

## AUTOMATIC RESTORATION OF MULTI-VOLUME DATA SETS TO A SINGLE VOLUME

The Space Recovery System (SRS) includes a variety of options for space abend recovery. SRS can reduce the primary request, add a secondary request, and decrease or increase the size of the secondary request. If a non-VSAM data set uses 16 extents on a volume, or a non-VSAM or VSAM data set is on a volume that is completely full, the only way to keep the job from abending is to request that SRS add another volume. Because SRS adds a volume only as the last choice, in most data centers less than 15% of recoveries result in a multi-volume data set being created.

It's easy to write a multi-volume data set, reading a multi-volume data set may not always be easy. Some storage management utilities, applications, or editors, such as ISPF, cannot easily read multi-volume data sets. Because of these constraints, some people have been uncomfortable allowing their space recovery product to recover a job by adding another volume. Choosing to allow the job to abend is a costly decision, resulting in wasted CPU cycles, costly reruns, schedule delays, and middle of the night calls to key personnel.

Before the introduction of SRS, another step was often added to the production schedule to identify multi-volume data sets, and take action to restore them to a single volume. Some centers created sophisticated programs and procedures to address this issue in a somewhat automated fashion. More often, some human intervention was required after the fact. No option existed that allowed the multi-volume data set to be reorganized automatically, immediately after it was closed. No option existed that insured that later jobs wouldn't be adversely affected.

SRS eliminates the fear of multi-volume data sets!

SRS includes an environment for restoring multi-volume data sets automatically. At the completion of a job, if a data set has required the addition of a volume for recovery (via the ADDVOL option), you can request that the data set be copied back to a single volume.

At the end of a job where a volume was added (via ADDVOL), you can request that SRS issue an operator command, a message or an SMF record. Issuing an operator command to start a task to reorganize the data set is the method recommended. Two sample procedures using DF/DSS are included on the distribution tape as members in the SAMPLIB installation library. The ACCDSSN procedure is for reorganizing non-SMS managed data sets. The ACCDSSY procedure is for reorganizing SMS managed data sets. Either procedure can be easily modified to use a different utility.

To use the sample procedures, ACCDSSN or ACCDSSY, edit the PARM information in either/both procedures' JCL to point to the program library (PGMLIB=) that contains member PARMCARD from the distribution load library. After editing, copy the ACCDSSY and/or ACCDSSN procedure JCL to SYS1.PROCLIB or equivalent.

# SRS

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To request the automatic restoration to a single volume using ACCDSSN (for non-SMS) or ACCDSSY (for SMS), you include the ADDVOL(CMD(cmd1)) parameter of the DEFPOOL statement. Including the ADDVOL(CMD(cmd1)) parameter will cause the AUTOREST environment to be set to MODE(ACTIVE). A message or SMF record can also be created to facilitate other restoration processes.

The ADDVOL(CMD(cmd1)) parameter points to a DEFCMD statement, where a skeleton of the actual command (either S ACCDSSN or S ACCDSSY) is created. Variable information is substituted when the command is issued. As distributed, the restoration will occur automatically at the conclusion of the job that created the multi-volume condition.

For example, a production pool requests that primary be reduced by 10%, but not allowed to go below 30% of the original request, and secondary can be added using 50% of the primary request amount, and secondary can be reduced, and a volume can be added using volumes that begin PROD (or a volume from the current SMS storage group, but a data set should not use more than 5 volumes total, and multi-volume data sets should be immediately restored using the ACCDSSN or ACCDSSY procedure.

SMS and non-SMS data sets can use this single rule by coding the variable &SMS(1,1) as part of the CMD name. If &SMS(1,1) evaluates as Y - the data set is SMS managed - then ACCDSSY will be executed. If &SMS(1,1) evaluates as N - the data set is not SMS managed - then ACCDSSN will be executed.

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Both VSAM and non-VSAM data sets can use this single rule by coding &CLUSTER instead of data set name. For non-VSAM in this case, the &CLUSTER component will be set to data set name.

```
DEFRULE PRODRULE
IF &HLQ = PROD
THEN SET &DISKPOOL = PRDPOOL

DEFPOOL PRDPOOL
REDUCEP(PERCENT(10) LIMIT(30))
SETSEC(PERCENT(50)) REDUCES(YES)
ADDVOL(YES MAXVOL(5) CMD(SMSREST))

DEFCMD SMSREST
"S ACCDSS&SMS(1,1),D='&CLUSTER.',IV=&VOLSER,S=&SIZE-T-ALL" CN(0)
```

At the conclusion of the job, if a data set has required an additional volume for recovery, the operator command will be issued. The ACCDSSN or ACCDSSY procedure will be executed. In either procedure, the first two steps are used to create the SYSIN control cards for use by DF/DSS. The third step attempts to find a volume that has adequate space to contain the data set. The total size of the data set in tracks is substituted as the amount of the primary request.

The volume where the data set is copied will be chosen according to your pooling rules, SMS assignment, or basic MVS allocation rules. As distributed, a volume with adequate space is chosen from the esoteric unit group SYSALLDA, which includes all DASD volumes. If you have a pooling product, such as ACC, or use SMS, the list of eligible candidate volumes will be narrowed down to the correct volumes in the pool or SMS storage group. Otherwise, normal MVS allocation rules apply.

The ACCDSSY and ACCDSSN procedures are just examples of automatic, immediate data set reorganization. The tools to use another method are provided within the SRS framework - an easy to use operator command facility (DEFCMD) and automatic timing (ADDVOL(CMD(cmd1))) of the reorganization job. SRS eliminates the worry of multi-volume data sets by returning the data set to a single volume at the earliest possible moment. Automatically!

For more information on the Space Recovery System, Contact DTS Software at (770) 922-2444, or fax requests to (770) 860-0831.

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