

WHITE PAPER

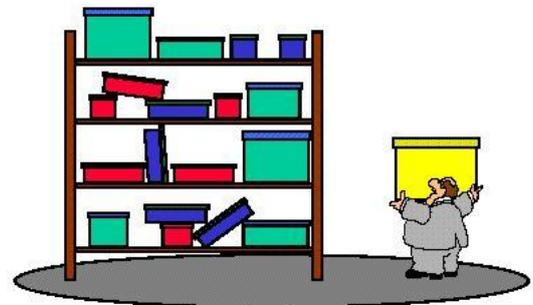
SPACEOPT

Optimum disk reorganization in
BS2000/OSD

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Pages 2

You have a large file and can no longer extend it, even though there is still masses of free space available on the pubset. This can happen even to the best operating system – except that in BS2000 you do not need to do your own housekeeping: Put SPACEOPT to work and everything has its proper place!



Features of the SPACEOPT product

SPACEOPT provides you with a powerful disk storage optimization tool.

A major advantage of SPACEOPT is that the reorganization of disk space can take place during online operation, with no need for additional intermediate storage.

The object of SPACEOPT is to create the largest possible contiguous areas of free storage space within a volume so that large files can be stored using a minimal number of extents. SPACEOPT can also be used selectively to reorganize individual files and reduce the number of extents. What's more, SPACEOPT also allows volumes to be cleared so that they can subsequently be deconfigured from a pubset.

Regular use of SPACEOPT can prevent disks from becoming so fragmented that large files can no longer find any contiguous storage space and can no longer be created. SPACEOPT significantly improves the usage level of disk volumes (pubset disks)

Storage space allocation in BS2000

The constant creation, deletion, enlargement and reduction in size of files during ongoing data processing operation leads to increasing fragmentation of the free storage space and the files to be created on the volumes of a pubset. Fragmentation results in a progressive degradation of file access performance. The extent list in the catalog entries gets longer and longer due to the necessity of creating multiple small file extents as files grow in size.

The problem

Large storage space requirements (99 PAM pages in the example) can no longer be serviced due to the overflow of the maximum number of extents in the catalog entry.

The solution

```
/START-SUBSYSTEM SUBSYSTEM-NAME=SPACEOPT
/START-SPACEOPT-JOB OBJECT=*PUBLIC-DISK(SBZ1.1), PROCESS-OPEN=*YES
```

Console output:

```
%XAA6-000.145657 % SOP0002 'START-SPACEOPT-JOB' for volume SBZ1.1 started
%XAA6-000.145657 % SOP0004 Space summary for SBZ1.1: free areas of t1=213,
t2=201, t3=28, t4=5, t5=0, largest area = 94464HPs, free space = 183108 HPs,
total space = 1025991 HPs, free areas = 204
...
```

```
%XAA6-000.145701 % SOP0004 Space summary for SBZ1.1: free areas of t1=15,
t2=16, t3=2, t4=3, t5=0, largest area = 107136 HPs, free space = 183108 HPs,
total space = 1025991 HPs, free areas = 15
%XAA6-000.145701 % SOP0003 Job for volume SBZ1.1 terminated
```

...
On completion of the SPACEOPT job, disk fragmentation is significantly reduced (down from 204 to 15 free areas).

Distribution of free pubset areas before SPACEOPT

The location of the free areas (blue zones in the graphic) is indicated in the output.
It can be seen that the disk is seriously fragmented due to numerous allocation and deletion operations.

Distribution of free pubset areas after SPACEOPT

The many small free areas in particular have been consolidated into contiguous areas (blue zones in the graphic)

Highlights of SPACEOPT

Optimum disk status through regular use of SPACEOPT, resulting in significant improvements in the following criteria:

Performance

- Catalog access: fewer input/output operations because smaller extent lists mean that more catalog entries can be stored in a block
- Data input/output: increased locality of the data blocks on the volumes

Availability

- No additional service window required for reorganization of fragmented volumes. Also open files are involved in the reorganization.
- No application aborts due to extent overflow



Easy to use and monitor thanks to SDF command interfaces.
User-friendly information function for assessing disk status.

Technical Requirements

Hardware:

BS2000/OSD Business Server

Software:

SPACEOPT V6.0 under BS2000/OSD-BC V9.0
SPACEOPT V5.0 under BS2000/OSD-BC V8.0
SPACEOPT V4.0 under BS2000/OSD-BC V7.0
SPACEOPT V3.0 under BS2000/OSD-BC V6.0
SPACEOPT V2.0 as from BS2000/OSD-BC V3.0 up to V5.0

Further reading:

SPACEOPT V3.0 (User Guide, Order No.: U41073-J-Z125-3-76)

[Online manual](#)