TO: DISTRIBUTION

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SUBJECT: Static File Migration

This memo obsolete MOSN-162.

The purpose of static file migration is to balance the page usage
on the drum and disks. This is accomplished by periodic run of
an exec_com called "adjust_device.ec". This exec_com calls the
command "adjust_device" with the parameters necessary to properly
balance the usage. The segments with the highest activity are
placed on the drum, those with the lowest activity on the d170's
and the others on the d270's. These parameters may be changed on
a daily basis using the results of previous runs. The important
parameters are listed below. The numbers are listed to give some
idea of the order in magnitude and are subject to frequent
change. The activity is measured in page faults per hour.

Arguments which are specified in the exec_com:

keyword	value	meaning
-brief		print only those segments being moved
-thh	16.00	segments above this activity go on the drum
-thl	0.60	segments below this activity go on the d170's
-dtu	72	a segment which has not been used for this many hours will be migrated to the d170's
-min	24	a segment created less than this many hours ago will not be migrated
-sact	40	the activity graph is scaled to this many page faults per hour
-sdtu	500	the inactivity graph is scaled for this many hours
-graph		causes the activity graphs to be printed
-hold		causes information to be accumulated from one part of the hierarchy tree to the next

-drum   causes all segments appearing on the drum to
                         be listed whether or not they were migrated

Arguments which are not specified in the exec_com (or are
                         assumed):

-d170   analogous to -drum

-d270   analogous to -drum

-move   causes the migration to actually take place
                         (otherwise it runs in "test" mode)

-test   causes the migration to be run in "test" mode
                         (this is a default)

-file path   the output will be placed in a file instead
                         of printed

Example:

adjust_device >ldd -brief -thh 16.0 -thl 0.6 -dtu 72 -min 24
          -sact 40 -sdtu 500 -graph -drum

For a more detailed explanation of the special command
"adjust_device", see the MPM SYSTEM PROGRAMMER'S SUPPLEMENT.

Running Migration in "test" Mode

To run the file migration exec_com in "test" mode, login on Dumper.SysDaemon and issue the following command:

ec ad prtbxx

where "prtbxx" is the address of the printer to be used (e.g. prtb34). This printer should be configured on to the service system, have enough paper (at least standby) and a properly aligned ribbon.

Running Migration in "move" Mode

To run the exec_com in "move" mode, login in on the Dumper and issue the following command:

ec ad prtbxx -move

Until the programs can be modified to make a crash during the running of file migration in "move" mode less fatal, the "move" mode should only be used during special sessions after a complete SAVE of the hierarchy. After the session, the system should be shutdown and a _regular_ salvager run. While running in "move" mode, the amount of space left on the various devices should be monitored often via the "storage" command on the Initializer. If the space left on any one device gets below a defined level (at this time, 1000 pages), the QUIT button on the migration console should be pressed and a member of the programming staff called. Depending up on what the staff member advises, the parameters are either changed or the system is shutdown and a salvager run.

Preliminary "test" Runs

If time permits, it is preferable to run a pass in "test" mode before shutting the system down for users. The results of the test run can be quickly analyzed to check if there is enough space for an actual "move" run. To do this, check the total records line at the end of the "test" run's printer output (see example below). For each device, subtract the second line (BEFORE migration) from the first (AFTER migration). The result is the number of records that will be moved on to that device. If the result is negative, that many records will be freed on that device. If the number is positive (pages being moved on to

that device), subtract that number from the number of available pages (from the "storage" command output or from the console output of the migration run). If this will leave less than 1000 pages on the device, the migration probably should not be run without first consulting a programming staff member.

REMEMBER: It is best to be safe than sorry.

If the system crashes while running file migration in "move" mode, be sure to attempt the ESD. If it fails, pages for various segments will probably be swapped or lost. If there are any severe (e.g. reused addresses) salvager errors, a programmer must be notified to evaluate the errors. If no programmer is available, the hierarchy should be restored from the SAVE. An attempt should be made to contact a programmer if the ESD fails, even if there are no severe salvager errors.

Example of the check to insure enough room:

Assume the "TOTAL RECORDS" line reads as follows:

TOTAL RECORDS=48749, DRUM=1859, DSU270=11735, DSU170=35155 (AFTER)
                     1756   9456   37537 (BEFORE)

The number of pages being moved to the drum is 103 (1859 - 1756), the number of pages being moved to the 270's is 2279 (11735 - 9456) and the number of pages being freed on the 170's is 2382 (35155 - 37537 = -2382).

If there were fewer than 1103 pages left on the drum or fewer than 3279 pages left on the 170's, the migration should not be run without first contacting a programmer.