

StorageTek Nearline Control Solution (MSP Implementation)

User Exit Guide

Version 6.2



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Preface

This guide describes Oracle's StorageTek HSC user exits included with NCS (MSP) 6.2. It is intended for storage administrators, system programmers and operators responsible for configuring and maintaining NCS software at their site.

Documentation, Support, and Training

| Function | URL |
|---------------|---|
| Oracle Home | http://oracle.com |
| Documentation | http://oracle.com/technetwork/indexes/documentation/index.html |
| Support | http://www.oracle.com/us/support/044752.html |
| Training | http://www.oracle.com/global/us/education/sun_select_country.html |

Additional Information

Conventions for Reader Usability

Product Names

SMC refers to the MSP implementation of Oracle's StorageTek Storage Management Component.

HSC refers to the MSP implementation of Oracle's StorageTek Host Software Component.

Typographic

Some JCL examples in this guide include *italic* type. Italic type is used to indicate a variable. You must substitute an actual value for these variables.

The use of mixed upper and lower case characters for commands, control statements, and parameters indicates that lower case letters may be omitted to form abbreviations. For example, you may simply enter POL when executing the POLicy command.

Control Statements

The standard syntax conventions for control statements are as follows:

- The only valid control statement information area is from column 1 to column 72. Columns 73-80 are ignored.
- Parameters may be separated by one or more blanks or a comma.
- A value is associated with a parameter by an equal (=) sign or by enclosing the value in parentheses, and concatenating it immediately after the parameter.
- Case (upper or lower) is ignored in actual control statements.
- Continuations are supported by including a plus (+) sign at the end of the line to be continued. A control statement is terminated if the statement is not continued.
- /* and */ can be used to enclose comments in the job stream. Comments can be continued over multiple lines, but cannot be nested.

PARMLIB members **must** include a /*...*/ comment as the **first** control statement. Otherwise, the old format is assumed. Comments in the old format must begin with an asterisk (*) in column 1.

For definition data sets (e.g., VOLATTRs, UNITATTRs and TAPEREQs), comments **must** be in the new format (/*...*/).

- Asterisk (*) comments are **not** allowed.
- A /*...*/ comment in the first line is **not** required.
- The maximum length for a control statement is 1024 characters.

Introduction

Overview

NCS 6.2 supports HSC user exits; user-modified routines designed to influence the behavior of your library environment.

However, those user exits that affect client allocation and message handling functions, previously managed by HSC, are now invoked and managed by the SMC. The remaining user exits are unchanged, and continue to be handled by the HSC.

The following table lists the user exits included with NCS 6.2:

Note – Shaded columns indicate HSC user exits now invoked and managed by the SMC.

TABLE 1-1 NCS 6.2 User Exits

| Exit Number | Exit Name | Description |
|-------------|-----------|--|
| 1 | SLSUX01 | Message Handling User Exit |
| 2 | SLSUX02 | JES Scratch Allocation User Exit |
| 3 | SLSUX03 | HSC Scratch Subpool User Exit |
| 5 | SLSUX05 | Programmatic Interface Authorization User Exit |
| 6 | SLSUX06 | HSC Insert/Delete User Exit |
| 8 | SLSUX08 | JES Specific Volume Allocation User Exit |
| 9 | SLSUX09 | Deferred Mount User Exit |
| 10 | SLSUX10 | JES Unit Affinity Separation User Exit |
| 14 | SLSUX14 | HSC Volume Access User Exit |
| 15 | SLSUX15 | HSC Command Authorization User Exit |

Virtual Storage Manager (VSM) Support

VSM support exists for certain user exits. Refer to your VTCS publications for more information.

Programming Attributes

Write user exits with the following program attributes in mind:

- A user exit is entered via SYNCH (SVC 12) and its own PRB is created for it. Follow standard OS save area chaining and linkage conventions.
- If the exit uses authorized services it must be link-edited with the authorized attribute 'AC=1'.
- The exit must reside in an authorized library. You can do this by adding the load library to the KAAAPFzz member of SYS1.PARMLIB.
- The exit is given control with Storage Key 0 and in Supervisor State.

Note – Because of their privileged status, have HSC user exits reviewed by system auditors conducting any system integrity or security audit.

- The exit must be reentrant and refreshable.
- The exit is loaded in pageable CSA.
- The exit is executed in TCB mode, no locks held.
- In general, user exits are given control with AMODE set to 31. Exceptions to this rule are noted in the detailed descriptions of individual exits.
- In general, user exits are regarded as having RMODE ANY. Exceptions to this rule are noted in the detailed descriptions of individual exits.

If it is necessary to force an RMODE of 24, you must give the exit's load module the RMODE 24 attribute through either the assembler RMODE statement or the link-edit process. The HSC honors the RMODE attribute it finds for the exit's load module. If you do not specify the RMODE attribute during either assembly or link-edit, the default RMODE will be 24. This is normally not a problem, but your exit may contain some special logic that is sensitive to RMODE.

HSC Format User Exits

Overview

The following table lists the HSC format user exits provided with NCS 6.2 and describes the primary function of each exit.

Note – Shaded columns indicate HSC user exits now invoked and managed by the SMC. These user exits affect client allocation and message handling functions.

TABLE 2-1 HSC Format User Exits

| Exit | Name | Description | Function |
|------|---------|--|--|
| 1 | SLSUX01 | Message Handling User Exit | Facilitates the interface to tape management systems. It is also used to implement scratch subpooling. |
| 2 | SLSUX02 | JES Scratch Allocation User Exit | Used to influence allocation and selection of tape drives to satisfy a nonspecific volume request under JES. |
| 3 | SLSUX03 | Scratch Subpool User Exit | Used to define multiple scratch subpools or scratch subpools of different volume label types. |
| 5 | SLSUX05 | Programmatic Interface Authorization User Exit | Implements the performance of authorization checking. |
| 6 | SLSUX06 | Insert/Delete User Exit | Implements reporting to provide information about volumes added or deleted from the library control data set. |
| 8 | SLSUX08 | JES Specific Volume Allocation User Exit | Used to influence allocation and selection of tape drives to satisfy a specific volume request under JES. |
| 9 | SLSUX09 | Deferred Mount User Exit | Allows you to override the default setting and MSP defer the mount of a cartridge on a library drive. |
| 10 | SLSUX10 | JES Unit Affinity Separation User Exit | Allows you to override the default setting, and control GDG or unit affinity separation for a specific GDG ALL or unit affinity chain. |
| 14 | SLSUX14 | Volume Access User Exit | Allows you to invoke security checking for volume access at mount and eject time. |
| 15 | SLSUX15 | Command Authorization User Exit | Used to ensure command security. |

Note –

- When migrating to a new release of the HSC, you are not required to reassemble your user exits. However, if you choose to do so, it is recommended that user modifications to user exits and other Oracle-supplied programs be based on the source code shipped in the current release.
- Sample user exits are distributed as follows:
 - SMC managed JES user exits and the message handling user exit are distributed in the SMC JES SAMPLIB (UX nn HSC n).
 - HSC managed user exits dummy exit source (SLSUX nn) and samples (UX nn SAM n) are distributed in the HSC SAMPLIB.
- The SMC allows ESOTeric and SUBPool parameters to be specified in the TAPERREQ control statement as well as user exits. Customers should examine their user exits to determine whether they could be replaced with TAPERREQ parameters. Control statements can also be used to control affinity separation policy and defer policy. Refer to the *Storage Management Component (SMC) Configuration and Administration Guide* for information on TAPERREQ and user exit interaction.

HSC User Exits in JES Environments

The following table provides a reference for determining the applicability of any HSC format user exit function within a JES environment.

TABLE 2-2 HSC User Exits in JES Environments

| User Exit Function | JES |
|---|---------|
| Deferred Mount | SLSUX09 |
| Influence Device Allocation for Scratch Volume Requests | SLSUX02 |
| Influence Device Allocation for Specific Volume Requests | SLSUX08 |
| Esoteric Substitution or Unit Affinity Separation for Affinity Chains | SLSUX10 |

Note – All other user exits are applicable regardless of the JES running.

HSC User Exits and Scratch Subpooling

Tape management systems such as CA-1 (TMS), CA-DYNAM/TLMS, DFSMSrmm, and Zara allow definition of relationships between job names or data set names and tape or cartridge volume serial numbers. This concept is sometimes referred to as scratch subpooling. When it is employed, the tape management system only allows certain nonspecific (scratch) mounts to be satisfied by volumes in qualified scratch subpools.

Scratch subpooling is supported in the HSC through user exits.

- User Exits SLSUX01, SLSUX02, and SLSUX03 are used to implement scratch subpooling.
- SLSUX01 may be called by the SMC at volume mount time to select a scratch volume. The subpool information provided by SLSUX01 allows the selection of a tape volume from the correct subpool.

Note – You must code either the SMC TAPEREQ SUBPool parameter or the SLSUX01 user exit regardless of whether you are using a tape management system or one of the HSC methods for scratch subpooling.

- SLSUX02 may be called by the SMC at device allocation time to select a device in the LSM containing the most scratch volumes of the correct subpool type. The subpool information provided by SLSUX02 allows the selection of a tape drive in the LSM with the most scratch volumes of the correct subpool type. SLSUX02 is used in a JES environment.
- SLSUX03 is called by HSC at initialization time to define the scratch subpools. Scratch subpools may be defined to the HSC using the SCRPOol control statement in the PARMLIB data set. Using this method is preferable to specifying scratch subpool names through SLSUX03.

Refer to the *HSC System Programmer's Guide* for more information on using the SCRPOol control statement.

Note – The *HSC System Programmer's Guide* provides additional information about the SCRPOol control statement and operator commands used to work with scratch subpools.

Message Handling User Exit (SLSUX01)

Functional Description

The SMC requests HSC library actions by receiving and analyzing system console messages. If the message is of use to the SMC, for example, an MSP mount message, the SMC extracts the necessary information from the message, such as the VOLSER and drive address, and sends this information to the HSC to direct the library hardware to perform the requested action.

User Exit 01 provides the facility the customer can use to change or enhance actions taken on intercepted messages. UX01 operates only on intercepted messages, either those defined by default (Refer to the *SMC Configuration and Administration Guide*), or those defined by the SMC USERMsg command. The user exit requests a specific SMC action by returning appropriate values to the SMC in the form of a parameter list.

There are two principal applications for User Exit 01:

- Request the SMC to take action for messages other than those automatically intercepted by the SMC. You may have a tape management system that issues special messages requiring the SMC to take a certain action. User Exit 01 intercepts console messages requiring action, and uses the User Exit 01 parameter list to instruct the SMC to perform the required action.

Note – Several messages for tape management systems are automatically intercepted. Refer to the *SMC Configuration and Administration Guide* for information about the USERMsg command, which adds messages to the list sent to SLSUX01.

- Support scratch subpooling in response to a Mount message requesting a scratch tape.

A subpool requested via TAPERREQ overrides a subpool requested via UX01. If neither TAPERREQ nor UX01 is specified, the SMC uses the subpool name in the TMS mount message for scratch processing. If no subpool is available through TAPERREQ, UX01, or the mount message, the HSC mounts any compatible scratch tape available.

Using User Exit 01, you can examine the Mount message and according to the exit code defined criteria (jobname, etc.), specify through the User Exit 01 parameter list that the scratch tape selected to satisfy the request must be chosen from a specified subpool of available scratch tapes. The VOLSERS contained in a particular scratch pool are defined using User Exit 03 or the HSC PARMLIB SCRPOOL control statement.

Environment

This user exit is applicable in JES environments. It is invoked by the SMC, and executes on the host where the SMC resides.

This user exit is invoked for every WTO or WTOR intercepted by the SMC. It is loaded using the SMC UEXit operator command. See page 84 for more information about this command.

Note – This user exit must reside in a library accessible to the subsystem (SMC STEPLIB, JOBLIB, or your system's LINKLIB concatenation).

Conditions When Exit Routine is Executed

Parameter List

The parameter list is mapped by macro SLSUX01P.

Entry Specifications

Upon entry to SLSUX01, register contents are as follows:

| Register | Contents |
|----------|-------------------------------|
| 0 | Undefined |
| 1 | Pointer to parameter list |
| 2-12 | Undefined |
| 13 | Pointer to register save area |
| 14 | Return address |
| 15 | Entry point address |

Conditions on Return to HSC From User Exit

Return Specifications

On return from SLSUX01, register contents are as follows:

| Register | Contents |
|----------|---------------------------|
| 0-14 | Values at entry to exit |
| 15 | Return code (hexadecimal) |

Return Codes

TABLE 2-3 SLSUX01 Return Codes

| Return Code | Name | Description |
|-------------|----------|---|
| 0 | UX01HSC | SMC to interpret the message |
| 4 | UX01ACTN | Message interpreted by the user exit. SMC acts per user exit direction. |
| 64 | UX01NOPR | The user exit is inactive |

TABLE 2-4 SLSUX01 Return Data in Parameter List

| Name | Description |
|---|--|
| UX01FUNC | Function code if return code UX01ACTN is issued. |
| UX01FUNT | Mount/dismount/swap FROM unit address if return code UX01ACTN is issued. |
| UX01LABT | Label type if return code UX01ACTN is issued. |
| UX01OPIN | Operator intervention flag if return code UX01ACTN is issued. |
| UX01SNAM | Scratch subpool name if return code UX01ACTN is issued. |
| UX01SSUB | Scratch subpool index if return code UX01ACTN is issued. |
| UX01TUNT | TO unit address if return code UX01ACTN is issued. |
| UX01VOLS | Volume serial number of cartridge if return code UX01ACTN is issued. |
| Note: If you define scratch subpools by using SCRPOOL statements in SLSSYSxx PARMLIB member (the preferred method), specify UX01SNAM. If you define scratch subpools by using SLSUX03, specify UX01SSUB. | |

Programming Considerations

This exit is invoked in a JES environment. In these environments, field UX01WQE in the parameter list mapped by SLSUX01P contains the pointer to the MSP WQE.

The exit routine should examine each message and set the operation to be performed in UX01FUNC, and then fill in the appropriate fields which apply to the function.

StorageTek samples include UX01HSC.

Examples

Mount Nonspecific Volume

In the following example, the user exit is set to mount a nonspecific volume of the library label type.

```
set UX01FUNC to C'1'.
set UX01VOLS to 'SCRTCH' or 'PRIVAT'.
set UX01FUNT to drive address.
set UX01SSUB to zero.
set UX01LABT to UX01DFLT.
```

Mount Nonspecific Volume from Scratch Subpool

In the following example, the user exit is set to mount a nonspecific volume from a scratch subpool of the library label type.

```
set UX01FUNC to C'1'.
set UX01VOLS to 'SCRTCH' or 'PRIVAT'.
set UX01FUNT to drive address.
set UX01SSUB to subpool index.
set UX01LABT to UX01DFLT.
```

Mount Nonspecific Volume from Scratch Subpool

In the following examples, the user exit is set to mount a nonspecific volume from a scratch subpool with a label type different than the library label type.

```
set UX01FUNC to C'1'.
set UX01VOLS to 'SCRATCH' or 'PRIVAT'.
set UX01FUNT to drive address.
set UX01SNAM to subpool name.
```

```
set UX01FUNC to C'1'.
set UX01VOLS to 'SCRATCH' or 'PRIVAT'.
set UX01FUNT to drive address.
set UX01SSUB to subpool index.
set UX01LABT to label type.
```

Mount Specific Volume

In the following example, the user exit is set to mount a specific volume.

```
set UX01FUNC to C'1'.
set UX01VOLS to appropriate VOLSER for specific request.
set UX01FUNT to drive address.
set UX01LABT to label type.
```

Dismount Volume

In the following example, the user exit is set to dismount a volume.

```
set UX01FUNC to C'2'.
set UX01FUNT to drive address.
set UX01DISP to disposition.
```

Swap Volume

In the following example, the user exit is set to swap a volume.

```
set UX01FUNC to C'3'.
set UX01FUNT to FROM drive address.
set UX01TUNT to TO drive address.
```

Operator Intervention on a mount

In the following example, the user exit is set to allow operator intervention on a mount.

```
set UX01FUNC to C'1'.
set UX01OPIN to UX01ON.
set UX01VOLS to volume serial number.
set UX01FUNT to FROM drive address.
set UX01TUNT to TO drive address.
set UX01LABT to label type.
```

No Operation

In the following example, the user exit is set to bypass all processing of and for this message.

```
set UX01FUNC to C'5'.
```

Special Considerations

Operator intervention is only supported on mount requests. It is not supported for dismount requests or for subsequent messages.

Setting the function code (UX01FUNC) to NOP (no operation) results in all SMC processing of the message being bypassed.

If you wish to pass back a null volser for a dismount request, specify '?????' (i.e., 6 question marks) for the volser (UX01VOLS). This causes HSC to dismount whatever volume is on the drive.

The user exit parameter list SLSUX01P and the MSP WQE, which are pointed to by UX01WQE, reside above the 16M line. The storage is not accessible to programs that are running with AMODE=24.

Restrictions and Limitations

The exit should take care not to issue any messages intercepted by the SMC. Otherwise, a loop in message processing may occur. Additionally, I/O services including: OPEN, CLOSE, READ, WRITE, etc. should be avoided.

Note – MSP/EX at C93091 and above supports 4-digit UCBs. If your version of SLSUX01 contains 3-digit UCBs, you must recode this exit using 4-digit UCBs.

User Exit 01 Parameter List

The parameter list is built by the NCS message intercept program prior to invoking the user exit. It contains the address of the WQE (the MSP Write Queue Element) containing a message. The user exit can inspect the message and request specific actions by setting the appropriate values and the return code to UX01ACTN.

SLSUX01 Map

| Offsets | | | | | |
|---------|------|------------|-----|----------|--|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 60 | SLSUX01P | User Exit 01 Parameter List |
| 0 | (0) | ADDRESS | 4 | UX01WQE | Address of MSP WQE |
| 4 | (4) | CHARACTER | 1 | UX01FUNC | Function code |
| | | 'F1' | | UX01MNT | Mount a cartridge. |
| | | 'F2' | | UX01DMNT | Dismount a cartridge. |
| | | 'F3' | | UX01SWAP | Swap a cartridge from XXX to YYY. |
| | | 'F5' | | UX01NOP | No operation to be performed. |
| 5 | (5) | BITSTRING | 1 | UX01OPIN | Operator intervention flag |
| | | ...1 | | UX01ON | Operator intervention requested. |
| 6 | (6) | CHARACTER | 6 | UX01VOLS | Volume serial number of cartridge |
| 12 | (C) | HEXSTRING | 10 | * | Reserved |
| 22 | (16) | CHARACTER | 1 | UX01DISP | Disposition of volume |
| | | 'K' | | UX01KEEP | Keep volume. |
| | | 'D' | | UX01DELT | Delete volume. |
| 23 | (17) | BITSTRING | 1 | UX01LABT | Label type |
| | | | | UX01DFLT | Library default label type |
| | |1 | | UX01SL | Standard label |
| | |1 . | | UX01AL | ANSI label |
| | |11 | | UX01NL | Nonlabeled |
| | |1 .. | | UX01NSL | Nonstandard label |
| 24 | (18) | CHARACTER | 4 | UX01FUNT | Mount/Dismount/Swap "from" unit address |
| 28 | (1C) | CHARACTER | 4 | UX01TUNT | "To" unit address |
| 32 | (20) | HEXSTRING | 1 | UX01SSUB | Scratch subpool number |
| 33 | (21) | HEXSTRING | 7 | * | Reserved |
| 40 | (28) | CHARACTER | 13 | UX01SNAM | Scratch subpool name |
| 56 | (38) | FULLWORD | 4 | UX01WORD | Customer field; initially zero; preserved across calls |
| 60 | (3C) | | | UX01L | Length of SLSUX01P |

SLSUX01 Cross Reference

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| SLSUX01P | 0 | |
| UX01ACTN | | 04 |
| UX01AL | | 02 |
| UX01CSC | | 00 |
| UX01DELT | | C4 |
| UX01DFLT | | 00 |
| UX01DISP | 16 | |
| UX01DMNT | | F2 |
| UX01FUNC | 4 | |
| UX01FUNT | 18 | |
| UX01HSC | | 00 |
| UX01KEEP | | D2 |
| UX01L | | 3C |
| UX01LABT | 17 | |
| UX01MNT | | F1 |
| UX01NL | | 03 |
| UX01NOP | | F5 |
| UX01NOPR | | 40 |
| UX01NSL | | 04 |
| UX01ON | | 16 |
| UX01OPIN | 5 | |
| UX01SL | | 01 |
| UX01SNAM | 28 | |
| UX01SSUB | 20 | |
| UX01SWAP | | F3 |
| UX01TUNT | 1C | |
| UX01VOLS | 6 | |
| UX01WORD | 38 | |
| UX01WQE | 0 | |

JES Scratch Allocation User Exit (SLSUX02)

Functional Description

The JES Scratch Allocation User Exit enables you to request the modification of actions taken by the SMC during allocation of a nonspecific (scratch) volume DD statement which references cartridge tape devices on a JES system. This exit can be used to:

- request allocation to a particular library subsystem as defined by the SMC LIBRARY command.
- request allocation of library drives
- request allocation of nonlibrary drives
- request allocation to prefer library drives over nonlibrary drives, but not exclude nonlibrary drives
- change esoteric (unit name) used for device allocation
- request allocation of a particular ACS
- request allocation to preference LSMs based on LSM type (LSMPREF)
- request allocation to use LSM preferencing when scratch volumes available reach a defined level (LOWSCR)
- supply scratch subpool information for allocation.

Environment

This user exit is applicable in JES environments. It is invoked by the SMC, and executes on the host where the SMC resides.

This user exit is invoked by the SMC for every allocation request for a nonspecific volume on a cartridge tape device. It is loaded using the SMC UEXIT operator command. See page [84](#) for more information about this command.

Note – This user exit must reside in a library accessible to the subsystem (SMC STEPLIB, JOBLIB, or your system's LINKLIB concatenation).

Conditions When Exit Routine is Executed

Entry Specifications

Upon entry to SLSUX02, register contents are as follows:

| Register | Contents |
|----------|-------------------------------|
| 0 | Undefined |
| 1 | Pointer to parameter list |
| 2-12 | Undefined |
| 13 | Pointer to register save area |
| 14 | Return address |
| 15 | Entry point address |

Parameter List

The parameter list is mapped by macro SLSUX02P.

Execution Attributes

Shared enqueues are held on major name SYSKDJSD and minor names Q4, CHNGDEVS, DDRTPUR, and DDRDA.

Conditions on Return From User Exit

Return Specifications

On return from SLSUX02, register contents are as follows:

| Register | Contents |
|----------|---------------------------|
| 0-14 | Values at entry to exit |
| 15 | Return code (hexadecimal) |

Return Codes

TABLE 2-5 SLSUX02 Return Codes

| Return Code | Name | Description |
|-------------|----------|---|
| 0 | UX02HSC | Perform default HSC allocation action |
| 4 | UX02LIB | Use library drives |
| 8 | UX02NLIB | Use nonlibrary drives |
| 12 | UX02LIBP | Prefer library drives |
| 16 | UX02ESUB | Change the esoteric (unit name) to be used for the allocation |
| 20 | UX02ASUB | Request the allocation to the specified ACS |
| 24 | UX02LS | Change the LSMREF parameter value |
| 28 | UX02LO | Change the LOWSCR parameter value |
| 32 | UX02VIRT | Select a virtual drive |
| 64 | UX02IACT | The user exit is inactive |

Programming Considerations

- Because the exit executes as an extension to the common allocation SSREQ, it cannot issue dynamic allocation requests.
- If your SMC accesses multiple libraries, you must code the UX02LIBN library name if you also code an ACS ID. The return code “Use Library Drives” is interpreted to mean use drives in any library. The return code “Use Nonlibrary Drives” is interpreted to mean use only drives not defined in any library.
- Do not attempt to use return code 12 (UX02LIBP) if you have nonlibrary transports with cartridge scratch loaders (CSLs) installed. If MSP allocation detects the presence of CSL transports, it ignores the effects of SMC device preferencing, and the CSL transports are preferred for scratch mounts. If all CSL transports are in use, then the preference established by the SMC is honored.

User Exit 02 Parameter List

The parameter list is built for a nonspecific allocation request. The return code from the user exit indicates the technique which SMC allocation should use for the unit selection(s). When the allocation technique indicates a library drive, the user exit can qualify the selection by a scratch subpool, or a scratch subpool and label type.

SLSUX02 Map

| Offsets | | | | | |
|---------|------|-------------|-----|----------|--|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 152 | SLSUX02P | User Exit 02 Parameter List |
| 0 | (0) | CHARACTER | 4 | UX02UX02 | Eyecatcher 'UX02' |
| 4 | (4) | FULLWORD | 4 | UX02LEN | Length of UX02 parameter list |
| 8 | (8) | HEXSTRING | 1 | UX02SUBP | Storage subpool number |
| | | 'E6' | | UX02SPID | Subpool 230 |
| 9 | (9) | HEXSTRING | 1 | UX02KEY | Storage key. |
| 10 | (A) | HEXSTRING | 2 | * | Reserved |
| 12 | (C) | CHARACTER | 8 | UX02JOB | Job name |
| 20 | (14) | CHARACTER | 8 | UX02STPN | Step name |
| 28 | (1C) | CHARACTER | 8 | UX02PRSN | Procedure step name |
| 36 | (24) | CHARACTER | 8 | UX02DDN | DD name |
| 44 | (2C) | ADDRESS | 4 | UX02JACC | Address of job accounting information |
| 48 | (30) | ADDRESS | 4 | UX02SACC | Address of step accounting information |
| 52 | (34) | CHARACTER | 44 | UX02DSN | Dataset name |
| 96 | (60) | HEXSTRING | 1 | UX02SSUB | Scratch subpool |
| 97 | (61) | BITSTRING | 1 | UX02LABT | Label type |
| | | | | UX02LBDF | Library default label type |
| | |1 | | UX02LBSL | Standard label |
| | |1. | | UX02LBAL | ANSI label |
| | |11 | | UX02LBNL | Nonlabeled |
| | |1.. | | UX02LBNS | Nonstandard label |
| 98 | (62) | CHARACTER | 3 | UX02XPDT | Dataset expiration date from JFCB |
| 101 | (65) | HEXSTRING | 3 | * | Reserved |
| 104 | (68) | FULLWORD | 4 | UX02USER | Customer field; initially zero; preserved across calls |
| 108 | (6C) | CHARACTER | 8 | UX02ESO | Area to return an esoteric name |
| 116 | (74) | HEXSTRING | 1 | UX02ACS | Area to return an ACS ID |
| 117 | (75) | CHARACTER | 13 | UX02SNAM | Scratch subpool name |
| 132 | (84) | ADDRESS | 4 | UX02JFCB | Address of the JFCB |
| 136 | (88) | BITSTRING | 1 | UX02LSMP | LSMPREF override |
| | | | | UX02LSNO | None |
| | |1 | | UX024410 | 4410 = CIMARRON |
| | |11 | | UX029360 | 9360 = WOLFCREEK |

| Offsets | | | | | |
|----------------|------------|-------------------|------------|-------------|-----------------------|
| Dec | Hex | Type/Value | Len | Name | Description |
| 137 | (89) |1.. | 1 | UX029310 | 9310 = POWDERHORN |
| | | BITSTRING | | UX02LOWS | LOWSCR override |
| | | | | UX02LONO | None |
| | | 1111 1111 | | UX02LOAN | Any |
| 138 | (8A) | HEXSTRING | 6 | * | Reserved |
| 144 | (90) | CHARACTER | 8 | UX02LIBN | Override library name |
| 152 | (98) | | | UX02LSTL | Length of SLSUX02P |

SLSUX02 Cross Reference

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| SLSUX02P | 0 | |
| UX02ACS | 74 | |
| UX02ASUB | | 14 |
| UX02DDN | 24 | |
| UX02DSN | 34 | |
| UX02ESO | 6C | |
| UX02ESUB | | 10 |
| UX02HSC | | 00 |
| UX02IACT | | 40 |
| UX02JACC | 2C | |
| UX02JFCB | 84 | |
| UX02JOBN | C | |
| UX02KEY | 9 | |
| UX02LABT | 61 | |
| UX02LBAL | | 02 |
| UX02LBDF | | 00 |
| UX02LBNL | | 03 |
| UX02LBNS | | 04 |
| UX02LBSL | | 01 |
| UX02LEN | 4 | |
| UX02LIB | | 04 |
| UX02LIBN | 90 | |
| UX02LIBP | | 0C |
| UX02LO | | 1C |
| UX02LOAN | | FF |
| UX02LONO | | 00 |
| UX02LOWS | 89 | |
| UX02LS | | 18 |
| UX02LSMP | 88 | |
| UX02LSNO | | 00 |
| UX02NLIB | | 08 |
| UX02PRSN | 1C | |
| UX02SACC | 30 | |
| UX02SNAM | 75 | |
| UX02SPID | | E6 |
| UX02SSUB | 60 | |
| UX02STPN | 14 | |
| UX02SUBP | 8 | |
| UX02USER | 68 | |
| UX02UX02 | 0 | |
| UX02VIRT | | 20 |
| UX02XPDT | 62 | |
| UX024410 | | 01 |
| UX029310 | | 04 |
| UX029360 | | 03 |

Scratch Subpool User Exit (SLSUX03)

Functional Description

The Scratch Subpool User Exit allows you to define multiple scratch subpools, or scratch subpools of different label types.

Note –

- The preferred method for defining scratch subpools involves using the Scratch Subpool (SCRPOOL) control statement to define subpool names for HSC in PARMLIB. For more information on using the Scratch Subpool control statement, refer to the *HSC System Programmer's Guide*.
 - If scratch subpools are defined in both PARMLIB and SLSUX03, the PARMLIB definitions are used.
-

SLSUX03 is usually used with SLSUX01 and SLSUX02 to implement scratch subpooling. Each user exit's roles are as follows:

- SLSUX03 defines the scratch subpools — it associates a particular group or range of VOLSERs as members in a particular subpool. The subpool is identified by either a name or a number.
- SLSUX01 is invoked for each Mount request and is used to inform the HSC which subpool to choose the scratch volume from for the request. SLSUX01 influences the choice of an appropriate scratch volume.
- SLSUX02 is invoked as part of the process of allocating a drive to satisfy each mount request for a scratch volume. When a subpool is returned by SLSUX02, the SMC preferences allocation of drives attached to LSMs that contain the most scratch volumes of the designated scratch subpool.

The combination of the user exit functionality described permits mounting of scratch tapes from specified scratch subpools in response to scratch mount requests and minimizes the number of pass-thrus required to satisfy the request.

Programming Considerations

Message Resulting From User Exit Failures

Any errors or inconsistencies in returns from the user exit, such as attempting to return more entries than initially specified or subpool entry definitions being returned out of order (by subpool index) cause display of a console error message and terminate HSC initialization. The following message is displayed if an error is detected:

```
SLSXXXXI - Module SLSVINIT return code 40Fx40Fx
```

The return code, 40Fx40Fx, in the message can have any of the following possible values:

| | |
|----------|---|
| 40F540F5 | Incorrect number of subpool entries/indices returned. |
| 40F640F6 | Subpool entries returned out of subpool index order. |
| 40F740F7 | Invalid volume serial number range. |
| 40F840F8 | Invalid label type. |
| 40F940F9 | Subpool already defined. |

Special Considerations

Different hosts in a multi-host complex may have different subpool definitions; separate initializations of the tape management system may change subpool definitions. Each time a tape management system's scratch subpool definitions change, the HSC should also be reinitialized, perhaps with a new Scratch Subpool User Exit.

Restrictions and Limitations

It is permissible to READ and/or WRITE files in this user exit. Users may want to include DD statements in the HSC startup procedure for any tape management system data sets that may need to be referenced.

User Exit 03 Parameter List

The parameter list is passed to the scratch subpool user exit to obtain the scratch subpool definitions for the installation. If an installation's user exit is going to return scratch subpool definitions, the fields defining the number of subpools and number of subpool entries must be supplied along with the first subpool entry definition. After that, each subsequent call to the user exit returns a single subpool entry. Entries must be returned in subpool index order starting with 1 to a maximum of 255.

SLSUX03 Map

| Offsets | | | | | |
|---------|------|------------|-----|----------|--|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 48 | SLSUX03P | User Exit 03 Parameter List |
| 0 | (0) | CHARACTER | 4 | UX03HDR | Eyecatcher |
| 4 | (4) | ADDRESS | 4 | UX03USER | Customer field; initially zero; preserved across calls |
| 8 | (8) | BITSTRING | 1 | UX03STAT | User exit call status |
| | | | | UX03INIT | Initial call to user exit |
| | |1 | | UX03SECD | Secondary call to user exit |
| 9 | (9) | BITSTRING | 1 | UX03SUBN | Number of subpools |
| 10 | (A) | HALFWORD | 2 | UX03ENTN | Number of subpool entries |
| 12 | (C) | HEXSTRING | 1 | UX03SUBP | Subpool index |
| 13 | (D) | CHARACTER | 6 | UX03LOVS | Low VOLSER |
| 19 | (13) | CHARACTER | 6 | UX03HIVS | High VOLSER |
| 25 | (19) | BITSTRING | 1 | UX03LABL | Label type |
| | | | | UX03LBDF | Library default label |
| | |1 | | UX03LBSL | Standard label (SL) |
| | |1. | | UX03LBAL | ANSI label (AL) |
| | |11 | | UX03LBNL | Nonlabeled (NL) |
| | |1.. | | UX03LBNS | Nonstandard label (NSL) |
| 26 | (1A) | HEXSTRING | 1 | * | Reserved |
| 27 | (1B) | CHARACTER | 13 | UX03SNAM | Subpool name |
| 40 | (28) | CHARACTER | 8 | UX03OWNR | Subpool owner |
| 48 | (30) | | | UX03LSTL | Length of SLSUX03P |

SLSUX03 Cross Reference

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| SLSUX03P | 0 | |
| UX03ENTN | A | |
| UX03HDR | 0 | |
| UX03HIVS | 13 | |
| UX03INIT | | 00 |
| UX03LABL | 19 | |
| UX03LBAL | | 02 |
| UX03LBDF | | 00 |
| UX03LBNL | | 03 |
| UX03LBNS | | 04 |
| UX03LBSL | | 01 |
| UX03LOVS | D | |
| UX03LSTL | | 30 |
| UX03OWNR | 28 | |
| UX03SNAM | 1B | 01 |
| UX03STAT | 8 | |
| UX03SUBN | 9 | |
| UX03SUBP | C | |
| UX03USER | 4 | |

PGMI Authorization User Exit (SLSUX05)

Functional Description

The Programmatic Interface Authorization User Exit performs authorization checking for PGMI functions. If the user exit disables itself (setting return code UX05NOPR) or abends, the HSC allows all users to issue the QUERY and READ requests. The remaining requests can only be issued by APF-authorized, key 0-7, or supervisor state requestors.

If desired, an installation can use RACF or similar product within the SLSUX05 to perform the authorization.

Environment

This user exit is applicable in a JES environment. It is invoked by the HSC, and executes in the HSC's address space.

This user exit is invoked by the HSC for all requests received from the programmatic interface. This does not include HSC internal requests (e.g., job processing, utilities). The user exit should evaluate the request and set a return code to indicate if the HSC should permit the request to be executed. The exit is called from a non-space switch PC in the requestor's address space, under the requestor's RB.

Note – This user exit must reside in a library defined in the KAAAPFxx member of the SYS1.PARMLIB.

Conditions When Exit Routine is Executed

Entry Specifications

Upon entry to SLSUX05, register contents are as follows:

| Register | Contents |
|----------|-------------------------------|
| 0 | Undefined |
| 1 | Pointer to parameter list |
| 2-12 | Undefined |
| 13 | Pointer to register save area |
| 14 | Return address |
| 15 | Entry point address |

Parameter List

The parameter list is mapped by macro SLSUX05P.

Conditions on Return To HSC From User Exit

Return Specifications

On return from SLSUX05, register contents are as follows:

| Register | Contents |
|----------|---------------------------|
| 0-14 | Values at entry to exit |
| 15 | Return code (hexadecimal) |

Return Codes

TABLE 2-6 SLSUX05 Return Codes

| Return Code | Name | Description |
|-------------|-----------|---------------------------|
| 0 | UX05ALLOW | Allow the request |
| 4 | UX05DENY | Deny the request |
| 64 | UX05NOPR | The user exit is inactive |

Programming Considerations

A user word is provided in the parameter list. The contents of the word are passed from invocation to invocation of the user exit, and the user exit may change the contents. After an IPL or HSC COLD start, it is initially zero; otherwise it survives across HSC startups. If this user word is used as a pointer, the area pointed to should be in common storage.

The user exit is called once during HSC initialization. In that case the pointer to SLSXREQM (UX05REQA) is zero. This permits the user exit to initialize the user word, if not already initialized.

Note – The user word may not be zero if this is not the first HSC initialization after an IPL or HSC COLD start.

There is no serialization provided. The user exit could be executing simultaneously under two TCBs. The user exit may want to serialize updates to any work area the user word may point to.

User Exit 05 Parameter List

The parameter list is built by user interface routines. The exit routine should examine the parameter list.

- If the user should be allowed to issue the request, register 15 should be set to UX05ALLOW.
- If the request is to be denied, UX05DENY should be set.
- If the exit is not to be called again, UX05NOPR should be set.

SLSUX05 Map

| Offsets | | | | | |
|---------|------|------------|-----|----------|--|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 24 | SLSUX05P | User Exit 05 Parameter List |
| 0 | (0) | CHARACTER | 4 | UX05HDR | Eyecatcher |
| | | 'UX05' | | UX05ID | Eyecatcher constant |
| 4 | (4) | FULLWORD | 4 | UX05LEN | Length of UX05 parameter list |
| 8 | (8) | ADDRESS | 4 | UX05REQA | SCSXREQM parameter list address |
| 12 | (C) | FULLWORD | 4 | UX05USER | Customer field; initially zero; preserved across calls |
| 16 | (10) | HEXSTRING | 8 | * | Reserved |
| 24 | (18) | | | UX05LSTL | Length of SLSUX05P |

SLSUX05 Cross Reference

| Name | Hex Offset | Hex Value |
|-----------|------------|-----------|
| SLSUX05P | 0 | |
| UX05ALLOW | | 00 |
| UX05DENY | | 04 |
| UX05HDR | 0 | |
| UX05ID | | 'UX05' |
| UX05LEN | 4 | |
| UX05LSTL | | 18 |
| UX05NOPR | | 40 |
| UX05REQA | 8 | |
| UX05USER | C | |

Insert/Delete User Exit (SLSUX06)

Functional Description

The Insert/Delete User Exit provides you a way to obtain information when a volume is added to or deleted from the control data set.

At HSC initialization, a separate server task is attached that drives the user exit code. When a volume is inserted or deleted, a parameter list is built to describe the action. The server task is then posted to invoke the user code and pass the parameter list along. This parameter list shows the type of entry (insert, delete or HSC purge) and information on the volume, such as: VOLSER, location, status, date/time for insert or last use, and number of times selected.

At HSC termination, the server task is notified that termination is in progress. It creates a dummy parameter list with the UX06FUNC=UX06PURG bit on and passes it to the user code for clean up.

The installation-written exit routine must be named SLSUX06 and must be link-edited into an HSC library. Standard IBM OS linkage conventions must be observed.

Environment

This user exit is applicable in a JES environment. It is invoked by the HSC, and executes in the HSC's address space.

Note –

- This exit is **not** active during reconfiguration.
 - This user exit must reside in a library defined in the KAAAPFxx member of the SYS1.PARMLIB.
-

Conditions When Exit Routine is Executed

Entry Specifications

Upon entry to SLSUX06, register contents are as follows:

| Register | Contents |
|----------|-------------------------------|
| 0 | Undefined |
| 1 | Pointer to parameter list |
| 2-12 | Undefined |
| 13 | Pointer to register save area |
| 14 | Return address |
| 15 | Entry point address |

Parameter List

The parameter list is mapped by macro SLSUX06P.

Conditions on Return To HSC From User Exit

Return Specifications

On return from SLSUX06, register contents are as follows:

| Register | Contents |
|----------|---------------------------|
| 0-14 | Values at entry to exit |
| 15 | Return code (hexadecimal) |

Return Codes

TABLE 2-7 SLSUX06 Return Codes

| Return Code | Name | Description |
|-------------|----------|------------------------------|
| 0 | UX06OK | Normal return |
| 64 | UX06NOPR | Cancel exit |
| 255 | UX06INV | Invalid function code passed |

Programming Considerations

The parameter list (SLSUX06P) is obtained from user key storage.

On initial entry, the UX06USER fullword is set to zero. If the user wants information to be maintained across all calls to the exit, they can GETMAIN a work area storage and place the address of that area in UX06USER. This is the only field in the parameter list that is maintained across exit calls. At termination (UX06FUNC=UX06PURG), the user must release any resources being held and FREEMAIN any obtained storage.

The exit routine should examine the UX06FUNC flag byte to determine the correct entry type.

Example:

```
UX06FUNC = UX06INS  - volume inserted in database
UX06FUNC = UX06DEL  - volume deleted from database
UX06FUNC = UX06PURG - purge call, cleanup before return
```

Program Attributes

The program attributes of SLSUX06 are as described in [“Programming Attributes” on page 12](#) with the following exceptions:

RMODE=24, AMODE=24

Special Considerations

Since the user code is invoked under a separate TCB, problems are not encountered in the HSC if the exit has problems. It may open files, do I/O, or obtain resources. Upon receiving an entry type of UX06PURG in the parameter list, the user code must clean up resources and terminate.

If the user code is passed an invalid function type, it should return UX06INV in R15.

If the user code decides it does not want to be called again, it should perform all necessary clean up and return UX06NOPR in R15.

The HSC server that invokes the user code enables MSP Dump Analysis and Elimination (DAE) to suppress duplicate SVC dumps. If user code is being tested that abends the same and a dump is needed, it may be necessary to temporarily turn off DAE on the system or to EDIT SYS1.DAE and remove the dump entry that is suppressing the dump.

Restrictions and Limitations

The following restrictions and limitations apply:

- The HSC must be recycled to reactivate the exit.
- If the exit is deactivated or an abend occurs, any transactions not processed are lost.
- The user exit is entered in 24-bit addressing. This is a restriction when calling TMS functions.
- The user exit must be assembled using the HSC and CA-1 (TMS) macro libraries.

Your systems programming staff may replace the default user exit with one designed to implement your system's specific needs.

User Exit 06 Parameter List

The parameter list is passed to the insert/delete user exit to pass information about the volume serial being added to or deleted from the database.

On the first call to the user code, it may obtain storage and save its address in the user word provided in the parameter list. The value of the user word is maintained across calls.

The user code is invoked for three actions: 1) insert - when a volume is added to the database, 2) delete - when a volume is deleted from the database and 3) purge - when HSC is brought down.

SLSUX06 Map

| Offsets | | | | | |
|---|------|-------------------|-----|----------|--|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 60 | SLSUX06P | User Exit 06 Parameter List |
| 0 | (0) | CHARACTER | 4 | UX06ID | Eyecatcher 'UX6P' |
| 4 | (4) | FULLWORD | 0 | UX06DESC | Alignment/length |
| 4 | (4) | HEXSTRING | 1 | UX06SPID | Subpool ID |
| 5 | (5) | HEXSTRING | 3 | UX06LEN | Block length |
| 8 | (8) | FULLWORD | 4 | UX06FWD | Forward chain pointer |
| 12 | (C) | FULLWORD | 4 | UX06USER | Customer field; initially zero; preserved across calls |
| 16 | (10) | HEXSTRING | 4 | * | Reserved |
| 20 | (14) | BITSTRING | 1 | UX06FUNC | Exit function flag |
| | | 1 | | UX06INS | Volume inserted in database |
| | | . 1 | | UX06DEL | Volume deleted from database |
| | | . . 1 | | UX06PURG | Purge call, clean up before return |
| 21 | (15) | HEXSTRING | 11 | * | Reserved |
| 32 | (20) | CHARACTER | 6 | UX06VOL | Volume serial |
| 38 | (26) | BITSTRING | 1 | UX06FLGS | Label type |
| | | 1 | | UX06SCR | Volume is scratch |
| | | . 1 | | UX06SEL | Volume is selected |
| | | . . 1 | | UX06ELAB | Cartridge has external label |
| | | . . . 1 | | UX06OCR | External label is OCR readable |
| | | 1 | | UX06INUS | Database volume record is valid |
| 39 | (27) | HEXSTRING | 1 | UX06LOCK | Owning host ID |
| 40 | (28) | HEXSTRING | 3 | * | Reserved |
| 43 | (2B) | HEXSTRING | 5 | UX06LOC | Cartridge location |
| The following date/time values are TOD date/time values obtained from the first fullword of the 64-bit result of a 'TIME STCK' (Store Clock) instruction. | | | | | |
| 48 | (30) | FULLWORD | 4 | UX06DATI | Date/time volume inserted |
| 52 | (34) | FULLWORD | 4 | UX06DATL | Date/time last selected |
| 56 | (38) | FULLWORD | 4 | UX06SCNT | Volume selected count |
| 60 | (3C) | HEXSTRING | 20 | * | Reserved |
| 80 | (50) | | | UX06L | Length of SLSUX06P |

SLSUX06 Cross Reference

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| SLSUX06P | 0 | |
| UX06DATI | 30 | |
| UX06DATL | 34 | |
| UX06DEL | | 40 |
| UX06DESC | 4 | |
| UX06ELAB | | 20 |
| UX06FLGS | 26 | |
| UX06FUNC | 14 | |
| UX06FWD | 8 | |
| UX06ID | 0 | |
| UX06INS | | 80 |
| UX06INUS | | 01 |
| UX06INV | | FF |
| UX06LEN | 5 | |
| UX06LOC | 2B | |
| UX06LOCK | 27 | |
| UX06NOPR | | 40 |
| UX06OCR | | 10 |
| UX06OK | | 00 |
| UX06PURG | | 20 |
| UX06SCNT | 38 | |
| UX06SCR | | 80 |
| UX06SEL | | 40 |
| UX06SPID | 4 | |
| UX06USER | C | |
| UX06VOL | 20 | |

JES Specific Volume Allocation User Exit (SLSUX08)

Functional Description

The JES Specific Volume Allocation User Exit enables you to request modification of the actions the SMC takes during allocation of a specific volume DD statement which references cartridge tape devices on a JES system. This exit can be used to:

- request allocation to a particular library subsystem as defined by the SMC LIBRARY command
- change esoteric (unit name) used for device allocation
- request allocation of a particular ACS
- request allocation of nonlibrary drives
- request allocation of library drives
- bypass drive exclusion logic.

Environment

This user exit is applicable in JES environments. It is invoked by the SMC, and executes on the host where the SMC resides.

This user exit is invoked by the SMC for every allocation request for a specific volume on a cartridge tape device on a JES system. It is loaded using the SMC UEXIT operator command. See page [84](#) for more information about this command.

Note – This user exit must reside in a library accessible to the subsystem (SMC STEPLIB, JOBLIB, or your system's LINKLIB concatenation).

Conditions when Exit Routine is Executed

Entry Specifications

Upon entry to SLSUX08, register contents are as follows:

| Register | Contents |
|----------|-------------------------------|
| 0 | Undefined |
| 1 | Pointer to parameter list |
| 2-12 | Undefined |
| 13 | Pointer to register save area |
| 14 | Return address |
| 15 | Entry point address |

Parameter List

The parameter list is mapped by macro SLSUX08P.

Execution Attributes

Shared enqueues held on major name SYSKDJSD, minor names Q4, CHNGDEVS, DDRTPUR, and DDRDA.

Conditions on Return From User Exit

Return Specifications

On return from SLSUX08, register contents are as follows:

| Register | Contents |
|----------|---------------------------|
| 0-14 | Values at entry to exit |
| 15 | Return code (hexadecimal) |

Return Codes

TABLE 2-8 SLSUX08 Return Codes

| Return Code | Name | Description |
|-------------|----------|--|
| 0 | UX08HJCL | Honor unit information in JCL |
| 4 | UX08ESUB | Change the esoteric (unit name) to be used for the allocation |
| 8 | UX08SVOL | Request the allocation to use library drives indicated by the SPECVOL parameter of the ALLOC command |
| 12 | UX08NLIB | Request allocation to use nonlibrary drives |
| 16 | UX08ASUB | Request the allocation of the specified ACS |
| 20 | UX08BSEP | Bypass drive exclusion |
| 64 | UX08IACT | User exit is not operational |

TABLE 2-9 SLSUX08 Return Data in Parameter List

| Name | Description |
|---------|---|
| UX08ACS | ACS to allocate in if return code UX08ASUB is issued. |
| UX08ESO | Esoteric to substitute if return code UX08ESUB is issued. |

Programming Considerations

- Because the exit executes as an extension to the common allocation SSREQ, it cannot issue dynamic allocation requests.
- If your SMC accesses multiple libraries, you must code the UX08LIBN library name if you also code an ACS ID. The return code “Use Library Drives” is interpreted to mean use drives in any library. The return code “Use Nonlibrary Drives” is interpreted to mean use only drives not defined in any library.

User Exit 08 Parameter List

The parameter list is built by SMC Common Allocation SSREQ processing. The user exit is called for a specific allocation request. The user exit provides the ability to provide allocation criteria for a given DD statement.

SLSUX08 Map

| Offsets | | Type/Value | Len | Name | Description |
|---------|------|-----------------|-----|----------|--|
| Dec | Hex | | | | |
| 0 | (0) | STRUCTURE | 136 | SLSUX08P | User Exit 08 Parameter List |
| 0 | (0) | CHARACTER | 4 | UX08UX08 | Eyecatcher 'UX08' |
| 4 | (4) | FULLWORD | 4 | UX08LEN | Length of UX08 parameter list |
| 8 | (8) | HEXSTRING | 1 | UX08SUBP | Storage subpool number |
| | | 'E6' | | UX08SPID | Subpool 230 |
| 9 | (9) | HEXSTRING | 1 | UX08KEY | Storage key. |
| 10 | (A) | HEXSTRING | 2 | * | Reserved |
| 12 | (C) | CHARACTER | 8 | UX08JOB | Job name |
| 20 | (14) | CHARACTER | 8 | UX08STPN | Step name |
| 28 | (1C) | CHARACTER | 8 | UX08PRSN | Procedure step name |
| 36 | (24) | CHARACTER | 8 | UX08DDN | DD name |
| 44 | (2C) | ADDRESS | 4 | UX08USER | Customer field; initially zero; preserved across calls |
| 48 | (30) | ADDRESS | 4 | UX08JACC | Address of job accounting information |
| 52 | (34) | ADDRESS | 4 | UX08SACC | Address of step accounting information |
| 56 | (38) | CHARACTER | 44 | UX08DSN | Dataset name |
| 100 | (64) | ADDRESS | 4 | UX08VOLP | Address of volume information |
| 104 | (68) | FULLWORD | 4 | UX08NUMV | Number of volumes in dataset |
| 108 | (6C) | CHARACTER | 8 | UX08ESO | Area to return esoteric name |
| 116 | (74) | HEXSTRING | 1 | UX08ACS | Area to return an ACS ID |
| 117 | (75) | CHARACTER | 3 | UX08XPDT | Dataset expiration date |
| 120 | (78) | BITSTRING | 1 | UX08LABT | Label type |
| | | . 1 | | UX08LBAL | Standard label |
| | | 1 . . | | UX08LBNS | ANSI label |
| | | 1 . | | UX08LBSL | Nonlabeled |
| | | 1 | | UX08LBNL | Nonstandard label |
| 121 | (79) | HEXSTRING | 7 | * | Reserved |
| 128 | (80) | CHARACTER | 8 | UX08LIBN | Override library name |
| 136 | (88) | CHARACTER | 8 | UX08LIBL | Library name where volume was found |
| 144 | (90) | | | UX08FIXL | Length of SLSUX08P |

| Offsets | | | | | |
|----------------|------------|-------------------|------------|-------------|---|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 16 | SLSUX08V | User Exit 08 Volume Parm List |
| 0 | (0) | CHARACTER | 6 | UX08VLSR | Volume serial |
| 6 | (6) | BITSTRING | 1 | UX08VLOC | Volume location |
| | | 1 | | UX08VLIB | Volume resides in library |
| | | . 1 | | UX08VNLB | Volume resides outside library |
| 7 | (7) | HEXSTRING | 2 | UX08LSM | If volume in library, the library location in ACS/LSM format 'AALL' (hexadecimal) |
| 9 | (9) | HEXSTRING | 7 | * | Reserved |
| 16 | (10) | | | UX08VOLL | Length of volume entry |

SLSUX08 Cross Reference

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| SLSUX08P | 0 | |
| UX08ACS | 74 | |
| UX08ASUB | | 10 |
| UX08BSEP | | 14 |
| UX08DDN | 24 | |
| UX08DSN | 38 | |
| UX08ESO | 6C | |
| UX08ESUB | | 04 |
| UX08FIXL | | 80 |
| UX08HJCL | | 00 |
| UX08IACT | | 40 |
| UX08JACC | 30 | |
| UX08JOB | C | |
| UX08KEY | 9 | |
| UX08LABT | 78 | |
| UX08LBAL | | 40 |
| UX08LBNL | | 01 |
| UX08LBNS | | 04 |
| UX08LBSL | | 02 |
| UX08LEN | 4 | |
| UX08LIBN | 80 | |
| UX08LSM | 07 | |
| UX08NLIB | | 0C |
| UX08NUMV | 68 | |
| UX08PRSN | 1C | |
| UX08SACC | 34 | |
| UX08SPID | | E6 |
| UX08STPN | 14 | |
| UX08SUBP | 8 | |
| UX08SVOL | | 08 |
| UX08USER | 2C | |
| UX08UX08 | 0 | |
| UX08VLIB | | 80 |
| UX08VLOC | 6 | |
| UX08VLSR | 0 | |
| UX08VNLB | | 40 |
| UX08VOLL | | 10 |
| UX08VOLP | 64 | |
| UX08XPDT | 75 | |

Deferred Mount User Exit (SLSUX09)

Functional Description

The Deferred Mount User Exit is invoked during MSP allocation processing to allow the user to determine whether a mount should be deferred. The exit is only invoked during static allocation. Dynamic allocation requests are always deferred. Checkpoint/restart data sets used for restart are never deferred.

If you request defer in the JCL, the mount of the cartridge is deferred until the data set is opened. If you do not request defer in your JCL, the cartridge is mounted at step allocation time. If the data set is not opened, the cartridge is mounted and dismounted without actually being used.

The SMC ALLOCDef command provides a DEFer option to enable or disable MSP deferred mount processing for library mounts. Refer to the *Storage Management Component (SMC) Configuration and Administration Guide* for more information.

- Setting DEFer(ON) allows you to override the JCL and always request deferred mount processing.
- Setting DEFer(OFF) does not override your JCL or JECL statements requesting MSP or deferred processing.

When deferred mount processing is in effect, a cartridge is only mounted when the data set on the cartridge is opened. If the data set is not opened, the cartridge is not mounted. The LSM robot is then free to perform other necessary tasks. If the volume is required, it is mounted at open time and the job waits until the cartridge is mounted before proceeding.

Cartridges that are mounted are selected by the HSC. Without deferred mounting, scratch volumes that are never used, are mounted and removed from the scratch list. This causes the scratch list to be depleted more quickly than if the HSC did not mount and select these volumes.

Deferred mounting can reduce the number of mounts and dismounts the robot must perform, but may increase the time required to run a job. SLSUX09 provides you with the flexibility to allow or disallow the Defer option on an individual mount request.

If you require some data sets be mounted prior to open time for performance reasons and your data center normally operates in deferred mode, SLSUX09 allows you to override deferred mounting for an individual mount request.

Environment

This user exit is applicable in JES environments. It is invoked by the SMC, and executes on the host where the SMC resides.

This user exit is loaded using the SMC UEXit operator command. See page [84](#) for more information about this command.

Note – This user exit must reside in a library accessible to the subsystem (SMC STEPLIB, JOBLIB, or you system's LINKLIB concatenation).

Conditions When Exit Routine is Executed

Entry Specifications

Upon entry to SLSUX09, register contents are as follows:

| Register | Contents |
|----------|-------------------------------|
| 0 | Undefined |
| 1 | Pointer to parameter list |
| 2-12 | Undefined |
| 13 | Pointer to register save area |
| 14 | Return address |
| 15 | Entry point address |

Parameter List

The the parameter list is mapped by macro SLSUX09P.

Conditions on Return From User Exit

Return Specifications

On return from SLSUX09, register contents are as follows:

| Register | Contents |
|----------|---------------------------|
| 0-14 | Values at entry to exit |
| 15 | Return code (hexadecimal) |

Return Codes

TABLE 2-10 SLSUX09 Return Codes

| Return Code | Name | Description |
|-------------|----------|--|
| 0 | UX09HSC | Process normally; exit does not influence defer status |
| 4 | UX09DFR | Defer the mount |
| 8 | UX09NDFR | Honor the JCL defer status |
| 12 | UX09NVIR | Do not defer the virtual mount. |
| 64 | UX09IACT | The user exit is inactive |

Caution – Use return code 12 with care. Due to timing issues, if a VTV is mounted in a non-deferred situation but is never opened by the program, the VTV remains mounted. This may compromise other processes because the VTV is not allowed to be processed while it is mounted. As there is no VTCS facility to perform a forced or manual dismount, use the MSP Unload command to ‘free’ the drive.

User Exit 09 Parameter List

The parameter list is built by SMC Common Allocation SSREQ processing. The user exit is called for a library volume allocation request. The return code from the user exit indicates the MSP defer status of the request.

SLSUX09 Map

| Offsets | | | | | |
|---------|------|--------------|-----|----------|--|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 120 | SLSUX09P | User Exit 09 Parameter List |
| 0 | (0) | CHARACTER | 4 | UX09UX09 | Eyecatcher 'UX09' |
| 4 | (4) | FULLWORD | 4 | UX09LEN | Length of UX09 parameter list |
| 8 | (8) | HEXSTRING | 1 | UX09SUBP | Storage subpool number |
| | | 'E6' | | UX09SPID | Subpool 230 |
| 9 | (9) | HEXSTRING | 1 | UX09KEY | Storage key. |
| 10 | (A) | HEXSTRING | 2 | * | Reserved |
| 12 | (C) | FULLWORD | 4 | UX09USER | Customer field; initially zero; preserved across calls |
| 16 | (10) | CHARACTER | 8 | UX09JOBN | Job name |
| 24 | (18) | CHARACTER | 8 | UX09STPN | Step name |
| 32 | (20) | CHARACTER | 8 | UX09PRSN | Procedure step name |
| 40 | (28) | CHARACTER | 8 | UX09PGMN | EXEC=program name |
| 48 | (30) | CHARACTER | 8 | UX09DDN | DD name |
| 56 | (38) | CHARACTER | 44 | UX09DSN | Dataset name |
| 100 | (64) | HEXSTRING | 16 | * | Reserved |
| 116 | (74) | BITSTRING | 1 | UX09DDCH | Dataset characteristics |
| | | 1. | | UX09SPEC | Specific volume request |
| | | . 1. | | UX09NSPC | Nonspecific volume request |
| 117 | (75) | HEXSTRING | 3 | * | Reserved |
| 120 | (78) | | | UX09LSTL | Length of SLSUX09P |

SLSUX09 Cross Reference

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| SLSUX09P | 0 | |
| UX09DDCH | 74 | |
| UX09DDN | 30 | |
| UX09DFR | | 04 |
| UX09DSN | 38 | |
| UX09HSC | | 00 |
| UX09IACT | | 40 |
| UX09JOB | 10 | |
| UX09KEY | 9 | |
| UX09LEN | 4 | |
| UX09LSTL | | 78 |
| UX09NDFR | | 08 |
| UX09NSPC | | 40 |
| UX09NVIR | | 0C |
| UX09PGMN | 28 | |
| UX09PRSN | 20 | |
| UX09SPEC | | 80 |
| UX09SPID | | E6 |
| UX09STPN | 18 | |
| UX09SUBP | 8 | |
| UX09USER | C | |
| UX09UX09 | 0 | |

JES Unit Affinity Separation User Exit (SLSUX10)

Functional Description

The JES Unit Affinity Separation User Exit enables you to request modification of the actions the SMC takes during allocation of a unit affinity chain or GDG ALL chain which references cartridge tape devices on a JES system. This exit can be used to

- override the setting of the SMC ALLOCDef command SEPLvl parameter
- request allocation of library drives for the chain
- request allocation of nonlibrary drives for the chain
- change the esoteric (unit name) used to allocate the chain
- request allocation of a particular ACS for the chain.

Environment

This user exit is applicable in JES environments. It is invoked by the SMC, and executes on the host where the SMC resides.

This user exit is invoked by the SMC for every unit affinity chain or GDG ALL chain that requires allocation. It is loaded using the SMC UEXit operator command. See [“SMC UEXit command” on page 84](#) for more information about this command.

Note – This user exit must reside in a library accessible to the subsystem (SMC STEPLIB, JOBLIB, or your system’s LINKLIB concatenation).

Conditions when Exit Routine is Executed

Entry Specifications

Upon entry to SLSUX10, register contents are as follows:

| Register | Contents |
|----------|-------------------------------|
| 0 | Undefined |
| 1 | Pointer to parameter list |
| 2-12 | Undefined |
| 13 | Pointer to register save area |
| 14 | Return address |
| 15 | Entry point address |

Parameter List

The parameter list is mapped by macro SLSUX10P.

Execution Attributes

Shared enqueues held on major name SYSKDJSD, minor names Q4, CHNGDEVS, DDRTPUR, and DDRDA.

Condition on Return From User Exit

Return Specifications

On return from SLSUX10, register contents are as follows:

| Register | Contents |
|----------|---------------------------|
| 0-14 | Values at entry to exit |
| 15 | Return code (hexadecimal) |

Return Codes

TABLE 2-11 SLSUX10 Return Codes

| Return Code | Name | Description |
|-------------|----------|--|
| 0 | UX10PLIB | Perform separation according to the SEPLvl parameter of the ALLOCDef or ALLOCJob commands |
| 4 | UX10NSEP | Do not separate the chain |
| 8 | UX10SEP | Separate the chain |
| 12 | UX10LDRV | Allocate library drives, but do not separate the chain |
| 16 | UX10NDRV | Allocate nonlibrary drives, but do not separate the chain |
| 20 | UX10ESUB | Perform esoteric substitution using the specified esoteric name, but do not separate the chain |
| 24 | UX10ASUB | Direct allocation to a specific ACS or subsystem name, but do not separate the chain |
| 64 | UX10IACT | The user exit is inactive |

TABLE 2-12 SLSUX10 Return Data in Parameter List

| Name | Description |
|---------|---|
| UX10ACS | ACS to allocate in if return code UX10ASUB is issued. |
| UX10ESO | Esoteric to substitute if return code UX10ESUB is issued. |

Programming Considerations

- Because the exit executes as an extension to the common allocation SSREQ, it cannot issue dynamic allocation requests.
- This exit can request esoteric substitution (or ACS specification) or separation, but not both. The two requests are mutually exclusive.

Performance Considerations

Unit affinity separation results in more tape devices being allocated to job steps requesting unit affinity between library and nonlibrary volumes, or volumes in different ACSs. Increased resource allocation may affect the overall performance for the entire job mix of an MSP environment.

User Exit 10 Parameter List

The parameter list is built by SMC Common Allocation SSREQ processing. The user exit is called for each unit affinity chain or unqualified GDG specified in the invoking JCL. SLSUX10 provides the ability to request unit affinity separation for data sets which belong to a single affinity chain or an unqualified GDG and the required volumes reside in different physical locations (e.g., inside and outside an ACS).

SLSUX10 Map

| Offsets | | | | | |
|---------|------|------------|-----|----------|--|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 64 | SLSUX10P | User Exit 10 Parameter List |
| 0 | (0) | CHARACTER | 4 | UX10UX10 | Eyecatcher 'UX10' |
| 4 | (4) | FULLWORD | 4 | UX10LEN | Length of UX10 parameter list |
| 8 | (8) | HEXSTRING | 1 | UX10SUBP | Storage subpool number |
| | | 'E6' | | UX10SPID | Subpool 230 |
| 9 | (9) | HEXSTRING | 1 | UX10KEY | Storage key. |
| 10 | (A) | HEXSTRING | 2 | * | Reserved |
| 12 | (C) | CHARACTER | 8 | UX10JOB | Job name |
| 20 | (14) | CHARACTER | 8 | UX10STPN | Step name |
| 28 | (1C) | CHARACTER | 8 | UX10PRSN | Procedure step name |
| 36 | (24) | ADDRESS | 4 | UX10USER | Customer field; initially zero; preserved across calls |
| 40 | (28) | ADDRESS | 4 | UX10JACC | Address of job accounting information |
| 44 | (2C) | ADDRESS | 4 | UX10SACC | Address of step accounting information |
| 48 | (30) | FULLWORD | 4 | UX10DCNT | Number of DDs in affinity chain |
| 52 | (34) | CHARACTER | 8 | UX10ESO | Area to return esoteric name |
| 60 | (3C) | HEXSTRING | 1 | UX10ACS | Area to return an ACS ID |
| 61 | (3D) | HEXSTRING | 3 | * | Reserved |
| 64 | (40) | | | UX10FIXL | Length of fixed portion of parameter list |

The following area immediately follows the SLSUX10P fixed data area. This area repeats once for each DD statement in the affinity chain. The number of DD statements in the affinity chain is stored in field UX10DCNT.

| Offsets | | | | | |
|----------------|------------|-------------------|------------|-------------|-----------------------------------|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 80 | SLSUX10D | User Exit 10 Dataset Parm List |
| 0 | (0) | CHARACTER | 8 | UX10DDN | DD name |
| 8 | (8) | CHARACTER | 44 | UX10DSN | Dataset name |
| 52 | (34) | ADDRESS | 4 | UX10VOLP | Pointer to volume information |
| 56 | (38) | FULLWORD | 4 | UX10VCNT | Number of volumes in dataset |
| 60 | (3C) | CHARACTER | 3 | UX10XPDT | Dataset expiration date from JFCB |
| 63 | (3F) | BITSTRING | 1 | UX10LABT | Label type from JFCB |
| | | .1 | | UX10LBAL | ANSI label |
| | |1 . . | | UX10LBNS | Nonstandard label |
| | |1 . | | UX10LBSL | Standard label |
| | |1 | | UX10LBNL | Nonlabeled |
| 64 | (40) | BITSTRING | 1 | UX10GDGI | GDG information |
| | | 1 | | UX10GDG | Dataset is part of GDGALL |
| | | .1 | | UX10NGDG | Dataset is GDG single |
| 65 | (41) | HEXSTRING | 15 | * | Reserved |
| 80 | (50) | | | UX10DSNL | Length of dataset entry |

The following area is pointed to by UX10VOLP. For a specific request, UX10VSER contains the volume serial. For a nonspecific request, UX10VSER contains "SCRTCH". If the specific volume resides in the library, UX10LSM will contain its library location. For all other requests UX10LSM will contain zeros.

| Offsets | | | | | |
|----------------|------------|-------------------|------------|-------------|--|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 16 | SLSUX10V | User Exit 10 Volume Parm List |
| 0 | (0) | CHARACTER | 6 | UX10VLSR | Volume serial |
| 6 | (6) | BITSTRING | 1 | UX10VLOC | Volume location |
| | | 1 | | UX10VLIB | Specific volume resides in library |
| | | . 1 | | UX10VNLB | Specific volume resides outside library |
| | | . . 1 | | UX10VSCR | Nonspecific volume request |
| 7 | (7) | HEXSTRING | 2 | UX10LSM | If specific volume in library, the library location in ACS/LSM format 'AALL' (hexadecimal) |
| 9 | (9) | HEXSTRING | 7 | * | Reserved |
| 16 | (10) | | | UX10VOLL | Length of volume entry |

SLSUX10 Cross Reference

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| SLSUX10D | 0 | |
| SLSUX10P | 0 | |
| SLSUX10V | 0 | |
| UX10ACS | 36 | |
| UX10ASUB | | 18 |
| UX10DCNT | 30 | |
| UX10DDN | 0 | |
| UX10DSN | 8 | |
| UX10DSNL | | 50 |
| UX10ESO | 34 | |
| UX10ESUB | | 14 |
| UX10FIXL | | 40 |
| UX10GDG | | 80 |
| UX10GDGI | 40 | |
| UX10IACT | | 40 |
| UX10JACC | 28 | |
| UX10JOB | C | |
| UX10KEY | 9 | |
| UX10LABT | 3F | |
| UX10LBAL | | 40 |
| UX10LBNL | | 01 |
| UX10LBNS | | 04 |
| UX10LBSL | | 02 |
| UX10LDRV | | 0C |
| UX10LEN | 4 | |
| UX10LSM | 07 | |
| UX10NDRV | | 10 |
| UX10NGDG | | 40 |
| UX10NSEP | | 04 |
| UX10PLIB | | 00 |
| UX10PRSN | 1C | |
| UX10SACC | 2C | |
| UX10SEP | | 08 |
| UX10SPID | | E6 |
| UX10STPN | 14 | |
| UX10SUBP | 8 | |
| UX10USER | 24 | |
| UX10UX10 | 0 | |
| UX10VCNT | 38 | |
| UX10VLIB | | 80 |
| UX10VLOC | 6 | |
| UX10VLSR | 0 | |
| UX10VNLB | | 40 |
| UX10VOLL | | 10 |

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| UX10VOLP | 34 | 20 |
| UX10VSCR | | |
| UX10XPDT | 3C | |

Volume Access User Exit (SLSUX14)

Functional Description

The Volume Access User Exit enables you to invoke security checking for volume access at mount and eject time.

Security checking for volume access occurs when SLSUX14 is enabled and there is a request for a mount or eject of a given volume. If the volume access check is successful, no user notification occurs. If the requestor is notified, the information presented in the messages can include:

- job (for PGMI, Utilities and Job/Mount processing)
- operator request
- user-supplied data in EBCDIC.

Note – This exit is not called for:

- duplicate/unlabeled volumes being ejected by audit
 - volumes being ejected by the init-cart utility
 - any unlabeled volumes found in the LSM playground.
-

Environment

This exit has no dependencies on JES. It executes in the HSC address space.

Note – This user exit must reside in a library defined in the KAAAPFxx member of the SYS1.PARMLIB.

Conditions When Exit Routine is Executed

Entry Specifications

Upon entry to SLSUX14, register contents are as follows:

| Register | Contents |
|----------|-------------------------------|
| 0 | Undefined |
| 1 | Pointer to parameter list |
| 2-12 | Undefined |
| 13 | Pointer to register save area |
| 14 | Return address |
| 15 | Entry point address |

Parameter List

The parameter list is mapped by macro SLSUX14P.

Conditions on Return to HSC From User Exit

Return Specifications

On return from SLSUX14, register contents are as follows:

| Register | Contents |
|----------|---------------------------|
| 0-14 | Values at entry to exit |
| 15 | Return code (hexadecimal) |

Return Codes

TABLE 2-13 SLSUX14 Return Codes

| Return Code | Name | Description |
|-------------|----------|---------------------------------|
| 0 | UX14OK | Perform function |
| 4 | UX14NWRT | Write protect mount |
| 8 | UX14PWRD | HSC password check |
| 12 | UX14RJCT | Function reject |
| 16 | UX14RACF | HSC RACROUTE check (TAPEVOL) |
| 20 | UX14RACL | HSC RACROUTE check use UX14RCLS |
| 64 | UX14IACT | The user exit is inactive |

TABLE 2-14 SLSUX14 Return Data in Parameter List

| Name | Description |
|----------|--------------------------------|
| UX14PSWD | Blank padded password |
| UX14RCLS | RACF class to use for RACROUTE |

Programming Considerations

You can still issue RACROUTE from within Volume Access User Exit or you can specify that HSC is to do a RACROUTE via an exit return code. You are provided with the following information:

- job name
- job request
- volume ID
- location
- issuer

The RACF user ID and group ID are provided, if they are available.

This information is extracted from the ACEE of the requestor and is sufficient to issue a RACROUTE request. If it is not available, the fields are binary zeros.

Note – For operator commands, MSP provides the information in the UTOKEN pointed to by the CIB and SSCM. However, this UTOKEN information is encrypted and is not usable.

You are provided with the following job processing-related information:

- program name
- data set name
- expiration date
- retention period.

If the information is not available, the fields are binary zeros.

You can use the information provided to affect the function in the following ways:

- allow the function to proceed
- make a mount write disabled (virtual thumbwheel)
- reject the function
- request or provide a password
- tell the HSC to issue a RACROUTE (optionally specifying the RACF class to use).

An audit trail message is issued in the event of a:

- command reject
- exit disabled (first time only)
- volume mount that is changed to write disabled via virtual thumbwheel
- password failure.

An operator prompt is generated when a password is requested. In all cases user information can be passed back to give a reason for the request or rejection.

To secure SLSUX14, the UEXIT command must also be secure. This is to ensure that SLSUX14 is not replaced by another UEXIT LOAD or disabled by UEXIT DISABLE.

SLSUX14 is dynamically loadable as long as it is in the SLSUEXIT DD data set.

SLSSYA~~xx~~ Parmlib with UEXIT command

```

/* */
CDSDEF DSN1=SLS.HSC.DBASEPRM, +
      DSN2=SLS.HSC.DBASESEC, +
      DSN3=SLS.HSC.DBASESBY

JRNDEF DSN1=SLS.MSP2.JOURNAL1, +
      DSN2=SLS.MSP1.JOURNAL2, HOSTID=MSP1

JRNDEF DSN1=SLS.MSP2.JOURNAL1, +
      DSN2=SLS.MSP2.JOURNAL2, HOSTID=MSP2

SET OUTPUT MIXED

OPTION DIALOG(BOTH)

COMMPATH HOST=MSP1 METHOD=CDS
COMMPATH HOST=MSP2 METHOD=CDS

CAPREF 1,010,MSP1
CAPREF 1,010,MSP2

UEXIT 14 LOAD=UX14VACC

UEXIT 15 LOAD=UX15CMDS

DISPLAY ACS

DISPLAY ALLOC

DISPLAY OPTION

UEXIT (1-15) QUERY

```

Additional loads of SLSUX14 (and SLSUX15) are done dynamically through the UEXIT command if you are allowed to complete the command based on the SLSUX15 and/or security package rules.

UEXIT Command to Load an Exit

```
UEXIT 14 LOAD=UX14NEW
```

Restrictions and Limitations

Security Profile:

If SLSUX14 states that the HSC is to do security checking by returning UX14RACF or UX14RACL, the RACROUTE is issued for volume access based on job or user criteria. The following example shows a RACF TAPEVOL class profile and permission command set that would be matched against the HSC RACROUTE.

Example of RACF Profile and Permission Commands

```
*****
*   Define a profile in the TAPEVOL class for volume 111111 *
*   (No general access allowed)                               *
*****
RDEFINE TAPEVOL 111111 UACC(NONE)
*****
*   Permit user FRED*1 to have read access to volume 111111 *
*****
PERMIT 111111 CLASS(TAPEVOL) ID(FRED*1) ACCESS(READ)
*****
```

A check is made for UPDATE authority. If access is allowed, the request is allowed; otherwise, a check is made for READ authority. If this is allowed, the tape is mounted write-protected. If neither UPDATE nor READ is allowed, the request is denied.

Note –

- UPDATE authority is required to eject a volume.
 - RACF 1.8.1 must be installed to have SLSUX14 perform RACF checking.
-

User Exit 14 Parameter List

The parameter list is built by programs that request to have a volume mounted, entered or ejected. The user exit is called to determine if and how the request should proceed.

SLSUX14 Map

| Offsets | | | | | |
|---------|------|------------|-----|----------|---|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 256 | SLSUX14P | User Exit 14 Parameter List |
| 0 | (0) | BITSTRING | 1 | UX14FUNC | Requested function |
| | |1 | | UX14MNT | Mount |
| | |1. | | UX14EJCT | Eject |
| 1 | (1) | BITSTRING | 1 | UX14TYPE | Request type |
| | | | | UX14UNKN | Unknown |
| | |1 | | UX14HSC | HSC initiated request |
| | |1. | | UX14JOBP | Job processing request |
| | |11 | | UX14UTIL | Utility request |
| | |1.. | | UX14PGMI | Programmatic interface request |
| | |1.1 | | UX14OPER | Operator request |
| | |11. | | UX14TMI | TMI request |
| | | .11. .11 | | UX14LSTA | Library Station request |
| 2 | (2) | BITSTRING | 1 | UX14STAT | Request status |
| | | 1... | | UX14WDSB | Write disable is set |
| 3 | (3) | BITSTRING | 1 | UX14FLG1 | Flag byte |
| | | 1... | | UX14F1SC | Scratch request |
| | | .1... | | UX14F1TV | 'To' device number is valid |
| | | ..1. | | UX14F1FV | 'From' device number is valid |
| 4 | (4) | CHARACTER | 6 | UX14VOLS | Volume serial |
| 10 | (A) | HEXSTRING | 2 | * | Reserved |
| 12 | (C) | CHARACTER | 8 | UX14HOST | Host ID |
| 20 | (14) | CHARACTER | 13 | UX14SNAM | Scratch subpool name if available |
| 33 | (21) | HEXSTRING | 3 | * | Reserved |
| 36 | (24) | HEXSTRING | 1 | UX14SSUB | Scratch subpool number |
| 37 | (25) | HEXSTRING | 3 | * | Reserved |
| 40 | (28) | FULLWORD | 4 | UX14WORD | Customer field; initially zero; preserved across calls |
| 44 | (2C) | HEXSTRING | 2 | UX14UNT1 | 'From' device number |
| 46 | (2E) | BITSTRING | 1 | UX14FTYP | 'From' location type |
| | |1 | | UX14CELL | 'From' is a cell |
| | |1. | | UX14CAPC | 'From' is a cap cell |
| | |11 | | UX14DRIV | 'From' is a drive |
| 47 | (2F) | HEXSTRING | 1 | UX14FACS | From ACS |
| 48 | (30) | HEXSTRING | 1 | UX14FLSM | From LSM |
| 49 | (31) | HEXSTRING | 1 | UX14FPNL | From panel |
| 50 | (32) | HEXSTRING | 1 | UX14FROW | From row |
| 51 | (33) | HEXSTRING | 1 | UX14FCOL | From column |
| 52 | (34) | HEXSTRING | 1 | UX14FCAP | From cap |

| Offsets | | | | | |
|---------|------|------------|-----|----------|--------------------|
| Dec | Hex | Type/Value | Len | Name | Description |
| 53 | (35) | HEXSTRING | 3 | * | Reserved |
| 56 | (38) | HEXSTRING | 2 | UX14UNT2 | 'To' unit |
| 58 | (3A) | HEXSTRING | 1 | UX14TTYP | 'To' location type |
| 59 | (3B) | HEXSTRING | 1 | UX14TACS | To ACS |
| 60 | (3C) | HEXSTRING | 1 | UX14TLSM | To LSM |
| 61 | (3D) | HEXSTRING | 1 | UX14TPNL | To panel |
| 62 | (3E) | HEXSTRING | 1 | UX14TROW | To row |
| 63 | (3F) | HEXSTRING | 1 | UX14TCOL | To column |
| 64 | (40) | HEXSTRING | 1 | UX14TCAP | To cap |
| 65 | (41) | HEXSTRING | 3 | * | Reserved |
| 68 | (44) | CHARACTER | 8 | UX14RUSR | RACF user ID |
| 76 | (4C) | CHARACTER | 8 | UX14RGRP | RACF group |
| 84 | (54) | HEXSTRING | 4 | * | Reserved |
| 88 | (58) | HEXSTRING | 4 | UX14CONS | Console ID |
| 92 | (5C) | CHARACTER | 8 | UX14CNAM | Console name |
| 100 | (64) | CHARACTER | 8 | UX14USID | User ID |
| 108 | (6C) | HEXSTRING | 4 | * | Reserved |

The following fields are for job processing requests.

| | | | | | |
|-----|------|-----------|----|----------|------------------|
| 112 | (70) | CHARACTER | 8 | UX14JOBN | Job name |
| 120 | (78) | CHARACTER | 8 | UX14STEP | Step name |
| 128 | (80) | CHARACTER | 8 | UX14PGNM | Program name |
| 136 | (88) | CHARACTER | 44 | UX14DSN | Dataset name |
| 180 | (B4) | HEXSTRING | 3 | UX14EXPD | Expiration date |
| 183 | (B7) | HEXSTRING | 2 | UX14RETN | Retention period |
| 185 | (B9) | HEXSTRING | 11 | * | Reserved |

The following fields can be returned by the exit.

| | | | | | |
|-----|-------|-----------|----|----------|---|
| 196 | (C4) | CHARACTER | 8 | UX14PSWD | Password, padded with blanks |
| 204 | (CC) | CHARACTER | 9 | UX14RCLS | RACF class to use for RACROUTE: 1 byte length followed by class name |
| 213 | (D5) | CHARACTER | 32 | UX14UMSG | User information |
| 248 | (F8) | HEXSTRING | 8 | * | Reserved |
| 256 | (100) | | | UX14L | Length of SLSUX14P |

SLSUX14 Cross Reference

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| SLSUX14P | 0 | |
| UX14CAPC | | 02 |
| UX14CELL | | 01 |
| UX14CNAM | 5C | |
| UX14CONS | 58 | |
| UX14DRIV | | 03 |
| UX14DSN | 88 | |
| UX14EJCT | | 02 |
| UX14EXPD | B4 | |
| UX14FACS | 2F | |
| UX14FCAP | 34 | |
| UX14FCOL | 33 | |
| UX14FLG1 | 3 | |
| UX14FLSM | 30 | |
| UX14FPNL | 31 | |
| UX14FROW | 32 | |
| UX14FTYP | 2E | |
| UX14FUNC | 0 | |
| UX14F1FV | | 20 |
| UX14F1SC | | 80 |
| UX14F1TV | | 40 |
| UX14HOST | C | |
| UX14HSC | | 01 |
| UX14IACT | | 40 |
| UX14JOBP | | 02 |
| UX14JOBN | 70 | |
| UX14LSTA | | 63 |
| UX14MNT | | 01 |
| UX14NWRT | | 04 |
| UX14OK | | 00 |
| UX14OPER | | 05 |
| UX14PGMI | | 04 |
| UX14PGMN | 80 | |
| UX14PSWD | C4 | |
| UX14PWRD | | 08 |
| UX14RACF | | 10 |
| UX14RACL | | 14 |
| UX14RCLS | CC | |
| UX14RETN | B7 | |
| UX14RGRP | 4C | |
| UX14RJCT | | 0C |
| UX14RUSR | 44 | |
| UX14SNAM | 14 | |
| UX14SSUB | 24 | |
| UX14STAT | 2 | |

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| UX14STEP | 78 | |
| UX14TACS | 3B | |
| UX14TCAP | 40 | |
| UX14TCOL | 3F | |
| UX14TLSM | 3C | |
| UX14TMI | | 06 |
| UX14TPNL | 3D | |
| UX14TROW | 3E | |
| UX14TTYP | 3A | |
| UX14TYPE | 1 | |
| UX14UMSG | D5 | |
| UX14UNKN | | 00 |
| UX14UNT1 | 2C | |
| UX14UNT2 | 38 | |
| UX14USID | 64 | |
| UX14UTIL | | 03 |
| UX14VOLS | 4 | |
| UX14WDSB | | 80 |
| UX14WORD | 28 | |

Command Authorization User Exit (SLSUX15)

Functional Description

The Command Authorization User Exit is used to ensure command security.

The Command Authorization User Exit is run for all commands issued within the HSC system. It is also run for all Unified User Interface (UI) commands that are issued by local utilities or origination from remote hosts (the SMC ROUTE command or the SMCUUUI utility).

A tier level presentation is used with the actual command string. Information to issue CMDAUTH from the exit is provided. This information includes:

- User
- Request
- Console
- Command
- Command string
- Command tier level: minimum to maximum

1. Query

2. Update

3. Control

- CIB address or SSCM address
- RACF UTOKEN
- Host Name

This information is used to:

- permit the use of the command
- supply and request a password
- reject the command
- request that HSC process CMDAUTH for the command.

You can use the default values that the HSC provides or the security matrix within the table together with the command string. The following table shows the minimum generic security levels.

TABLE 2-15 Command Security Level

| Command | Minimum Level |
|----------|---------------|
| ALLOC | Update |
| CAPPREF | Update |
| CDS | Control |
| CLEAN | Control |
| COMMPATH | Update |

TABLE 2-15 Command Security Level (Continued)

| Command | Minimum Level |
|----------------|----------------------|
| DIAG | Query |
| DISMOUNT | Control |
| DISPLAY | Query |
| DRAIN | Control |
| EJECT | Control |
| ENTER | Control |
| F | Control |
| JOURNAL | Update |
| LIST | Query |
| LOAD | Query |
| LS | Query |
| MN | Update |
| MNTD | Update |
| MODIFY | Control |
| MONITOR | Update |
| MOUNT | Control |
| MOVE | Control |
| OPTION | Update |
| PM | Update |
| RECOVER | Control |
| RELEASE | Control |
| RETRY | Control |
| SENDER | Control |
| SRVLEV | Control |
| STOPMN | Update |
| SWITCH | Control |
| TRACE | Query |
| UEXIT | Update |
| UNITDEF | Update |
| VARY | Control |
| VIEW | Update |
| VOLDEF | Update |
| WARN | Update |

Environment

This exit has no dependencies on JES. It executes in the HSC address space or the address space running the UUI command.

Note – This user exit must reside in a library defined in the KAAAPFxx member of the SYS1.PARMLIB.

Conditions When Exit Routine is Executed

Entry Specifications

Upon entry to SLSUX15, register contents are as follows:

| Register | Contents |
|----------|-------------------------------|
| 0 | Undefined |
| 1 | Pointer to parameter list |
| 2-12 | Undefined |
| 13 | Pointer to register save area |
| 14 | Return address |
| 15 | Entry point address |

Parameter List

The parameter list is mapped by macro SLSUX15P.

Execution Attributes

Shared enqueues held on major name SYSKDJSD, minor names Q4, CHNGDEVS, DDRTPUT, and DDRDA.

Conditions on Return To HSC From User Exit

Return Specifications

On return from SLSUX15, register contents are as follows:

| Register | Contents |
|----------|---------------------------|
| 0-14 | Values at entry to exit |
| 15 | Return code (hexadecimal) |

Return Codes

TABLE 2-16 SLSUX15 Return Codes

| Return Code | Name | Description |
|-------------|----------|---------------------------------|
| 0 | UX15OK | Perform function |
| 4 | UX15PWRD | Check password through HSC |
| 8 | UX15RJCT | Function reject |
| 12 | UX15CHKA | Check authority through CMDAUTH |
| 64 | UX15IACT | The user exit is inactive |

TABLE 2-17 SLSUX15 Return Data in Parameter List

| Name | Description |
|----------|----------------------------|
| UX15PSWD | Blank padded user password |
| UX15UDTA | User information |

Programming Considerations

You can use the HSC default values provided for each command or define a new security matrix within a table you create and use in conjunction with the command string provided in SLSUX15. Parsing the command string past the first operand (the command) is your responsibility.

An audit trail is issued in the event of a rejected command, disabled exit, or password failure. An operator prompt is issued when a password is requested. Once the password is received, it is made unreadable. The operator's response is also made unreadable and compared with the encrypted password from the exit. After the compare, both are erased.

Note – The Command Authorization User Exit does not include control statements executed during HSC PARMLIB. Security for PARMLIB access must be defined through your security packages. Your security package can also control the execution of utility jobs.

The HSC programmatic interface (PGMI) is not controlled through SLSUX15 because it can be controlled through SLSUX05.

SLSUX15 is dynamically loadable as long as it is in the SLSUEXIT DD data set.

SLSSYSxx Parmlib with UEXIT command

```

/*      */
CDSDEF DSN1=SLS.HSC.DBASEPRM, +
      DSN2=SLS.HSC.DBASESEC, +
      DSN3=SLS.HSC.DBASESBY

OPTION OUTPUT(MIXED)

OPTION DIALOG(BOTH)

COMMPATH HOST=MSP1 METHOD=VTAM
COMMPATH HOST=MSP2 METHOD=VTAM

CAPREF 1,010,MSP1
CAPREF 1,010,MSP2

UEXIT 14 LOAD=UX15VACC

UEXIT 15 LOAD=UX15CMDS

DISPLAY ACS

DISPLAY ALLOC

DISPLAY OPTION

UEXIT (14,15) QUERY

```

Additional loads of SLSUX15 are done dynamically through the UEXIT command if you are allowed to complete the command based on the SLSUX15 and/or security package rules.

UEXIT Command to Load an Exit

```
UEXIT 15 LOAD=UX15NEW
```

Restrictions and Limitations

Security Profile:

If SLSUX15 sets a return code of UX15CHKA, a CMDAUTH is issued for command authorization based on user criteria. The following example shows a RACF OPERCMDS class profile and permission command set that would be matched against the HSC CMDAUTH.

Example of RACF Profile and Permission Commands

```
*****
*   Define a profile in the OPERCMDS class for Mount command   *
*                               (No general access allowed)      *
*****
RDEFINE OPERCMDS subsysname.MOUNT.* UACC(NONE)
*****
        Permit user FRED01 to have read access to volume 111111
*****
PERMIT subsysname.MOUNT.* CLASS(OPERCMDS) ID(FRED01)
ACCESS(UPDATE)
*****
```

User Exit 15 Parameter List

The parameter list is built and provides users with the capability to check command authority with whatever security mechanisms are currently in place. When control is returned to the request processor routine, action will be taken based on the return code set in register 15.

SLSUX15 Map

| Offsets | | | | | |
|---------|-------|------------|-----|----------|--|
| Dec | Hex | Type/Value | Len | Name | Description |
| 0 | (0) | STRUCTURE | 520 | SLSUX15P | User Exit 15 Parameter List |
| 0 | (0) | CHARACTER | 8 | UX15CMND | Command being processed |
| 8 | (8) | FULLWORD | 4 | UX15WORD | Customer field; initially zero; preserved across calls |
| 12 | (C) | HEXSTRING | 4 | UX15UTOK | Security user token |
| 16 | (10) | BITSTRING | 1 | UX15TIER | Security tier level |
| | |1. | | UX15READ | Query (read) |
| | |1.. | | UX15UPDT | Policy setting (update) |
| | |11. | | UX15CNTL | All functions (control) |
| 17 | (11) | BITSTRING | 1 | UX15TYPE | Type of request |
| | |1 | | UX15CMD | Command |
| 18 | (12) | HEXSTRING | 2 | * | Reserved |
| 20 | (14) | CHARACTER | 8 | UX15HOST | Host Name |
| 28 | (1C) | HEXSTRING | 24 | * | Reserved |
| 18 | (12) | HEXSTRING | 34 | * | Reserved |
| 52 | (34) | CHARACTER | 4 | UX15SSYS | Subsystem name |
| 56 | (38) | ADDRESS | 4 | UX15CIB | Pointer to CIB |
| 60 | (3C) | ADDRESS | 4 | UX15SSCM | Pointer to SSCB |
| 64 | (40) | HEXSTRING | 4 | UX15CONS | Console ID |
| 68 | (44) | HEXSTRING | 8 | UX15CART | Cart token |
| 76 | (4C) | CHARACTER | 8 | UX15CNAM | Console name |
| 84 | (54) | CHARACTER | 8 | UX15USID | User ID |
| 92 | (5C) | CHARACTER | 256 | UX15STRG | Command string |
| 348 | (15C) | HEXSTRING | 1 | UX15PRFX | Command prefix |
| 349 | (15D) | HEXSTRING | 99 | * | Reserved |
| |) | | | | |
| 448 | (1C0) | CHARACTER | 8 | UX15PSWD | Password, padded with blanks |
| 456 | (1C8) | CHARACTER | 32 | UX15UDTA | User information |
| 488 | (1E8) | HEXSTRING | 32 | * | Reserved |
| 520 | (208) | | | UX15L | Length of SLSUX15P |

SLSUX15 Cross Reference

| Name | Hex Offset | Hex Value |
|----------|------------|-----------|
| SLSUX15P | 0 | |
| UX15CART | 44 | |
| UX15CHKA | | 0C |
| UX15CIB | 38 | |
| UX15CMD | | 01 |
| UX15CMND | 0 | |
| UX15CNAM | 4C | |
| UX15CNTL | | 06 |
| UX15CONS | 40 | |
| UX15IACT | | 40 |
| UX15HOST | 14 | |
| UX15OK | | 00 |
| UX15PRFX | 15C | |
| UX15PSWD | 1C0 | |
| UX15PWRD | | 04 |
| UX15READ | | 02 |
| UX15RJCT | | 08 |
| UX15SSCM | 3C | |
| UX15SSYS | 34 | |
| UX15STRG | 5C | |
| UX15TIER | 10 | |
| UX15TYPE | 11 | |
| UX15UDTA | 1C8 | |
| UX15UPDT | | 04 |
| UX15USID | 54 | |
| UX15UTOK | C | |
| UX15WORD | 8 | |

Implementing SMC-Managed User Exits

Overview

This chapter describes how SMC-managed user exits are implemented. The following user exits are invoked and managed by the SMC:

TABLE 3-1 SMC-Managed User Exits

| Exit Number | Exit Name | Description |
|-------------|-----------|--|
| 1 | SLSUX01 | Message Handling User Exit |
| 2 | SLSUX02 | JES Scratch Allocation User Exit |
| 8 | SLSUX08 | JES Specific Volume Allocation User Exit |
| 9 | SLSUX09 | Deferred Mount User Exit |
| 10 | SLSUX10 | JES Unit Affinity Separation User Exit |

These user exits provide control over message handling functions and client allocation. They are implemented using the SMC UEXit operator command.

SMC managed JES user exits and the message handling user exit are distributed in the SMC JES SAMPLIB (UX nm HSC n).

Note –

- These user exits are executed on the host where the SMC resides, regardless of where the library server resides.

For example, if the SMC specifies two server statements, each of which define a separate path to a separate library, only one user exit 08 (SLSUX08 or SCSUX08) is executed on the SMC host to determine specific volume policy.

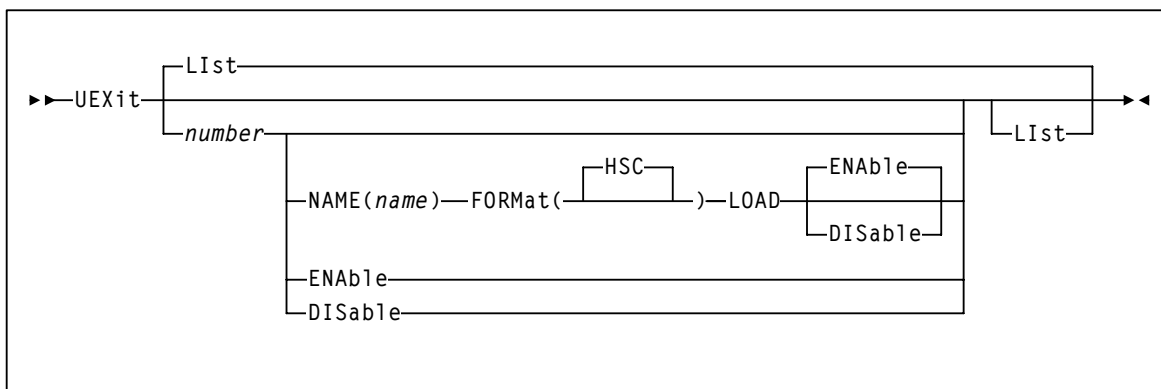
- These user exits must reside in a library accessible to the subsystem (SMC STEPLIB, JOBLIB, or your system's LINKLIB concatenation).

SMC UEXit command

The UEXit command defines which load modules are invoked for a specific user exit, and whether the user exit is enabled or disabled. HSC user exit formats are supported. The UEXit command can be used to specify the desired format.

Note – Use this command to load each user exit you wish to use. If a user exit is not loaded, it **will not be** called.

Syntax



Command Name

UExit

Initiates the UEXit command.

Parameter Descriptions

List

optionally, displays status information for all user exits.

- List is the default when **no** parameters are specified on the UEXit command.
- List may be specified with other parameters. In this case, the List is generated **after** the other parameters are processed.

number

optionally, specifies the user exit number. Valid values are 1, 2, 8, and 9.

NAME

optionally, specifies the user exit's load module name

name

indicates the load module name (e.g., SLSUX01)

FORMat

optionally, specifies the format of user exit to be enabled or disabled.

HSC

indicates the HSC user exit format.

LOAD

optionally, loads the specified user exit, making it available for use.

Note –

- If a user exit is not loaded, it **will not be** called.
 - A subsequent load of a module for the same user exit causes the currently active copy of the load module to be deleted when its use count reaches zero.
-

ENable

optionally, enables a user exit that was previously disabled due to a problem.

DISable

optionally, disables a user exit to allow for problem resolution.

Example

In the following example, the UEXit command is used to load the HSC format (SLSUX01) of user exit 01.

```
UEXIT 01 NAME(SLSUX01) FORMAT(HSC) LOAD
```

SLSUX01 is loaded from the SMC STEPLIB, JOBLIB, or your system's linklib concatenation.

Implementing HSC-Managed User Exits

Overview

This chapter describes how HSC-managed user exits are implemented. The following user exits are invoked and managed by the HSC:

TABLE 4-1 HSC-Managed User Exits

| Exit Number | Exit Name | Description |
|-------------|-----------|--|
| 3 | SLSUX03 | HSC Scratch Subpool User Exit |
| 5 | SLSUX05 | Programmatic Interface Authorization User Exit |
| 6 | SLSUX06 | HSC Insert/Delete User Exit |
| 14 | SLSUX14 | HSC Volume Access User Exit |
| 15 | SLSUX15 | HSC Command Authorization User Exit |

These user exits are loaded at HSC subsystem initialization from the load library identified by ddname SLSUEXIT, or from the HSC load library with the default names.

- Each user exit can be defined to the HSC with the UEXIT PARMLIB control statement. Issue a separate control statement for each user exit you want to invoke by substituting the exit number in the SLSUX nn parameter, or by specifying the entry point name used to link-edit the load module. The UEXIT statement allows you to load the exit in either an enabled or disabled state.
- If no UEXIT statement for a particular user exit is found in the HSC PARMLIB data set, the HSC loads that user exit's default stub from one of two sources:
- the SLSUEXIT DD statement, if it is present in the HSC START procedure, or
- the HSC load library, if SLSUEXIT does not exist.

Unless replaced by the customer, the HSC load library contains the StorageTek default stubs of each user exit and sets a return code of 64, indicating the user exit is inactive. When the HSC receives a return code of 64 from an initial call to the user exit, it does not call the exit again during that HSC session unless the exit is explicitly reloaded or activated using the UEXIT operator command.

The HSC UEXIT command can be used to dynamically enable, disable, reload, or query the status of user exits.

Note –

- HSC managed user exits dummy exit source (SLSUX nn) and samples (UX nn SAM n) are distributed in the HSC SAMPLIB.
 - When migrating to a new release of the HSC, you are not required to reassemble your user exits. However, if you choose to do so, it is recommended that user modifications to user exits and other StorageTek programs be based on the source code shipped in the current release.
 - The SMC allows ESOTeric and SUBPool parameters to be specified in the TAPEREQ control statement as well as user exits. Customers should examine their user exits to determine whether they could be replaced with TAPEREQ parameters. Control statements can also be used to control affinity separation policy and defer policy. Refer to the *Storage Management Component (SMC) Configuration and Administration Guide* for information on TAPEREQ and user exit interaction.
 - User exit 7 (SLSUX07) is no longer supported.
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HSC User Exit (UEXIT) Command and Control Statement

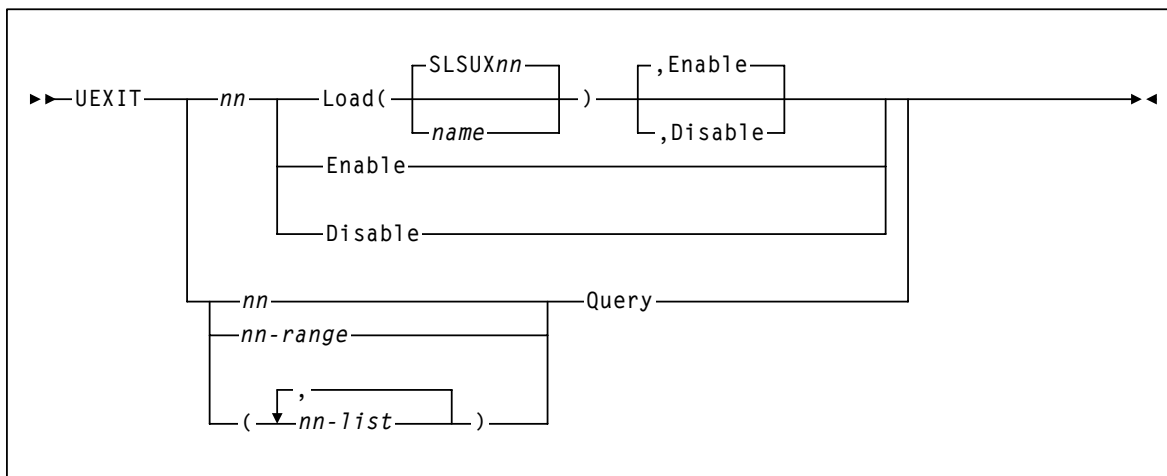
HSC user exits permit you to invoke your own processing routines at particular points during HSC processing. User exits controlled by the HSC are loaded at HSC initialization from the load library identified by DDNAME SLSUEXIT.

This command provides a way for you to define how the HSC processes your user exits by allowing you to start the HSC with a user exit disabled and then enable the exit at any time the HSC is operational. If an exit does not perform as expected, make the necessary changes and load it again.

Note – User Exit 03 is enabled at HSC initialization. The UEXIT command cannot be used to enable, disable, or reload that exit.

The UEXIT command optionally allows you to provide unique user exit load module names and to create different versions of an exit that can be run at different times (for example, day shift versus night shift). The load modules are contained in a user-defined load module library described at HSC startup.

Syntax



Command Name

UEXIT

initiates the UEXIT command and control statement.

Parameters

nn

specifies the user exit number.

Load

causes the specified module to be loaded into storage.

SLSUX*nn*

specifies the default name for the user exit. If *name* is not specified, then the default name is used when the HSC loads the module into storage.

name

specifies the name of the module to be used for this exit. This is the entry point name which is used to link-edit the load module.

Enable

indicates that upon completion of the command the specified exit is considered as being active. Enable is the default.

Disable

indicates that upon completion of the command the specified exit is considered as being inactive.

Enable

specifies that the most current module for the specified user exit (*nn*) is to be enabled. This parameter may also be specified with the Load parameter.

Disable

specifies that the most current module for the specified user exit (*nn*) is to be disabled. This parameter may also be specified with the Load parameter.

nn or nn-range or nn-list

can be used with the Query parameter to specify a single user exit, a range of exits, or a list of exits.

When specifying a range of user exit numbers, the beginning number must be separated from the ending number by a hyphen.

Example: (04-09)

In a list of user exits, the user exit numbers must be separated by commas and the list must be enclosed in parentheses.

Example: (01,04,10)

Query

requests the status of all the currently loaded versions of the specified user exit number(s). A display of user exit status may be specified for a single user exit, a range of exits, or a list of exits.

Examples

The following examples illustrate the use of the UEXIT command and control statement.

Load User Exit 03 - Enabled

```
UEXIT 03 LOAD
```

Load User Exit 06 - Disabled

```
UEXIT 06 LOAD(SLSUX12),DISABLE
```

Display Status of All Currently Loaded Versions of User Exit 05

```
UEXIT 05 Q
```

Display Status for a List of User Exits

```
UEXIT (03,05,06,14) Q
```

Display Status for a Range of User Exits

```
UEXIT 14-15 Q
```

