Estimating Sizes for Directory and Data Structures in a Cluster Environment

Option "C" calculates the estimated sizes for directory and data structures in a cluster environment.

The cache structure should be made large enough to provide sufficient space:

- for tracking all blocks kept in the buffer pools of all connected cluster nuclei (directory elements) and

- for keeping all changed blocks until they are written to the database (data elements).

The assignment of total cache space into directory and data elements is done via the DIRRATIO and ELEMENTRATIO parameters.

```
13:01:16            ***** A D A B A S  BASIC  SERVICES *****        2007-10-02
DBID 1955              -  Cache Structure Calculator  -            PSPC002


Smallest block size in DB ....... 4092
Largest block size in DB ........ 27990
Buffer pool size (LBP) .......... 104857600___
Size proper for caching blocks .. 104800000___
Max nuclei in cluster ........... 3
Directory element size .......... 400
Cache structure size (in KB) .... 256000___


For minimum calculation, leave cache structure size field empty.

Modify values, press Enter to provide estimates below.



Cache CFRM SIZE/INITSIZE ........ 256000       ( 250.0      MB)
ADARUN DIRRATIO ................. 62
ADARUN ELEMENTRATIO ............. 49
Cache directory elements ........ 128597
Cache data elements ............. 101633
Cache data element size ......... 2048



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```

Input fields:

Field	Description
Smallest block size	Value between 1024 and 32768. Default taken from current AOS DBid.
Largest block size	Value between 1024 and 32768. Default taken from current AOS DBid. If Smallest block size exceeds this value, then Smallest block size is swapped in.
Buffer pool size	Value between 80,000 and 999,999,999,999. Default taken from `LBP` parameter of current AOS Dbid.
Size proper for caching blocks	Value between 100000 - 999,999,999,999. Default taken from `LBP` parameter of current AOS Dbid, rounded down to nearest 100000. "Size proper" means that this does not include the overhead in the cache structure required for administering these blocks. Thus this value specifies how much space should be available in the cache structure for keeping changed blocks between buffer flushes and for buffering blocks so that the cluster nuclei do not have to read them from the database.
Max Nuclei in cluster	Value between 2 and 32. Defaults to 3.
Directory element size	Value between 100 and 999. Specifies how much space (including the overhead for the access paths) each directory element will take in the cache structure. Defaults to 400.
Cache Structure size	Blank for minimum calculation, or a value between 100 and 999,999,999 (KB). Although this value is given as an output field, you may want to propose a cache structure size, to see how to allocate the cache space (dir & data elements).

Output fields:

Field	Description
Cache CFRM SIZE/INITSIZE	The recommended cache structure `SIZE` or `INITSIZE` specification in the coupling facility resource management policy.
DIRRATIO/ELEMENTRATIO	The recommended ADARUN parameter settings for the cluster nuclei.
Cache directory/data elements	The estimated directory and data element counts resulting from the `SIZE/INITSIZE`, `DIRRATIO`, and `ELEMENTRATIO` settings.
Cache data element size	This (accurate) value depends only on the largest Asso/Data/Work block size in the database.

By hitting PF4, you then go to the Lock Structure Calculator.

Lock Structure Calculator

The Lock Structure Calculator calculates an estimated size for the Cache `CFRM SIZE` or `INITSIZE` specification in the coupling facility resource management policy.

The lock structure must be made large enough to provide sufficient space

- for keeping the lock record elements for all locks held at the same time, and

- for avoiding too much false contention on lock structure size as an input field.

The Number of lock table entries and record elements are shown for comparison with the related cluster nucleus message (ADAX70) and to aid users' own calculations.

```
13:42:29              ***** A D A B A S  BASIC  SERVICES *****           2007-08-20
DBID 1955                - Lock Structure Calculator  -                  PSPL002

Max files in database (MAXFILES) ...... 400
Max number of parallel users (NU) ..... 200_____
Number of hold queue elements (NH) .... 40000
Unique descriptor pool size (LDEUQP) .. 50000
Lock record element size .............. 260
Lock structure size (in KB) ..........

For minimum calculation, leave lock structure size field empty.
Modify values, press Enter to provide estimates below.


Lock  CFRM SIZE/INITSIZE .............. 13232     ( 12.9     MB)
Number of lock table entries .......... 131072
Number of lock record elements ........ 46157      Required min .. 45175




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

Input fields:

Field	Description
Max files in database	Value between 3 and 5000. The same as MAXFILES parameter of ADADEF and ADAORD. Taken from the current AOS DBid.
Max number of parallel users	Value between 20 and 16,777,215. Default taken from NU parameter of current AOS DBid.
Number of hold queue elements	Value between 20 and 16,777.215. Default taken from NH parameter of current AOS Dbid.
Unique descriptor pool size	Value between 1 and 999,999,999. Default taken from LDEUQP parameter of current AOS Dbid.
Lock record element size	Value between 100 and 999. Specifies how much space (including the overhead for the access paths) each lock record element will take in the lock structure. Defaults to 260.
Lock structure size	Blank for minimum calculation, or a value between 100 and 9,999,999 (KB). Although this value is given as an output field, you may want to propose a lock structure size, to see the estimated number of lock table entries and lock table elements.

Output fields:

Field	Description
Lock CFRM SIZE/INITSIZE	The recommended lock structure `SIZE` or `INITSIZE` specification in the coupling facility resource management policy.
Number of lock table entries	The calculated count of lock table entries resulting from the `SIZE/INITSIZE` setting.
Number of lock record elements	The estimated count of lock record elements resulting from the `SIZE/INITSIZE` setting. One has to actually start a cluster nucleus with the specified parameters to see how many lock record elements it gets from the lock structure. The number on the right side is the minimum number of lock record elements that the starting cluster nuclei require to be available.