol_mj_data\danemj2_1
0F3C41F8	4	3	0	10240	0	MI-B-D C:\ol_mj_mirror\danemj2_1
0F3C3728	5	3	0	12800	12797	PI-B-D C:\ol_mj_data\danemj2_2
0F3C43D8	5	3	0	12800	0	MI-B-D C:\ol_mj_mirror\danemj2_2
0F3C3908	6	4	0	7680	127	PI-B-D C:\ol_mj_data\logmj
0F3C45B8	6	4	0	7680	0	MI-B-D C:\ol_mj_mirror\logmj
0F3C3AE8	7	5	0	7680	7627	PI-B-D C:\ol_mj_tmp\tmp1_mj
0F3C3CC8	8	6	0	7680	7627	PI-B-D C:\ol_mj_tmp\tmp2_mj
0F3C4018	9	4	0	10240	2737	PI-B-D C:\ol_mj_data\logmj_2
0F3C4798	9	4	0	10240	0	MI-B-D C:\ol_mj_mirror\logmj_2

9 active, 32766 maximum

NOTE: The values in the "size" and "free" columns for DBspace chunks are displayed in terms of "pgsize" of the DBspace to which they belong.

Expanded chunk capacity mode: always

C:\Program Files\IBM\Informix\11.70>