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SVA SNAPSHOT

SHARED VIRTUAL ARRAY SNAPSHOT

INSTALLATION, CUSTOMIZATION, AND MAINTENANCE FOR OS/390

PRODUCT TYPE
SOFTWARE

Shared Virtual Array SnapShot

Version 2.1

for OS/390

Installation, Customization, and Maintenance

Part Number: 311291308

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About This Book

SVA SnapShot duplicates data sets or whole volumes without physically moving any data, thus dramatically reducing the time required for duplication. This book describes how to install, customize, and maintain SnapShot Version 2.1 on z/OS, OS/390, and MVS host operating systems. (Although this book generally mentions only OS/390, the SVAA for OS/390 software runs identically on **z/OS, OS/390, and MVS**.)

Note: SVAA Version 3.1 is a prerequisite for SnapShot; it must be installed before you proceed with the steps described in this book.

Who Should Read This Book

This book is for the systems programmers responsible for initializing and customizing SnapShot in an OS/390 environment. It presumes that readers are familiar with the information contained in the *SVAA for OS/390 Installation, Customization, and Maintenance* manual. It also presumes that readers have experience with the OS/390 operating system, System Modification Program Extended (SMP/E), Time Sharing Option/Extended (TSO/E), and Interactive System Productivity Facility (ISPF).

Conventions Used in This Book

Use of "Subsystem"

The term “subsystem” is used in two ways: ***OS/390 subsystem*** refers to the SVAA software subsystem as defined in IEFSSN*xx*. ***SVA subsystem*** refers to the SVA hardware. In command descriptions, the variable ***ssname*** always represents the name of the installed SVAA subsystem, while ***subsys*** represents the name assigned to the SVA subsystem (the hardware).

Notation Used in Syntax Diagrams

Throughout this library, diagrams are used to illustrate the programming syntax. The following list tells you how to interpret the syntax diagrams:

- Read the syntax diagrams from left to right, from top to bottom, following the path of the line.

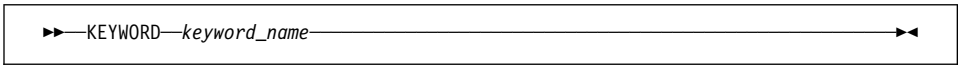
  The ▸▸— symbol indicates the beginning of a statement.

  The —▸ symbol indicates that the statement syntax continues on the next line.

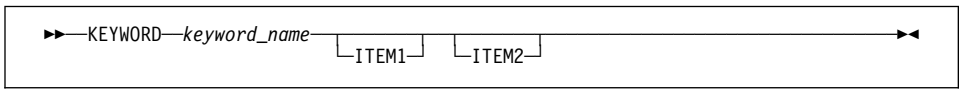
  The ▸— symbol indicates that a statement is continued from the previous line.

  The —▸◂ symbol indicates the end of a statement.

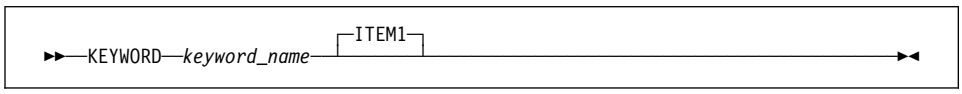
- Items shown on the main path of the statement are required.

- Items shown on branches below the main path are optional.

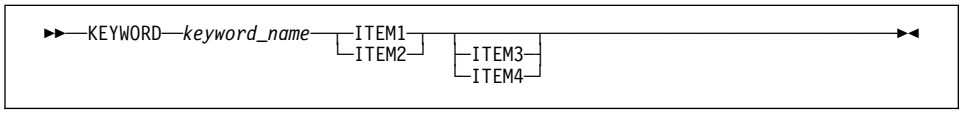


- Items shown on branches above the main path are default values.



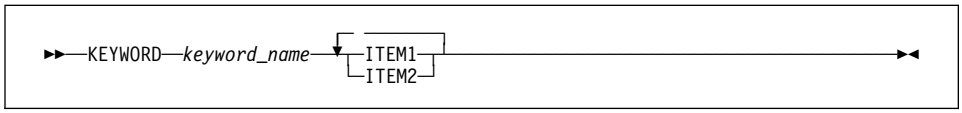
- Items appearing in a stack indicate that only one of the items can be specified. When one of the items in a stack appears on the main path, you must include one of the items.

  For example, in the following diagram, you must include either ITEM1 or ITEM2. ITEM3 and ITEM4 both appear below the main path, so neither one is required.

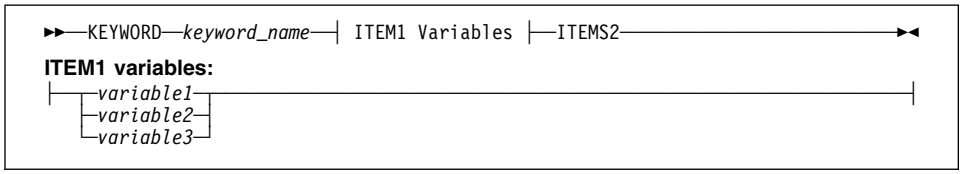


- A repeat arrow shown above an item or a stack of items indicates that you can specify the item multiple times or specify more than one of the items. A character (such as a comma or a blank) on the repeat arrow indicates that the items must be separated by that character.

  For example, in the following syntax diagram, you can specify both ITEM1 and ITEM2, but you must use a blank to separate your choices in your programming syntax.



- In some cases, when an item has additional items associated with it, an additional syntax diagram is shown that represents the full syntax of that item. For example, in the following syntax diagram, additional information that can or must be specified for ITEM1 appears in the “ITEM1 Variables” syntax diagram.



Shared Virtual Array Documentation

This section lists both software documentation and hardware documentation for the Shared Virtual Array products.

How to Obtain Software Documentation

All of the Shared Virtual Array software publications are available:

- On the "SVA Software Publications" CD-ROM (part number 3134524*nn*). To order a copy, contact StorageTek Publication Sales and Service at 800-436-5554 or send a fax to 303-661-7367.
- Online (for viewing and printing), at the StorageTek Customer Resource Center (CRC) web site at: **www.support.storagetek.com**
  Click on Software and go to the Shared Virtual Array Software list.

  Note: Access to the CRC site requires a password. To obtain a password, call StorageTek Customer Support at 800-678-4430.

SVA Administrator Library:

SVA Administrator for OS/390

- *Shared Virtual Array Administrator for OS/390 Configuration and Administration*
  3112905*nn*
- *Shared Virtual Array Administrator for OS/390 Installation, Customization, and Maintenance*
  3112908*nn*
- *Shared Virtual Array Administrator for OS/390 Reporting*
  3112906*nn*
- *Shared Virtual Array SnapShot for OS/390 Installation, Customization, and Maintenance*
  3112913*nn*

SVA Administrator for VM

- *Shared Virtual Array Administrator for VM Configuration and Administration*
  3134629*nn*
- *Shared Virtual Array Administrator for VM Installation, Customization, and Maintenance*
  3134631*nn*
- *Shared Virtual Array Administrator for VM Reporting*
  3134630*nn*

SVA Administrator for OS/390 and VM

- *Shared Virtual Array Administrator for OS/390 and VM Messages and Codes*
  3112907*nn*

For any StorageTek Software:

- *Requesting Help from Software Support*
  1121240*nn*

SVA Hardware Publications

Shared Virtual Array hardware publications are available:

- Online (for viewing and printing), at the StorageTek Customer Resource Center (CRC) web site at: **www.support.storagetek.com**
  Click on Disk Subsystems.

  Note: Access to the CRC site requires a password. To obtain a password, call StorageTek Customer Support at 800-678-4430.

V2Xf SVA Library:

- *V2Xf Shared Virtual Array General Information*
  MO9216*x*
- *V2Xf Shared Virtual Array Introduction*
  MO9217*x*
- *V2Xf Shared Virtual Array Operation and Recovery*
  MO9219*x*
- *V2Xf Shared Virtual Array Planning*
  MO9218*x*
- *V2Xf Shared Virtual Array Reference*
  MO9220*x*
- *V2Xf Shared Virtual Array System Assurance*
  MO9221*x*
- *V2Xf Shared Virtual Array Peer-to-Peer Remote Copy Configuration Guide (PPRCfcn)*
  MO9211*x*

V2X SVA Library:

- *V2X Shared Virtual Array General Information*
  MO9133*x*
- *V2X Shared Virtual Array Introduction*
  MO9135*x*
- *V2X Shared Virtual Array Operation and Recovery*
  MO9137*x*
- *V2X Shared Virtual Array Planning*
  MO9136*x*

- *V2X Shared Virtual Array Reference*
  MO9139*x*
- *V2X Shared Virtual Array System Assurance*
  MO9138*x*
- *V2X Shared Virtual Array System Assurance*
  MO9138*x*

V960 SVA Library:

- *V960 Shared Virtual Array General Information*
  MO5011*x*
- *V960 Shared Virtual Array Introduction*
  MO5006*x*
- *V960 Shared Virtual Array Operation and Recovery*
  MO5007*x*
- *V960 Shared Virtual Array Planning*
  MO5008*x*
- *V960 Shared Virtual Array Reference*
  MO5009*x*
- *V960 Shared Virtual Array System Assurance*
  MO5010*x*

Peer-to-Peer Remote Copy for V2X, V2X2, and V960:

- *Peer-to-Peer Remote Copy Configuration Guide*
  MP4007*x*

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Product Support

StorageTek Customer Services provides 24-hour assistance for questions or problems related to StorageTek products. Calls from our customers receive immediate attention from trained diagnostic specialists. Call 800-678-4430.

Refer to the document *Requesting Help from Software Support* for detailed information about contacting StorageTek for technical support in your country or geographical location.

During problem resolution, Software Support may request that you provide specific diagnostic materials. Although printed data might be acceptable, data in machine-readable form is much preferred.

OS/390 Diagnostic Materials

Software Support may request one or more of the following kinds of diagnostic materials, depending on the nature of the problem:

- Details of circumstances
- OS/390 SYSLOG
- SYSMSG data set
- SYSPRINT data set
- SYS*x*DUMP and SYS1.DUMP*nn* data sets
- SYSHIST data set (LOG OFFLOAD)

- Database DUMPS/DEBUG
- EREP records (hardware and/or software)
- ISPF panel images
- ISPF panel names and SPFLOG
- External trace for SVAA via GTF
- CCW I/O traces
- SMF records
- Listings of SVAA files altered during installation, including the PROFSIBS and PROFSIBA macros
- Copies of logging files
- Output of SVAA started-task job
- Console dump with: SDATA=(ALLPSA,SQA,LSQA,RGN,LPA, TRT,CSA,SWA,SUMDUMP,ALLNUC,Q=YES,GRSQ)

Summary of Changes

Revision K, May 2006 -- EC 132661

This revision:

- Updates Table 3-5 in Chapter 3 to indicate that the *unitaddress* parameter is a variable, not a keyword.

All significant changes are identified by a vertical bar in the left margin.

Revision J, August 2005 -- EC 132346

This edition:

- Updates the Volume access authority level in Step 7 to discuss what occurs if the target parameter requests PPRC Remote SnapShot.
- Updates Table 3-5 in Chapter 3 to include PPRC Remote SnapShot among the command-level resources checked by SVAA.

Eighth Edition (Rev H), March 2005 -- EC 132026

This edition:

- Updates Table 1-2 in Chapter 1 with the new minimum Version and Release of the System Software Prerequisites.

All significant changes are identified by a vertical bar in the left margin.

Seventh Edition (Rev G), April 2004 -- EC 128971

This edition updates Table 3-5 in Chapter 3 to indicate that Control access is required before trying to snap to a target data set.

All significant changes are identified by a vertical bar in the left margin.

Sixth Edition (Rev F), November 2003 -- EC 128861

This edition updates the security resources in Step 7 for the ability to snap offline volumes.

All significant changes are identified by a vertical bar in the left margin.

Fifth Edition (Rev E), September 2002 -- EC 128567

This edition:

- Corrects the JCL in Step 2: Loading the Installation JCL. Emphasizes that the current installation JCL is on the SnapShot Maintenance Tape—not the Product Tape.

All significant changes are identified by a vertical bar in the left margin.

Fourth Edition (Rev D), January 2002 -- EC 123350

This edition:

- Adds a description of the Maintenance Tape on page 2-1.
- Updates the Installation JCL shown on page 2-2.
- Revises Table 2-3 (page 2-5), to show values for “Used 3390 Tracks” (instead of 3380).
- Updates the JCL in Step 3a: Receiving the SnapShot Functions and Step 3b: Receiving the Maintenance PTFs and Holddata.
- Adds Chapter 5, “Installing Maintenance PTFs Independently,” for use after the initial installation is complete.

Chapter 1. Overview

Associated Software

SVAA Version 3.1

SVAA Version 3.1 (and all required maintenance) must be installed before you can install SnapShot for OS/390 Version 2.1. See the *SVAA for OS/390 Installation, Customization, and Maintenance* manual for the procedures for installing SVAA.

Note: SnapShot for OS/390 Version 1.2 is not supported on SVAA Version 3.1.

SnapShot microcode

The SnapShot microcode is not a prerequisite to installing the SnapShot software or using it to copy data sets and volumes with a data mover. However, the SnapShot microcode must be installed on the SVA before you can perform snap operations. Contact your service representative regarding microcode installation.

Installation Checklist

Use the checklist in Table 1-1 to ensure that you perform all the steps necessary to install, initialize, and customize SnapShot in the OS/390 environment.

Table 1-1. *Installation checklist*

Step	Description of action	Required or optional?	Page	√
1	Load the installation JCL.	Required	2-2	
2	Allocate and define the SnapShot data sets.	Required	2-4	
3	Install the SnapShot functions and Maintenance PTFs.	Required	2-6	
4	Customize SYS1.PARMLIB for SnapShot.	Required	3-2	
5	Serialization requirements for SnapShot	Optional, but recommended	3-9	
6	Verify load module library requirements.	Required	3-10	
7	Define security resources to your security system.	Optional	3-11	
8	Customize SnapShot user exits.	Optional	3-13	
9	Enable parmlib changes.	Optional	4-2	
10	Initialize Volume Preferencing	Optional	4-4	
11	Verify Volume Preferencing status.	Optional	4-8	
12	Verify SnapShot under TSO.	Optional	4-9	
13	Verify SnapShot under SIBBATCH.	Optional	4-10	

Migration Considerations

You must install SnapShot 2.1 into the same target and distribution zones as SVAA 3.1.

Software Prerequisites

SnapShot Version 2.1 requires Shared Virtual Array Administrator (SVAA) Version 3.1 and its prerequisites.

Table 1-2. *System Software Prerequisites*

Software	**Minimum Version, Release**
DFMVS/MVS	Version 1, Release 5

Required IBM PTFs for older software levels are listed below.

Table 1-3. *System Software PTF Prerequisites*

Component	**Version**	**PTF**	**APAR**
MVS/ESA DFP	3.3.0	UW38930	OW26512, OW26620
DFSMS/MVS	1.1.0	UW39472	OW27470
DFSMS/MVS	1.1.0	UW38491	OW26407
DFSMS/MVS	1.1.0	UW21260	OW14790
DFSMS/MVS	1.2.0	UW39469	OW27470
DFSMS/MVS	1.2.0	UW38939	OW26407
DFSMS/MVS	1.2.0	UW39265	OW27434
DFSMS/MVS	1.2.0	UW31949	OW20560
DFSMS/MVS	1.2.0	UW38677	OW26683
DFSMS/MVS	1.2.0	UW21258	OW14790
DFSMS/MVS	1.3.0	UW39470	OW27470
DFSMS/MVS	1.3.0	UW38940	OW26407
DFSMS/MVS	1.3.0	UW39266	OW27434
DFSMS/MVS	1.3.0	UW31950	OW20560
DFSMS/MVS	1.3.0	UW38678	OW26683
DFSMS/MVS	1.4.0	UW39267	OW27434
DFSMS/MVS	1.4.0	UW39471	OW27470
DFSMS/MVS	1.4.0	UW39566	OW27392
DFSMS/MVS	1.4.0	UW38679	OW26683

Chapter 2. Installing SnapShot

The SMP/E installation process consists of the following steps:

Step 1 Loading the Installation JCL (from the Maintenance Tape)

Step 2 Allocating and defining the SnapShot data sets

Step 3 Installing the SnapShot functions and the Maintenance PTFs

SnapShot Product Tape Contents

SnapShot Version 2.1 is contained on one 3480 standard-label tape with the volume serial number SOC210. Table 2-1 lists the tape's contents.

Table 2-1. *SnapShot Product Tape contents*

File No.	Data Set Name	Description
1	SMPMCS	SnapShot SMP/E control statements
2	SSOC210.F1	JCLIN for SnapShot
3	SSOC210.F2	Source for SnapShot
4	SSOC210.F3	Macros for SnapShot
5	SMPEJCL	SMP/E installation JCL

SnapShot Maintenance Tape Contents

The SnapShot Maintenance Tape is a 3480 non-label tape. Table 2-2 lists the tape's contents.

Table 2-2. *SnapShot Maintenance Tape contents*

File No.	Data Set Format	Description
1	SMPPTFIN	All PTFs issued since Base tape
2	IEBGENER	Print file of all PTF cover letters
3	IEBGENER	Print file of summary info for all PTFs
4	SMPPTFIN	SMP/E external hold statements
5	IEBUPDTE	Current installation JCL

Step 1: Loading the Installation JCL

To install SnapShot, you must use the current installation JCL, which is in: **file 5 on the SnapShot Maintenance Tape**. (**Do not** use file 5 on the SnapShot Product Tape.)

Modify the following job to load the installation JCL file from the Maintenance Tape to a data set on your system:

- For *mnttap*, enter the volume serial number that appears on the external label of the Maintenance Tape.
- For *tapeunit*, enter the unit number of the drive on which the tape is mounted.
- Change the SYSUT2 **DSN**, **UNIT**, and **BLKSIZE** fields as needed.

```
//jobname   JOB    'accounting info'
//*
//          EXEC   PGM=IEBUPDTE,PARM=NEW
//SYSPRINT  DD     SYSOUT=*
//SYSIN     DD     DSN=INSTJCL,DISP=OLD,
//                 VOL=SER=mnttap,
//                 UNIT=tapeunit,
//                 LABEL=(5,NL,EXPDT=98000),
//                 DCB=(RECFM=FB,LRECL=80,BLKSIZE=7200)
//*
//SYSUT2    DD     DSN=data.set.name,DISP=(,CATLG),
//                 UNIT=sysallda,SPACE=(TRK,(10,2,10)),
//                 DCB=(RECFM=FB,LRECL=80,BLKSIZE=23440)
```

Figure 2-1. *Load JCL*

JCL members $$NOTES and $$TOC are shown below.

$$NOTES: Notes for Using SnapShot Installation JCL

This library contains sample JCL for installing the SnapShot function and Maintenance PTFs with SMP/E. Member $$TOC, the table of contents, lists the function of each member.

Follow the instructions in this chapter and in the documentation provided in each member before executing each job. Change the lowercase variables in each job to valid uppercase values. Execute the jobs in the order given.

An optional edit macro is provided to help with the editing of the JCL (member $SSEDIT). Follow the instructions in the edit macro for its use.

Instructions within each job contain either notes or a list of changes to make. Anything within a note will not be changed by the $SSEDIT macro and must be considered separately before running the job. Notes will always begin with 'Note:'.

$$TOC: SnapShot Installation JCL Contents

$$NOTES	Notes on using the installation JCL.
$$TOC	Table of contents.
$SSEDIT	Edit macro used to modify installation JCL.
$SSRUN	REXX EXEC to invoke $SSEDIT against all members of the SnapShot Installation JCL pds (optional).
$NEW	Changes to the Installation JCL for the current maintenance level.

Function Installation

S1ALLOC	Allocate and define the SnapShot data sets.
S2RCVFUN	Receive the SnapShot function.
S3RCVPTF	Receive PTFs.
S4APPLY	Apply the SnapShot function.
S5ACCEPT	Accept the SnapShot function.
S6PTFAPP	Apply any PTFs not previously applied.
S7PTFACC	Accept any PTFs not previously accepted.

Step 2: Allocating and Defining the SnapShot Data Sets

See installation JCL member **S1ALLOC**.

Allocating the SnapShot Data Sets

Table 2-3 on page 2-5 describes the attributes and the recommended number of directory blocks and space allowances for the SnapShot target and DLIB data sets.

The block sizes listed in the table indicate the sizes of blocks on the Product tape. However, for data set names with an entry in the **Note** column, the **recommended** block size is a different value—see the **Recommended Block Sizes** note at the bottom of the table. If you change the block size, you may want to change the number of blocks. The values given in the table are the same as those in JCL member **S1ALLOC**.

Note: One data set, STKLOAD, is shared with SVAA. You will already have it allocated and the SMP/E DDDEF defined.

Defining SnapShot Data Sets to SMP/E

Before you perform the SMP/E installation of SnapShot, you must define the SnapShot data sets to the SVAA SMP/E target and distribution zones. If you do not wish to use DDDEFs for the SnapShot data sets, you will need to include a DD statement for each SnapShot data set within your SMP/E PROC or JCL for any SnapShot SMP/E tasks to be done.

Update your TARGET and DLIB zone DDDEFs with the SnapShot data set names. Change "hlq" to an appropriate high level dataset name qualifier, and correct the name of the target and DLIB zones in the SET BOUNDARY statements. Ensure that you are using the SVAA CSI, target, and distribution zones.

Table 2-3. *SnapShot Data Sets (See JCL member S1ALLOC)*

Data Set Name	DSORG	RECFM	LRECL	Block Size	Used Blocks	Used 3390 Tracks	Used Directory Blocks	Note	Description
hlq.ASOCMAC	PO	FB	80	3120	8	4	1	2	Distribution library: macros
hlq.ASOCRTNS	PO	U	0	6144	225	25	21	-	Distribution library: routines
hlq.ASOCSAMP	PO	FB	80	3120	88	6	1	-	Distribution library: sample
hlq.SOCMAC	PO	FB	80	3120	8	4	1	2	Target library: macros
hlq.SOCRTNS	PO	U	0	6144	235	27	20	-	Target library: routines
hlq.SOCSAMP	PO	FB	80	3120	88	6	1	-	Target library: sample
hlq.STKLINK	PO	U	0	23476	2	1	1	1	Target library: load modules

Note: In the above data set names, "hlq" means high-level qualifier(s).

Note: Recommended Block Sizes

The above block sizes are the block sizes on the tape. It is recommended that the block size for each data set be modeled after a similar system data set on your system. Use the value in the “Note” column in the above table to find the model data set name.

Note 1: Same as SYS1.LINKLIB.
Note 2: Same as SYS1.MACLIB.

Step 3: Installing the SnapShot Functions and PTFs

The SnapShot function installation consists of the following tasks:

- Receiving the SnapShot functions (from the SnapShot Product Tape)
- Receiving the SnapShot Maintenance PTFs and HOLDDATA (from the SnapShot Maintenance Tape)
- Applying the SnapShot functions
- Accepting the SnapShot functions
- Applying any PTFs not previously installed
- Accepting any PTFs not previously installed

For each step in the installation process you can use the Installation JCL member, the SMP/E Sysmod Management dialogs, or the printed sample JCL to install the SnapShot programs into the appropriate SMP/E zone.

SnapShot SMP/E Function ID

SnapShot for OS/390 is packaged in standard SMP/E format. It has the following SMP/E function ID (FMID):

SSOC210 SnapShot Version 2.1 base function

Step 3a: Receiving the SnapShot Functions

Use the sample JCL in **S2RCVFUN** to receive the SnapShot functions from the Product Tape.

```
//jobname   JOB    'accounting info'
//*
//          EXEC   smpeproc
//SMPPTFIN  DD     DISP=(OLD,PASS),
//                 VOL=(,RETAIN,SER=SOC210),
//                 UNIT=tapeunit,
//                 LABEL=(1,SL,EXPDT=98000),
//                 DSN=SMPMCS
//SMPCNTL   DD     *

 SET BOUNDARY ( GLOBAL )
            .
 RECEIVE    SELECT ( SSOC210 )   /* SnapShot for 0S/390 V2.1 */
            SYSMODS
            .
```

Figure 2-2. *JCL member S2RCVFUN: Receiving the SnapShot functions*

When the S2RCVFUN job has completed successfully, proceed to “Step 3b: Receiving the Maintenance PTFs and HOLDDATA” on page 2-7 (S3RCVPTF).

Step 3b: Receiving the Maintenance PTFs and HOLDDATA

Use the sample JCL in **S3RCVPTF** to receive the Maintenance PTFs and HOLDDATA from the Maintenance tape.

```
//jobname   JOB    'accounting info'
//*
//          EXEC   smpeproc
//*
//SMPPTFIN  DD     DSN=PTF,DISP=SHR,
//                 VOL=(,RETAIN,SER=mnttap),
//                 UNIT=tapeunit,
//                 LABEL=(1,NL,EXPDT=98000),
//                 DCB=(RECFM=FB,LRECL=80,BLKSIZE=7200)
//SMPHOLD   DD     DSN=HOLDDATA,DISP=SHR,
//                 VOL=(,RETAIN,SER=mnttap),
//                 UNIT=AFF=SMPPTFIN,
//                 LABEL=(4,NL,EXPDT=98000),
//                 DCB=(RECFM=FB,LRECL=80,BLKSIZE=7200)
//SMPCNTL   DD     *

 SET BOUNDARY ( GLOBAL ) .

 RECEIVE SYSMODS                 /* Receive all SYSMODs and    */
         HOLDDATA                /* any exception data.  List  */
         LIST                    /* the MCS for each SYSMOD.   */
         .
```

Figure 2-3. *JCL member S3RCVPTF: Receiving the PTFs and HOLDDATA*

When the S3RCVPTF job has completed successfully, proceed to “Step 3c: Applying the SnapShot Functions” on page 2-8 (S4APPLY).

Step 3c: Applying the SnapShot Functions

Use the sample JCL in **S4APPLY** to install the SnapShot function into the appropriate target libraries.

Before submitting this job, specify the name of your target zone in the SET BOUNDARY statement.

```
//jobname   JOB    'accounting info'
//*
//          EXEC   smpeproc
//SMPLOG    DD  DISP=SHR,DSN=loghlq.SMPLOG
//SMPLOGA   DD  DISP=SHR,DSN=loghlq.SMPLOGA
//SMPCNTL   DD     *

 SET BOUNDARY ( target ) .       /* SVAA target zone */

 APPLY      SELECT ( SSOC210 )   /* SnapShot for OS/390 V2.1 */
            GROUPEXTEND
            NOJCLINREPORT
            RETRY ( YES )
            .
```

Figure 2-4. *JCL member S4APPLY: Applying the SnapShot functions*

Note: Expect return code 04 with Binder message IEW2454W or SMP/E message GIM23903W for link-edit processing to the SOCRTNS library.

When the S4APPLY job has completed successfully, proceed to “Step 3d: Accepting the SnapShot Functions.”

Step 3d: Accepting the SnapShot Functions

Use the sample JCL in **S5ACCEPT** to accept the SnapShot functions. The ACCEPT CHECK option can be used as often as necessary before the actual ACCEPT process to identify SMP/E processing problems. All SMP/E-detected problems must be resolved before the SnapShot functions can be successfully accepted.

Before submitting this job, specify the name of your distribution zone in the SET BOUNDARY statement.

```
//jobname   JOB    'accounting info'
//*
//          EXEC   smpeproc
//SMPCNTL   DD     *

 SET BOUNDARY ( dlib ) .         /* SVAA distribution zone */

 ACCEPT     SELECT ( SSOC210 )   /* SnapShot for OS/390 V2.1 */
            GROUPEXTEND
            NOJCLINREPORT
            RETRY ( YES )
            .
```

Figure 2-5. *JCL member S5ACCEPT: Accepting the SnapShot functions*

Step 3e: Applying Remaining Maintenance PTFs

Use the sample JCL in job **S6PTFAPP** to apply any Maintenance PTFs not applied using GROUPEXTEND in the S4APPLY job.

Add BYPASS options as needed after examining the SMP/E HOLDDATA.

```
//jobname   JOB    'accounting info'
//*
//          EXEC   smpeproc
//SMPCNTL   DD     *

 SET BOUNDARY ( target ) .

 APPLY      FORFMID ( SSOC210 )   /* SnapShot for OS/390 V2.1 */
            GROUPEXTEND
            BYPASS ( bypass options )
            RETRY ( YES )
            .
```

Figure 2-6. *JCL member S6PTFAPP: Applying remaining PTFs*

Step 3f: Accepting Remaining Maintenance PTFs

Use the sample JCL in job **S7PTFACC** to accept any Maintenance PTFs not accepted using GROUPEXTEND in the S5ACCEPT job.

Add BYPASS options as needed. Use the same BYPASS options used in the S6PTFAPP job.

```
//jobname   JOB    'accounting info'
//*
//          EXEC   smpeproc
//*
//SMPCNTL   DD     *

 SET BOUNDARY ( dlib ) .

 ACCEPT     FORFMID ( SSOC210 )   /* SnapShot for OS/390 V2.1 */
            GROUPEXTEND
            BYPASS ( bypass options )
            RETRY ( YES )
            .
```

Figure 2-7. *JCL member S7PTFACC: Accepting remaining PTFs*

Chapter 3. Customizing for SnapShot

Customizing for SnapShot involves the following steps, which are described in detail in this chapter.

Step 4 Customizing SYS1.PARMLIB

This involves some or all of the following steps:

- **Step 4a** Customizing LNKLST*xx* or PROG*xx* (see page 3-2)
- **Step 4b** Customizing IEAAPF*xx* or PROG*xx* (see page 3-2)
- **Step 4c** Customizing IEFSSN*xx* (see page 3-3)
- **Step 4d** Customizing SMFPRM*xx* (see page 3-7)

Step 5 Serializing for SnapShot (see page 3-9)

Step 6 Verifying Load Module Library Requirements

- **Step 6a** Verifying STKLINK requirements (see page 3-10)
- **Step 6b** Verifying STKLOAD requirements (see page 3-10)

Step 7 Defining Security Resources (see page 3-11)

Step 8 Customizing User Exits (see page 3-13)

Note: A SAMPLIB for SnapShot, called SOCSAMP, is installed with SVAA. SOCSAMP contains some sample EXECs, panels, and programs that you can use to verify the SnapShot installation. The contents of SOCSAMP are listed in Appendix A, “Contents of SOCSAMP.”

Step 4: Customizing SYS1.PARMLIB for SVAA

To run SVAA on your system, you must customize SYS1.PARMLIB members by performing some or all of the following steps:

- Customizing LNKLST*xx* or PROG*xx*
- Customizing IEAAPF*xx* or PROG*xx*
- Customizing IEFSSN*xx*
- Customizing SMFPRM*xx*

See the IBM *OS/390 Initialization and Tuning Reference* for the correct syntax for each parmlib member.

Step 4a: Customizing the LNKLSTxx or PROGxx Member

Copies of the following data sets must be in the link list concatenation (either the PROG*xx* member for OS/390 2.4 or above, or the LNKLST*xx* member for any level of OS/390):

hlq.**SIBLINK**
hlq.**STKLINK**

To improve performance, it is recommended that copies of the following data sets also be in the system link list concatenation:

hlq.**SIBLOAD**
hlq.**STKLOAD**

Sample members, named LNKLSTIX and PROGIX, are included in the SIBSAMP library.

Note: Do not place the SMP/E target data sets (SIBLINK and/or SIBLOAD) in the system link list. As with all SMP/E target data sets, this can cause system problems when applying maintenance to the data sets. Instead, place copies of these data sets in the link list. The copies should have zero secondary extents.

Step 4b: Customizing the IEAAPFxx or PROGxx Member

For SnapShot, you must include the following data set in one of the authorized program lists in SYS1.PARMLIB (either the PROG*xx* member for OS/390 2.4 or above, or the IEAAPF*xx* member for any level of OS/390):

hlq.**STKLINK**

Sample members, named IEAAPFIX and PROGIX, are included in the SIBSAMP library.

Note: If a library is in the link list concatenation but is not APF-authorized, referring to the library in a JOBLIB or STEPLIB statement causes the library to be considered unauthorized for the duration of the job or step. Therefore, if you will ever access the above data set using a JOBLIB or STEPLIB statement, the data sets must be in an APF list, even if all three are in the link list and the link list is automatically authorized (the LNKAUTH=APFTAB parameter of IEASYS00 is *not* specified).

Step 4c: Customizing the IEFSSNxx Member

Subsystem definitions are contained in SYS1.PARMLIB member IEFSSN*xx* (known as the Subsystem Name Table or SSN). You defined your SVAA subsystem when you installed SVAA. For SnapShot, one additional parameter—**VP** (volume preferencing status)—can be included in the definitions.

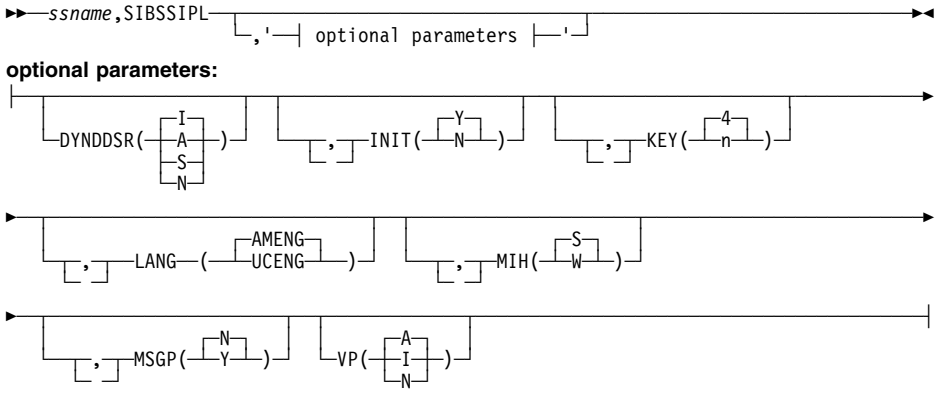
A sample IEFSSN*xx* member, named IEFSSNIX, is included in the SIBSAMP data set.

Important!

If you specify VP (volume preferencing) option **A** or **I**, SnapShot installs a hook into the OS/390 system routine IGGDAC02. There are no special requirements about its installation order unless the hook needs to be removed completely by removing the residual stubs. In this case, volume preferencing must be installed last (after all other products that use IGGDAC02 have been installed), or all other products that use IGGDAC02 must be de-installed before SnapShot's volume preferencing exit is de-installed.

Syntax

SIBSSIPL



Notes:

1. The VP (volume preferencing) parameter is specifically for SnapShot.
2. You can use either a blank or a comma to separate optional parameters.
3. Any sequence of optional parameters containing a blank or comma must be enclosed in single quotation marks.

Parameters

The SVAA and SnapShot entries in the IEFSSN*xx* member can have the following parameters.

ssname

Required

This parameter specifies the name of the OS/390 SVAA subsystem (*not* the SVA subsystem).

The SSN entry is required in the subsystem name table of each OS/390 operating system under which SVAA will execute. The OS/390 SVAA subsystem name does not have to be unique across operating systems; the same name (or a different name) can be used on each OS/390 system.

Values: *ssname* contains up to 4 characters and must begin with an alphabetic or special character (#, @, or $). The remaining characters (if any) can be alphanumeric or any of the same special characters.

Default value: None

SIBSSIPL

Required

This keyword specifies that SIBSSIPL is the name of the subsystem initialization routine.

Values: SIBSSIPL (no other value is allowed)

Default value: None

DYNDDSR

Optional

This parameter controls the initialization of Dynamic Deleted Data Space Release (DDSR).

Values:

- **A** Dynamic DDSR is to be initialized and activated.
- **S** Dynamic DDSR is to be initialized but only activated in simulation mode; no actual space release will be performed.
- **I** Dynamic DDSR is to be initialized but not activated until a RELEASE DYNAMICDATA(STATUS(ACTIVE)) subcommand is issued.
- **N** Dynamic DDSR is not to be initialized. To activate Dynamic DDSR, you must reinitialize the SVAA subsystem specifying the **A, I,** or **S** option for DYNDDSR (see "Step 10: Initializing Volume Preferencing with SIBMVSS" on page 4-4).

Default value: **I**

INIT

Optional

This parameter indicates whether subsystem initialization is to be performed during IPL.

Values:

- **Y** Perform full subsystem initialization, including allocation and initialization of data structures, loading of global service routines, and device mapping.
- **N** Do not perform subsystem initialization. (For information about initializing SVAA with SIBMVSS at a later time, see "Step 10: Initializing Volume Preferencing with SIBMVSS" on page 4-4.)

Default value: **Y**

KEY

Optional

This parameter identifies the protection key in which the subsystem is to run. The SVAA subsystem can be initialized with a problem program protection key of 1 to 7. Once initialized, the key value for the SVAA subsystem cannot be changed.

Values: 1 to 7.

SVAA will not function properly if you specify a problem program protection key of 8 to 15.

Default value: 4

LANG

Optional

This parameter indicates whether SVAA subsystem messages routed to the operator console are to appear in mixed case or all uppercase.

Values:

AMENG Display all messages in "American" (mixed case) English.

UCENG Display all messages in uppercase English.

Default value: **AMENG**

MIH

Optional

This parameter specifies how SVAA is to handle incorrect settings of the DASD MIH (missing-interrupt handler) timeout value.

Values:

S SVAA is to set the MIH timeout interval to the recommended value for all SVA devices. When setting MIH values for devices, SVAA displays the SIB2972I message once—for the first SVA device only.

W SVAA is *not* to change the MIH timeout interval for any SVA device, but is to display the warning message SIB2971W for each SVA device for which the MIH timeout value is insufficient.

Default value: **S**

MSGP

Optional

This parameter indicates whether the subsystem name is to be prefixed in the display of SVAA messages.

To support automated console operations programs, the subsystem name normally does not prefix the message identifier.

Values:

Y Display the subsystem name as a prefix to SVAA messages.

N Suppress the display of the subsystem name as a prefix to SVAA messages.

Default value: **N**

VP

Optional

This parameter specifies status for the volume preferencing intercept.

Note: The VP parameter is ignored if SnapShot is not installed.

Values:

A SVAA installs volume preferencing and makes it active.

I SVAA installs volume preferencing, but leaves it inactive (volume preferencing can be made active later with a SET VOLPREF subcommand).

N Volume preferencing is not to be installed and cannot be activated with a SET VOLPREF subcommand. To activate volume preferencing later, you must reinitialize the SVAA subsystem specifying **VP(A)** or **VP(I)** (see "Step 10: Initializing Volume Preferencing with SIBMVSS" on page 4-4).

Default value: **A**

Example of Valid Subsystem Definition

The following sample definition initializes SVAA and installs and activates volume preferencing.

```
SVAA,SIBSSIPL,'INIT(Y),VP(A)'
```

Step 4d: Customizing the SMFPRMxx Member

If you want SMF to collect SnapShot data, you must identify the SMF record type for SVAA and the subtype (**subtype 8**) for SnapShot in the SMFPRM*xx* member of SYS1.PARMLIB.

The layout of the SnapShot SMF record (subtype 8) is documented in the *SVAA for OS/390 Configuration and Administration*. A SAS program (SOASNP03) that formats SnapShot SMF records for display is provided in the SOCSAMP data set. See Appendix A, "Contents of SOCSAMP."

Syntax

```
SYS(options)
SUBSYS(STC,options)
SUBPARM(ssname(smftype[,subtype]))
```

A sample SMFPRM*xx* member, named SMFPRMIX, is included in the SVAA SIBSAMP data set. (This member contains the SUBPARM syntax but, as explained in steps 2 and 3 below, you also may need to include the SYS and SUBSYS parameters.)

To have SMF collect SVAA data, you must:

1. In the SUBPARM parameter, select the record type to be used for SVAA data and specify the record subtypes for the data you want to collect.
2. Include the selected SVAA record type in the TYPE option of the SYS parameter—if the TYPE option is present. (If the TYPE option is omitted, ***all*** record types are enabled by default.)
3. If the SUBSYS(STC,...) parameter (for started tasks) is present in SMFPRM*xx*, and if it includes the TYPE option, it must include the SVAA record type.

SYS Parameter

The options for the SYS parameter are described in the IBM *OS/390 Initialization and Tuning Reference*. The TYPE and NOTYPE options both affect SVAA data collection for SMF. For SVAA data to be collected:

- If the TYPE option is specified, the SVAA SMF record type (selected in the SUBPARM parameter) must be included as one of its values.
- If the NOTYPE option is specified, the SVAA record type must *not* be included as one of its values.

SUBSYS Parameter

The SUBSYS(STC,...) parameter is optional in the SMFPRM*xx* member. The options available with SUBSYS(STC,...) are identical to those used with the SYS parameter.

SUBPARM Parameter

The SUBPARM parameter enables you to specify the SVAA SMF record type and subtypes to be written.

ssname

Required

ssname specifies the SVAA subsystem name.

Values: The name must be the *ssname* defined in the IEFSSN*xx* member (see page 3-3).

Default value None

smftype
Required

smftype specifies the SMF record type to be used for SVAA data.

Values: An integer ranging from 128 to 255

Default value: None

subtype
Optional

subtype specifies the SVAA record subtypes that are to be written (or *not* written) for this SVAA subsystem.

Values: SVAA record subtypes, with or without minus signs. The only subtype values related to SnapShot are:

8 Write SnapShot Version 2.1 SMF records.

-8 Do not write SnapShot Version 2.1 SMF records.

Default value: -8

Specifying the other SVAA record subtypes (1, 2, 3, 4, 5, and 7) is described in the *SVAA for OS/390 Installation, Customization, and Maintenance* manual.

Example of SMFPRMxx Member

In the following SMF entry example, 250 is the record type selected for SVAA data. Record subtype 8 indicates that SnapShot Version 2.1 records are to be written.

```
SYS(TYPE(0:104,250))
SUBSYS(STC,TYPE(0:55,80:104,250))
SUBPARM(IXFP(250,8))
```

Figure 3-1. *SMFPRMxx parmlib member example*

Step 5: Serialization Requirements for SnapShot

This step is applicable only if you are executing SnapShot on multiple systems and shared DASD. If SnapShot is executing on only one system, you can skip this step.

ENQUEUE Requests

When sharing DASD, SnapShot processing requires serialization to provide data integrity and to prevent lockout situations. You should use **Global Resource Serialization (GRS) or an equivalent product to ensure that ENQUEUE requests are propagated to all connected systems.**

Serializing SnapShot I/O Requests

Table 3-1 describes the enqueues that are obtained to serialize the processing of a SnapShot request. The ENQUEUE major name uses the standard SVAA non-authorized ENQUEUE major name, SIBIXFP. You should include this major name (SIBIXFP) in the SYSTEM Include Resource Name List (RNL). *Do not include minor names* in the RNL unless you specify a volser minor name for each volume that may be snapped. The ENQUEUE minor names are shown in the table.

Table 3-1. *SnapShot ENQUEUE requests*

Major name	Minor name (suffix)	Scope	Operations
SIBIXFP	*volser*	SYSTEM	Source and target allocations
SIBIXFP	*data set name*	STEP	Source and target processing (prevents multitasking lockouts)

SVAA may also use another non-authorized ENQUEUE major name, IXFPQNM, for SnapShot internal processing. It does *not* require a SYSTEM Include RNL entry.

Serializing a SnapShot Operation

To properly serialize SNAP DATASET operations and any associated catalog or VTOC operations, SVAA must acquire ENQUEUEs on the resource names shown in Table 3-2. Operating system components that SVAA directly or indirectly invokes during a SnapShot operation may acquire other ENQUEUEs.

Table 3-2. *SnapShot ENQUEUE major and minor name requirements*

Major name	Minor name	Scope	Operations
SYSDSN	*data set name*	SYSTEM	SnapShot operations, VTOC and VTOC index updates
SYSZDSCB	*volser* || *'S'* || *data set name*	SYSTEMS	SnapShot operations, PDSE target
Note: '||' indicates concatenation			

RESERVE Requests

Device RESERVEs are required for VTOC updates to serialize the source and target devices during a SnapShot operation. Operating system components that SVAA directly or indirectly invokes during SnapShot may acquire other RESERVEs.

Table 3-3. *SnapShot RESERVE major and minor name requirements*

Major name	Minor name	Scope	Operations
SYSVTOC	*volser*	SYSTEMS	VTOC and VTOC index updates

Step 6: Verifying Load Module Library Requirements

For information about allocation parameters, see the "Allocating SnapShot Data Sets" section in Chapter 2.

Step 6a: Verifying STKLINK Library Requirements

The *hlq*.STKLINK load module library:

- Must be in one of the authorized program lists in SYS1.PARMLIB (IEAAPF*xx* or PROG*xx*)
- Must be included in the system link list (LNKLST*xx* or PROG*xx*)
- Should be allocated with no secondary extents
- Should not be used as the SMP/E target library (*hlq*.STKLINK should be a copy of the SMP/E target STKLINK library)

Step 6b: Verifying STKLOAD Library Requirements

Note: This step was required in the SVAA installation procedure. Therefore, if you have already verified STKLOAD requirements, you can skip this step.

The *hlq*.STKLOAD load module library should be already defined for SVAA. It must be included in one of the authorized program lists in SYS1.PARMLIB (IEAAPF*xx* or PROG*xx*).

If *hlq*.STKLOAD is included in the system link list (LNKLST*xx* or PROG*xx*), the *hlq*.STKLOAD load module library:

- Should be allocated with no secondary extents
- Should not be used as the SMP/E target library (*hlq*.STKLOAD should be a copy of the SMP/E target STKLOAD library)

If *hlq*.STKLOAD is not included in the system link list, the *hlq*.STKLOAD load module library:

- Must exist in a STEPLIB DD in:
  - the started-task JCL
  - SIBMVSS jobs
  - SIBBATCH jobs
  - the TSO logon proc
- Must, for ISPF access, be allocated (before ISPF is invoked) to either:
  - the STEPLIB ddname in a TSO logon procedure, or
  - the ISPLLIB ddname in a TSO logon EXEC.

Step 7: Defining Security Resources

To install and use the security provided by SnapShot, you must activate certain security classes and define resources to your security system. The tables in the following sections summarize the security resources checked by SnapShot. You may already have defined some of these resources; others you may want to modify or add. See the documentation for your security system for information about activating a class and defining a resource.

Note: If you do not have a security system installed and if security is required, you must code the SIBIOATX and SIBCMDAX security exits (Step 8 on page 3-13).

Authorizing User Access to SnapShot Commands

Access to both the source and target of a SnapShot operation occurs within the requestor's address space and uses system-provided services to accomplish certain aspects of the operation. These system services invoke SAF as part of their normal operation. In general, the following access authority levels are checked when performing a SnapShot operation:

Volume For the source device, SnapShot checks DASDVOL read access or the equivalent. For the target device, SnapShot checks DASDVOL ALTER access or the equivalent. If a DASDVOL resource is not defined for a volume, access is granted.

If the OFFLINE parameter is specified for the source volume, SnapShot checks *unitaddress* for READ access or the equivalent. If the OFFLINE parameter is specified for the target, SnapShot checks *unitaddress* for UPDATE access or the equivalent.

If the target parameter requests PPRC Remote SnapShot, the remote functional device ID and the remote SVA serial number are checked for UPDATE access or the equivalent.

Data Set For the source data set, SnapShot checks DSN READ access or the equivalent. For new target data sets, SnapShot checks DSN ALTER access. For existing target data sets, SnapShot checks DSN UPDATE access.

Checking OS/390- or User-Level Security Resources

Table 3-4 summarizes the OS/390- or user-level security resources checked by SVAA.

Table 3-4. *OS/390- or user-level security resources checked by SVAA*

Class	Resource name	Access	When used
DASDVOL	Volser	Alter	To verify SnapShot target volume requests.
DASDVOL	Volser	Read	To verify SnapShot source volume requests.

Note: For SnapShot, if no DASDVOL entry exists, the SnapShot operation proceeds. If a DASDVOL entry exists, SnapShot acts as described in Table 3-4.

Checking SnapShot Command-Level Resources

Table 3-5 summarizes the SnapShot command-level resources checked by SVAA.

Table 3-5. *SnapShot command-level resources checked by SVAA*

Class	Resource name	Access	When used
FACILITY	STKUSER.IXCMD. SNAPDS.*dsn*	Read	Before attempting to snap from the source data set.
FACILITY	STKUSER.IXCMD. SNAPDS.*dsn*	Control	Before attempting to snap to a target data set.
FACILITY	STKUSER.IXCMD. SNAPVOL	Control	Before using a SNAP VOLUME subcommand.
FACILITY	STKUSER.IXCMD. SNAPVOL.*volser*	Read	Before attempting to snap from the source volume.
FACILITY	STKUSER.IXCMD. SNAPVOL.*volser*	Update	Before attempting to snap to the target volume.
FACILITY	STKUSER.IXCMD. QUERYVOLPREF	Control	Before using a QUERY VOLPREF subcommand.
FACILITY	STKUSER.IXCMD. SETVOLPREF	Control	Before using a SET VOLPREF subcommand.
FACILITY	STKUSER.IXCMD. SNAPOVOL. *unitaddress*	Read	Before attempting to snap from an offline source volume.
FACILITY	STKUSER.IXCMD. SNAPOVOL. *unitaddress*	Update	Before attempting to snap to an offline target volume.
FACILITY	STKUSER.IXCMD SNAPRVOL. *serial.rfdid*	Update	Before attempting to use PPRC Remote SnapShot to snap to a functional device, *rfdid*, defined on the remote SVA with serial number, *serial*.

Step 8: Customizing SnapShot User Exits

Two user exits are available with SnapShot: SIBIOATX and SIBCMDAX. Both of these user exits are shared with SVAA; an example of each is provided in the SVAA SIBSAMP data set.

You can enable and/or customize SnapShot user exits now or at any time after this point. If you decide to enable them at a later time, you *will not* have to reinitialize your OS/390 system or refresh SVAA. If, however, you ***modify*** a user exit that you were already using, you ***must*** refresh SVAA. (Instructions for refreshing SVAA are provided in *SVAA for OS/390 Installation, Customization, and Maintenance*.)

Detailed information about the user exits, including the default actions, appears in Appendix B, "SVAA User Exits."

Note: Ordinarily, you need to install the SIBIOATX and SIBCMDAX exits only if you have no security system or if the resources are not defined. However, if you are not satisfied with the default actions, you can customize the user exits.

Either user exit (listed in Table 3-6) you want to use must be in a link list, STEPLIB, or JOBLIB data set, and it must be in an APF-authorized library. The first time a user exit is called, it is loaded into a common storage area and remains there as long as the SVAA subsystem remains on your OS/390 system.

The SVAA SIBSAMP data set contains the sample SIBIOATX and SIBCMDAX exit routines with their default actions. The mapping macros for the data areas are in the SIBMAC data set.

Table 3-6. *Summary of SnapShot user exits and functions*

User Exit Name	Function	Description
SIBIOATX	Authorize subsystem I/O	Verifies a user's authority: • to send a particular ECAM message to a subsystem (security definition required). • to use the DELETE DEVICE subcommand (security definition required). For SnapShot, verifies the DASDVOL resource type to authorize volumes involved in a SNAP VOLUME subcommand (security definition not required). If your OS/390 system does not have a security product that supports SAF-type requests, you must customize and install the SIBIOATX user exit.
SIBCMDAX	Authorize SnapShot commands	Verifies a user's authority to issue a SnapShot subcommand. If your OS/390 system does not have a security product that supports SAF-type requests, and if you want to verify user authority, you must customize and install the SIBCMDAX user exit. If you do not code an exit, all commands are allowed.

Chapter 4. Verifying SnapShot Installation

Step 9 Enabling parmlib changes

Step 10 Initializing Volume Preferencing

Step 11 Verifying Volume Preferencing Status

Step 12 Verifying SnapShot under TSO

Step 13 Verifying SnapShot under SIBBATCH

Step 9: Enabling Parmlib Changes

PROGxx or LNKLSTxx

(See Step 4a)

After making your SnapShot changes to the PROG*xx* member,

- use the SET PROG command to enable dynamically ***all*** PROG*xx* changes, or
- issue individual SETPROG commands to dynamically create a new link list (DEFINE), add the new SnapShot 2.1 libraries (ADD), delete any SnapShot 1.2 libraries (DELETE), activate the new link list (ACTIVATE), and update the Master Scheduler address space to use the new link list (UPDATE).

Remember that if you use the LNKLST*xx* member to control the link list, you can't dynamically change the names of the libraries used; therefore, using the PROG*xx* member is recommended. Refer to the IBM *OS/390 System Commands* manual for the exact syntax and further information.

For example:

```
SET PROG=xx
```

Or:

```
SETPROG LNKLST,DEFINE,NAME=newlnklstname,COPYFROM=currentlnklstname
SETPROG LNKLST,ADD,DSN=snap21.STKLINK,VOL=volser
     .
     .
SETPROG LNKLST,DELETE,DSN=snap21.STKLINK
     .
     .
SETPROG LNKLST,ACTIVATE,NAME=newlnklstname
SETPROG LNKLST,UPDATE,ASID=01
```

PROGxx or IEAAPFxx

(See Step 4b)

After making your SnapShot changes to the PROG*xx* member,

- use the SET PROG command to enable dynamically ***all*** PROG*xx* changes, or
- issue individual SETPROG commands to dynamically APF authorize each SnapShot library.

Remember that if you use the IEAAPF*xx* member to control APF authorization, an IPL is required; therefore, using the PROG*xx* member is recommended. Refer to the IBM *OS/390 System Commands* manual for the exact syntax and further information.

For example:

```
SET PROG=xx
```

Or:

```
SETPROG APF,ADD,DSN=hlq.STKLINK,VOL=volser
```

IEFSSNxx

(See Step 4c)

After making your SnapShot changes to the IEFSSN*xx* member, use the SETSSI command with only the SUBNAME parameter to dynamically add the subsystem without an IPL. Note that, because SVAA is not a dynamic subsystem, you cannot specify parameters such as ACTIVATE and DEACTIVATE. Refer to the IBM *OS/390 System Commands* manual for the exact syntax and further information.

For example:

SETSSI ADD,SUBNAME=*name*

SMFPRMxx

(See Step 4d)

Use the SET SMF command to enable dynamically your SnapShot changes to the SMFPRM*xx* member. Refer to the IBM *OS/390 System Commands* manual for the exact syntax and further information.

For example:

SET SMF=*xx*

Step 10: Initializing Volume Preferencing with SIBMVSS

You can initialize volume preferencing at IPL time—using VP(A) (the default) or VP(I) in the IEFSSN*xx* member of SYS1.PARMLIB (see “Step 4c: Customizing the IEFSSNxx Member” on page 3-3).

If Volume Preferencing was ***not*** activated during IPL, you must initialize or reinitialize SVAA to activate it.

You can execute the SIBMVSS program (which supports the ALTER SSNAME command) to initialize or reinitialize (or terminate) SVAA. With the PARAM parameter of ALTER SSNAME (see page 4-6) you specify startup parameters to be used in initializing SVAA—including VP (volume preferencing).

You can invoke SIBMVSS in batch mode or through a started-task procedure; you *cannot* invoke SIBMVSS under TSO.

Note: Initializing SVAA with SIBMVSS performs the same tasks that are invoked during IPL by specifying INIT(Y) in IEFSSN*xx*—including full subsystem initialization, allocation and initialization of data structures, loading of global service routines, and device mapping.

Procedure

To initialize with SIBMVSS:

- Stop the SVAA started task.
- Terminate the SVAA subsystem with SIBMVSS using the command:

  ALTER SSNAME(NAME(*ssname*) TERMINATE)

- Use a tool to add the changes to IEAAPF*xx* or the PROG*xx* list:
  - The OS/390 command SET PROG=*xx* can be used to change the PROG list.
  - If you are using IEAAPF00, various tools (RESOLVE, for example) are available to update it without an IPL.
- Use a tool, such as RESOLVE or LLA, to modify the current link list and
- Rebuild or refresh LLA.
- Reinitialize the SVAA subsystem with SIBMVSS using:

  ALTER SSNAME(NAME(*ssname*) INIT PARAM('INIT(Y),VP(A)'))

An example of JCL to invoke the ALTER SSNAME command in batch mode is shown in Figure 4-1 on page 4-5.

```
//jobname   JOB (job-accounting-info)
//*
//* SVAA subsystem JCL
//* Initialize, reinit, or terminate the subsystem
//*
//        EXEC PGM=SIBMVSS,TIME=5
//*
//STEPLIB  DD  DISP=SHR,DSN=hlq.SIBLOAD     If not in link list
//         DD  DISP=SHR,DSN=hlq.STKLOAD     If not in link list
//         DD  DISP=SHR,DSN=hlq.SACLINK     If not in link list
//*
//SYSPRINT DD  SYSOUT=A
//SYSIN    DD  *
ALTER SSNAME(NAME(ssname) INIT PARAM('INIT(Y),VP(A)'))
/*
```

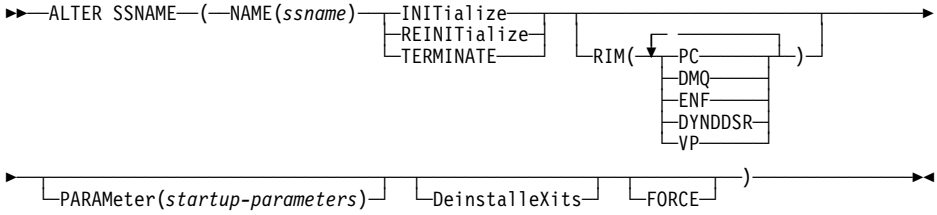
Figure 4-1. *Example of JCL to invoke ALTER SSNAME command*

Notes:

1. Include the STEPLIB DD statement if the *hlq*.SIBLOAD data set, *hlq*.STKLOAD data set, or *hlq*.SACLINK data set is not in the link list.
2. If you are using started-task JCL and the step name is the same as the subsystem name, you must specify **'S** *procname*,**SUB=JES2'** or **'S** *procname*,**SUB=JES3'** to start the task.
3. In the JCL example, the ALTER SSNAME command uses the default values of the SVAA-only options and specifies that VP is to be installed and activated.

Syntax for ALTER SSNAME command

ALTER SSNAME



Parameters

The ALTER SSNAME command has the following parameters:

NAME (ssname)

Required

This parameter specifies the SVAA subsystem for which you want to invoke the ALTER SSNAME command.

Note: OS/390 must have been IPLed previously with the SVAA subsystem definition in the IEFSSN*xx* parmlib member.

Values: *ssname* is the SVAA subsystem name (from SYS1.PARMLIB(IEFSSN*xx*)).

Default value: None

INIT | REINIT | TERMINATE

Required

This parameter specifies the action to be taken on the SVAA subsystem or one or more resource initialization modules.

Values: **INITialize** initializes the SVAA subsystem for the first time.

REINITialize reinitializes the SVAA subsystem after you have made some changes, such as to DDSR.

TERMINATE terminates SVAA. You must first terminate any associated SVAA started tasks.

Default value: None

RIM

Optional

This parameter specifies one or more SVAA resource initialization modules (RIMs) on which the command is to act. When you use this parameter, the ALTER SSNAME command affects only the specified RIM components of the SVAA subsystem—not the entire subsystem.

Note: You can specify these values in any combination from none (the default) to all five.

Values: **PC** (for both SVAA and SnapShot) performs RIM processing for the SVAA OS/390-authorized services functions.

DMQ (for SVAA only) performs RIM processing for device mapping services functions.

ENF (for SVAA only) performs RIM processing for event notification (e.g., vary online).

DYNDDSR (for SVAA only) performs RIM processing for Dynamic DDSR. The status of Dynamic DDSR is set to Inactive (the default).

VP (for SnapShot only) performs RIM processing for volume preferencing. The status of volume preferencing is set to Active (the default). (VP is ignored if SnapShot is not installed.)

Default value: None

PARAMETER (startup-parameters)

Optional—but these startup parameters are ignored if the RIM ***parameter is specified.***

This parameter specifies startup parameters to be used in the initialization of SVAA. (Note that the ALTER SSNAME command does not read the IEFSSN*xx* parmlib member for initialization parameters.) If no parameters are specified, the SVAA default parameters are used.

Abbreviation: **PARAM**

Values: Any of the optional startup parameters: DYNDDSR, INIT, KEY, MIH, LANG, MSGP, and VP.

Note: A sequence of subparameters entered with the PARAM parameter must be enclosed within single quotes if the text string contains blanks. (If the string contains no blanks, the quotes are optional.)

Default value: None

DEINSTALLEXITS

Optional

During SVAA subsystem termination, this parameter removes:

- The residual Dynamic DDSR control of the DADSM intercept vector for the IGGPRE00 exit.
- The residual volume preferencing control of the DADSM intercept vector for IGGDAC02.

Note: SVAA termination does not require the DX parameter unless you are using products that require hook removal (for example, SAMS:Allocate, formerly VAM). Also, for the hook removal to be successful, any product installed after SVAA must be removed first.

Abbreviation: **DX**

FORCE

Optional—not recommended

If FORCE is specified and SVAA encounters an error in executing the command, SVAA continues to try to execute the command.

Example of ALTER SSNAME Command Syntax

The following example initializes SVAA subsystem SS3 with volume preferencing inactive. SVAA-only options are set to their default values.

```
ALTER SSNAME (NAME(SS3) INIT PARAM(VP(I)))
```

Step 11: Verifying Volume Preferencing Status

After you have installed SnapShot, you can issue the following command from the OS/390 system console (the SVAA started task must be active):

F SVAA,Q VOLPREF(SSN(*ssname*))

where *ssname* is the name of the OS/390 subsystem on which you have installed SVAA.

This command requests the current status and processing options of the intercept used to implement volume preferencing (active, inactive, or not installed) on OS/390 subsystem *ssname*.

Step 12: Verifying SnapShot under TSO

If your SVA hardware is ***not installed***, you will receive a message from either of the following tests indicating that the data mover option is required.

Batch Test

To test SnapShot in batch mode, run Step 2 of the SOASSVPT member of the SnapShot SOCSAMP data set after you have finished installing SnapShot.

Modify the appropriate statements in the JCL provided in SOASSVPT and submit the job. In the JCL, change the data set name on the STEPLIB statement to the name you used during SnapShot installation.

```
//*****************************************************************
//* STEP2 EXECUTES SIBADMIN IN BATCH TSO
//*****************************************************************
//STEP2  EXEC  PGM=IKJEFT01,DYNAMNBR=50
//*STEPLIB  DD  DSN=hlq.SIBLOAD,DISP=SHR
//*         DD  DSN=hlq.STKLOAD,DISP=SHR
//*SIBCTRAN DD  DSN=hlq.SACLINK,DISP=SHR
//*CTRANS   DD  DSN=hlq.SACLINK,DISP=SHR
//*STKPARMS DD  DSN=hlq.stkparms,DISP=SHR
//*
//SYSTSPRT DD  SYSOUT=(,)
//SYSTSIN  DD  *
SIBADMIN QUERY VERSION
SIBADMIN QUERY SSNAME
SIBADMIN QUERY VOLUMEPREFERENCING
SIBADMIN SNAP DATASET( SOURCE(dsn) TARGET(dsn) )
/*
```

Figure 4-2. *JCL for testing SnapShot under TSO*

Online Test

To test SnapShot online, logon to TSO with your new logon proc which allocates the required data sets.

Before running this test, add a SET ECAMDEVICE subcommand to SIBSTK*xx* in your STKPARMS data set.

From **TSO**, enter:

```
SIBADMIN SNAP DATASET(SOURCE(dsn)TARGET(dsn))
```

Step 13: Verifying SnapShot under SIBBATCH

The SIBBATCH program provides another way to execute SnapShot commands in batch mode. This step involves modifying some sample JCL and running a SIBBATCH job.

To test SnapShot with SIBBATCH, run Step 1 of the SOASSVPT member of the SOCSAMP data set after you have finished installing SnapShot.

Modify the appropriate statements in the JCL provided in SOASSVPT and submit the job. In the JCL, change the data set name on the STEPLIB statement to the name you used during SnapShot installation.

The SIBLOAD, STKLOAD, and SACLINK data sets are needed if they are not in the link list concatenation.

Note: If your SVA hardware is ***not installed***, you will receive a message from this test indicating that the data mover option is required.

```
//*****************************************************************
//* STEP1 EXECUTES THE SIBBATCH PROGRAM
//*****************************************************************
//STEP1  EXEC  PGM=SIBBATCH
//*STEPLIB  DD  DSN=hlq.SIBLOAD,DISP=SHR
//*         DD  DSN=hlq.STKLOAD,DISP=SHR
//*SIBCTRAN DD  DSN=hlq.SACLINK,DISP=SHR
//*CTRANS   DD  DSN=hlq.SACLINK,DISP=SHR
//*
//SYSTERM  DD  SYSOUT=(,)
//SYSPRINT DD  SYSOUT=(,)
//SYSIN    DD  *
 QUERY VERSION
 QUERY SSNAME
 QUERY VOLUMEPREFERENCING
 SNAP DATASET (SOURCE(dsn) TARGET(dsn) )
/*
```

Figure 4-3. *JCL for testing SnapShot in batch*

Chapter 5. Installing Maintenance PTFs Independently

When you contact StorageTek Software Support for any SnapShot PTFs released since you first installed SnapShot, you are sent the latest SnapShot Maintenance Tape. This chapter describes the procedure for installing those PTFs to update previously installed SnapShot software—independently of the SnapShot installation procedure.

Instructions for contacting customer support are located in the StorageTek publication: *Requesting Help from Software Support*.

The tape is a 3480 non-label tape containing the files listed in Table 5-1.

Table 5-1. *Maintenance Tape contents*

File No.	Data Set Format	Description
1	SMPPTFIN	All PTFs issued since Base tape
2	IEBGENER	Print file of all PTF cover letters
3	IEBGENER	Print file of summary info for all PTFs
4	SMPPTFIN	SMP/E external hold statements
5	IEBUPDTE	Current installation JCL

Current installation JCL is in file 5 of the Maintenance tape. See “Step 1: Loading the Installation JCL” on page 2-2 for JCL to load the file to disk. You can use the Installation JCL members, the SMP/E SYSMOD Management dialogs, or the printed sample JCL to complete the SMP/E installation of the PTFs. This consists of the following tasks:

- Receiving the Maintenance PTFs: Use the S3RCVPTF job shown on page 2-7.
- Resolving HOLDDATA: See paragraph below.
- Applying the Maintenance PTFs: Use the S6PTFAPP job shown on page 2-9.
- Accepting the Maintenance PTFs: Use the S7PTFACC job shown on page 2-9.

Resolving HOLDDATA

Some PTFs may have special requirements that must be met before they can be installed. These PTFs are prevented from being installed by the use of SMP/E HOLDDATA. Before running the Apply job, review the output from the Receive job for HOLDDATA, and follow the instructions given for each held PTF. Once the requirements are met, you can bypass the hold condition for that held PTF in the Apply job. Do not bypass HOLDERROR conditions. Refer to the *SMP/E Reference* manual for complete instructions on using the BYPASS parameter.

Appendix A. Contents of SOCSAMP

The following is a list and brief description of the sample SnapShot jobs and files available in the SOCSAMP data set.

SNAPD	REXX EXEC to perform a data set SnapShot from ISPF option 3.4.
SNAPDL00	ISPF panel for SNAP DATASET.
SNAPV	REXX EXEC to perform a volume SnapShot from ISMF option 2.1.
SNAPVL00	ISPF panel for SNAP VOLUME.
SOASNP01	JCL to execute SAS program SOCSNP03 (see below).
SOASNP03	SAS program to format SnapShot SMF (subtype 8) records.
SOASSVPT	JCL to verify that SnapShot is installed.

Appendix B. SVAA User Exits

If you activate SVAA user exits, they must reside in a library with the same requirements as the *hlq*.SIBLOAD load module library. (See the *SVAA for OS/390 Installation, Customization, and Maintenance* manual for the requirements for the *hlq*.SIBLOAD library.)

Common Areas Available to User Exits

On entry to all user exits, register 1 points to a fullword that contains the address of a common user exit parameter list, mapped by the SIBUXP DSECT. Some of the most useful fields SIBUXP contains are:

- The subpool (SIBUXP_SUBPOOL) and key (SIBUXP_KEY) the exit should use to GETMAIN additional storage if the user exit storage block is not large enough.
- The address (SIBUXP_GSTRGP) and length (SIBUXP_GSTRGLEN) of a storage block (mapped by the SIBUXSQE DSECT) available to all SVAA user exits invoked by this task.
- The address (SIBUXP_ESTRGP) and length (SIBUXP_ESTRGLEN) of a storage block available to this user exit. All invocations of the same exit *in this task* use the same storage block.
- A register save area for use by the exit (SIBUXP_REGSAVE).

Table B-1 shows the record layout for the common header fields for each user exit (SIBUXP).

Table B-1 (Page 1 of 2). *Layout of common header (SIBUXP) parameter list record*

Type	Dec Offset	Hex Offset	Length	Value	Name	Description
A	0	0	1		SIBUXP_VERSION	Version code of this structure
				1	SIBUXP_VERS	Current version
A	1	1	1		SIBUXP_RSVD1	Reserved
A	2	2	2		SIBUXP_LENGTH	Length of the common SIBUXP header area
A	4	4	4		SIBUXP_ITYPE	Type of invocation
				1	SIBUXP_INVCINIT	Initial invocation
				2	SIBUXP_INVCNORM	Normal invocation
				3	SIBUXP_INVCTERM	Termination
A	8	8	1		SIBUXP_SUBPOOL	Exit should use this subpool if additional storage is required
A	9	9	1		SIBUXP_KEY	Key in which exit is invoked
X	10	A	6		SIBUXP_RSVD2	Reserved
X	16	10	2		SIBUXP_GSTRGLEN	Length of user exit global storage block
A	18	12	2		SIBUXP_ESTRGLEN	Length of storage block for this user exit
A	20	14	4		SIBUXP_GSTRGP	Pointer to user exit global storage element (SIBUXSQE)
A	24	18	4		SIBUXP_ESTRGP	Pointer to storage element for the user exit (SIBUXSQE)
X	28	1C	72		SIBUXP_REGSAVE	Save area for use by the user exit
A	100	64	4		SIBUXP_PRMLEN	Length of the PLIST supplied to the user exit

Table B-1 (Page 2 of 2). *Layout of common header (SIBUXP) parameter list record*

Type	Dec Offset	Hex Offset	Length	Value	Name	Description
D	104	68	0		SIBUXP_PRMP	Start of individual exit's PLIST area

Note: Types are defined as:

A – address
X – hexadecimal character
D – double word
C – character

Table B-2 shows the record layout for the common storage area fields for each user exit (SIBUXSQE).

Table B-2. *Layout of common storage (SIBUXSQE) element list record*

Type	Dec Offset	Hex Offset	Length	Value	Name	Description
C	0	0	8		SIBUXSQE_EPNAME	Exit name or 'GLOBAL' for the storage area presented to all user exits executing within this task
A	8	8	1		SIBUXSQE_SUBPOOL	Subpool of this storage element
A	9	9	1		SIBUXSQE_STRGKEY	Key of this storage element
A	10	A	2		SIBUXSQE_STRGLEN	Length of the storage block in this SIBUXSQE
				256	SIBUXSQE_EBLKLEN	Length of individual exit's UXSQE storage block
				256	SIBUXSQE_GBLKLEN	Length of global UXSQE storage block
X	12	C	4		SIBUXSQE_RSVD1	Reserved
D	16	10	0		SIBUXSQE_STRGBLK	Start of storage block for the exit

Note: Types are defined as:

A – address
X – hexadecimal character
D – double word
C – character

SVAA SIBIOATX User Exit

The SIBIOATX user exit is invoked by SVAA to verify a user's authority to send a particular ECAM message to an SVA subsystem. The SIBSAMP data set includes a sample SIBIOATX exit, with its default actions. You may modify this exit's actions to meet your needs.

The SIBIOATX exit indicates the action to be taken in SIBIOAXP_EXITRET. The exit may unconditionally allow the request, unconditionally deny the request, or ask SVAA to invoke RACROUTE to perform security checking. If the latter is chosen, the exit may modify the access type (SIBIOAXP_ACCSTYPE), the class name (SIBIOAXP_CLASSNAM), and/or the resource name (SIBIOAXP_RSRCENAM) to be used.

SVAA Actions if SIBIOATX is not Implemented

If you choose not to use the SIBIOATX exit, SVAA invokes Security Authorization Facility (SAF) services to check the user's authority to use one of the following sets of parameters to send messages to an SVA subsystem:

- If the message is restricted (no restricted messages are invoked by SnapShot):

  - Security class name = **FACILITY**
  - Security resource name = **STGADMIN.IDC.SETCACHE**
  - Access type = **UPDATE**

- If the message is not restricted:

  - Security class name = **FACILITY**
  - Security resource name = **STGADMIN.IDC.LISTDATA**
  - Access type = **READ**

Note: See the SVAA Communication Devices appendix in the *SVAA for OS/390 Installation, Customization, and Maintenance* manual for more information about restricted and unrestricted SVAA messages.

The message is sent to the SVA subsystem if the user is authorized to send messages. If the user is not authorized, the request is denied. If the security system cannot determine whether the user is authorized, the request is allowed if the security access type is read; otherwise it is denied.

Note: If you change the security access rules, you must restart the TSO session or end the current SIBADMIN session and restart it for SVAA to recognize the change.

Return Codes

Return codes for the SIBIOATX user exit are listed in Table B-3.

Table B-3. *SIBIOATX return codes*

Code	Description
0	Invoke RACROUTE to validate request
1	Request unconditionally allowed
2	Request unconditionally denied

Entry Specifications

Upon entry to SIBIOATX, the register contents are as listed in Table B-4.

Table B-4. *SIBIOATX entry specifications*

Register	Contents
0	Undefined
1	Pointer to a fullword containing the address of the SIBUXP common parameter list header
2 - 12	Undefined
13	OS save area
14	Return address
15	Entry point address for SIBIOATX

Return Specifications

Return specifications for the SIBIOATX user exit are listed in Table B-5.

Table B-5. *SIBIOATX return specifications*

Register	Contents
0 - 12	Undefined
13	OS save area
14	Return address
15	Return code (hexadecimal)

Program Attributes

The execution attributes of the SIBIOATX user exit are:

- Reentrant
- Refreshable
- Problem State
- Problem Program PSW key
- AMODE=31
- Enabled Unlocked Task Mode
- Non-Cross Memory Mode

Parameter List

Table B-6 shows the layout for SIBIOAXP, the parameter list for the SIBIOATX user exit.

Table B-6 (Page 1 of 2). *Layout of SIBIOAXP parameter list record*

Type	Dec Offset	Hex Offset	Length	Value	Name	Description
A	0	0	4		SIBIOAXP_MSGCLASS	SVAA message class
				1	SIBIOAXP_CONFIG	Configuration
				2	SIBIOAXP_CFGRPT	Configuration reporting
				3	SIBIOAXP_PERFRPT	Performance reporting
				4	SIBIOAXP_SPACERPT	Space Utilization reporting
				5	SIBIOAXP_MAT	Media Acceptance Test
				7	SIBIOAXP_GCID	Guaranteed cache by ID
				9	SIBIOAXP_AUDIT	Audit Trail
				10	SIBIOAXP_ADMIN	Administrative
				11	SIBIOAXP_RSSD	3990 Read Subsystem Data
				12	SIBIOAXP_SNAPVOL	Snap volume request
				13	SIBIOAXP_SNAPDSN	Snap data set request
A	4	4	4		SIBIOAXP_ACCSTYPE	Security access type
				2	SIBIOAXP_ACCSREAD	Read access
				4	SIBIOAXP_ACCSUPDT	Update access
				8	SIBIOAXP_ACCSCNTL	Control access
				128	SIBIOAXP_ACCSALTR	Alter access
A	8	8	4		SIBIOAXP_EXITRET	Exit return
				0	SIBIOAXP_ROUTESAF	Invoke RACROUTE to validate request
				1	SIBIOAXP_ALLOWUNC	Unconditionally allow request
				2	SIBIOAXP_DENYUNC	Unconditionally deny request
C	12	C	8		SIBIOAXP_SUBSYSNM	SVA subsystem name

Table B-6 (Page 2 of 2). *Layout of SIBIOAXP parameter list record*

Type	Dec Offset	Hex Offset	Length	Value	Name	Description
C	20	14	8		SIBIOAXP_CLASSNAM	Resource class name Default=FACILITY
C	28	1C	100		SIBIOAXP_RSRCENAM	Resource name. The number of characters may not exceed the maximum for the class. May be blank padded or null terminated. The default is: STGADMIN.IDC.LISTDATA or STGADMIN.IDC.SETCACHE
	128	80	8		SIBIOAXP_USERID	Foreground or background user ID modifiable by the exit. The field is left-justified and padded to the right with blanks.
	136	88			SIBIOAXP_SIZE	Total structure size.

Note: Types are defined as:

A – address
X – hexadecimal character
D – double word
C – character

SVAA SIBCMDAX User Exit

For SnapShot, the SVAA SIBCMDAX user exit allows each SVA installation to determine access rights to the SnapShot commands and their parameters. The exit is invoked regardless of whether RACF or SAF is installed and operating.

Note: SIBCMDAX must reside in an APF-authorized linklist load library.

Return Codes

Return codes for the SIBCMDAX user exit are listed in Table B-7.

Table B-7. *SIBCMDAX return codes*

Code	Description
0	Invoke RACROUTE to validate request
1	Request unconditionally allowed
2	Request unconditionally denied

Entry Specifications

Upon entry to SIBCMDAX, the register contents are as listed in Table B-8.

Table B-8. *SIBCMDAX entry specifications*

Register	Contents
0	Undefined
1	Pointer to a fullword containing the address of the SIBUXP common parameter list header
2 - 12	Undefined
13	OS save area
14	Return address
15	Entry point address for SIBCMDAX

Return Specifications

Return specifications for the SIBCMDAX user exit are listed in Table B-9.

Table B-9. *SIBCMDAX return specifications*

Register	Contents
0 - 12	Undefined
13	OS save area
14	Return address
15	Return code (hexadecimal)

Program Attributes

The execution attributes of the SIBCMDAX user exit are:

- Reentrant
- Refreshable
- Problem State
- Problem Program PSW key
- AMODE=31
- Enabled Unlocked Task Mode
- Non-Cross Memory Mode

Parameter List

Table B-10 shows the record layout for SIBCMDXP, the parameter list for the SIBCMDAX exit.

Table B-10. *Layout of SIBCMDXP parameter list record*

Type	Dec Offset	Hex Offset	Length	Value	Name	Description
C	0	0	8		SIBCMDXP_USERID	Foreground or background user ID, modifiable by the exit. This field is left-justified and padded on the right with blanks.
B	8	8	4		SIBCMDXP_REQTYPE	Type of security request. **1** Initial command request **2** (Reserved) **3** Extended request (such as volume or data-set access)
B	C	12	4		SIBCMDXP_ACCTYPE	Access type required, modifiable by the exit: **X'02'** Read **X'04'** Update **X'08'** Control **X'80'** Alter
B	10	16	4		SIBCMDXP_EXITRET	Exit return, exit modifiable **0** Invoke RACROUTE to validate request **1** Allow request **2** Deny request
C	14	30	4		SIBCMDXP_SSN	OS/390 subsystem name associated with the request
C	18	24	8	FACIL-ITY	SIBCMDXP_CMDOPT	Resource class name that will be used for SAF calls, modifiable by the exit
B	20	32	16			Reserved
C	30	48	100		SIDCMDXP_RSCENAME	Name of the security resource to be validated, modifiable by the exit.

Note: Types are defined as:

B – binary
C – character

SVAA Actions if SIBCMDAX is not Implemented

For a return code of **0** from SIBCMDAX, SAF is invoked for RACROUTE to verify the command request. Table 3-5 on page 3-12 shows the RACROUTE parameters for the SnapShot commands. (If the resource name is not defined, the command is always authorized.)

Note: In addition, if SMF logging is activated in the PARMLIB, each attempted snap operation is logged via an SMF record. The format of the SMF record appears in Appendix B of the *SVAA for OS/390 Configuration and Administration* manual.

Glossary

This glossary contains terms and definitions pertaining to SnapShot.

A

allowed. A user request, command, or action is allowed by SnapShot if it determines that the request can be fulfilled using SnapShot. SnapShot ignores a request that is *not allowed* and issues an error message. Contrast with *supported, not supported*.

B

back-end storage. The data storage portion of a storage subsystem. In SVA, this is the disk array string.

backup. (1) Pertaining to a procedure, technique, or hardware used to recover lost or destroyed data or to keep a system operating. (2) Pertaining to a system, device, file, or facility that can be used in the event of a malfunction or loss of data.

C

catalog. (1) A directory of files and libraries, with reference to their locations. (2) To enter information about a file or library into a catalog.

copy. A product of a data copying process.

D

data path. A physical connection from the host to a hardware device.

database. A collection of data with a given structure.

data mover copy. The result of a successful invocation of a data mover to copy a data set or volume.

data object. A collection of data referred to by a single name.

data set. The major unit of data storage and retrieval.

DFSMSdss. Data Facility Storage Management Services: Data Set Services.

down time. The time during which a functional unit cannot be used because of a fault within the functional unit or within the environment.

duplication. The reproduction of information from one element of a recording medium to another.

E

esoteric names. Esoteric unit names. The names a user assigns to DASD volumes that have the same device type.

extent. Continuous space on a disk or diskette that is occupied by or reserved for a particular data set.

G

GDG. generation data group. A collection of data sets with the same base name, such as PAYROLL, that are kept in chronological order. Each data set is called a generation data set.

M

meta data. Data that describe data objects. SnapShot meta data consist of the catalog, the VTOC, the VTOC index, and the VVDS.

N

NCL. net capacity load

non-quiesced snap. A snap taken when the system is in full read-write access mode.

not allowed. A user request, command, or action that is **NOT** allowed by SnapShot. SnapShot ignores the request, command, or action, and issues an error message.

not supported. A user request, command, or action that is **not** supported by SnapShot. SnapShot does not reject the request, command, or action; no error message is issued; and the results may be unpredictable.

P

point-in-time. The time at which a backup of a data base is taken. The current point in time is the time of the most recent backup.

Q

quiesce. To end a process by allowing operations to complete normally.

quiesced snap. A snap taken while the system is quiesced; all buffered transactions are flushed to disk storage.

R

recovery. (1) The reconstruction of a database; for example, reconstruction by means of backup files and after-images. (2) The resetting of system resources to a point at which computer programs can be restored without error in functional processing.

referential integrity. In a DB2 database, a set of tables and table spaces that must be recovered together to a prior point in time to ensure the data remains consistent.

restore. To return to an original value or image; for example, to restore data in main storage from auxiliary storage.

RI. See referential integrity

S

SAF. Security Access Facility.

SMS. Storage Management Subsystem.

snap. (noun) A duplication of a source volume or data set on a SnapShot that is created by merely copying pointers within the subsystem to the data. A snap is also the result of a successful SnapShot operation (not the use of a data mover). Synonymous with SnapShot. Contrast with *data mover copy*. (verb) To duplicate a functional volume or data set using SnapShot.

snap back. To restore a previously snapped data set or volume from its SnapShot.

SNAP DATASET. The SnapShot command that duplicates a data set.

SNAP VOLUME. The SnapShot command that duplicates a functional volume.

snapping. Data duplication using SnapShot.

snapshot. The result of a successful SnapShot operation. A snap.

SnapShot. A program that provides very fast duplication of data sets or volumes.

source. A system, a program within a system, or a device that makes a request to a target.

supported. A user command, request or action that is supported in SnapShot, is evaluated by SnapShot, and is accepted for processing. A request that is *not supported* is not rejected by SnapShot, no error message is issued, and the results may be unpredictable. Contrast with *allowed, not allowed*.

T

target. The location at which a source data set or volume is duplicated.

V

volume. A functional volume that is the source or target of an SnapShot snap operation.

volume preferencing. A facility of SnapShot that filters the choice of an SMS target volume for newly allocated data sets.

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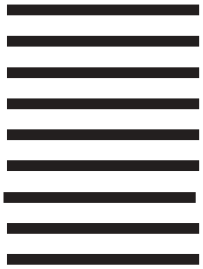

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