Operating System Environment Manager

For z/OS

Installation Guide

Version 6.1

Second Edition (February 2006)

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This edition applies to Operating System Environment Manager for z/OS (OSEM for z/OS) Version 6 Release 1 Modification 0 (Program Number 5799-HAX).

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Installation Planning

This section provides a list of important topics, which you will need to consider prior to installing OS/EM. The intent is to assist you in assessing the impact, if any, that OS/EM will have on your installation.

OS/EM Authorization Code

An OS/EM authorization code must be obtained for each processor complex on which the product is intended to operate. OS/EM will not execute without a valid authorization code.

The authorization code is based on the unique CPU serial number and can be obtained by supplying the serial number(s) to your OS/EM sales account manager.

Obtain CPU Number

The CPU serial number can be obtained by entering the following command on an MVS master console:

```
D M=CPU
IEE174I 12.42.25 DISPLAY M 618
PROCESSOR STATUS
ID  CPU                 SERIAL
0    +                  0114BA3746
1    +                  1114BA3746
2    +                  2114BA3746

CPC ND = 009672.R31.IBM.02.000000052227
CPC ID = 00

+ ONLINE    - OFFLINE    . DOES NOT EXIST

CPC ND  CENTRAL PROCESSING COMPLEX NODE DESCRIPTOR
CPC ID  CENTRAL PROCESSING COMPLEX IDENTIFIER
```

In this sample display, the serial number of ID 0 is '0114BA'. The last 4 characters are the CPU model number. OS/EM uses the last 4 characters of the serial number, in this case '14BA'.

Current User Exits

Every user exit currently in use at your installation should be thoroughly documented as to its use and the location of both source and load members. All such exits should be functioning properly and should not modify any control blocks not specifically allowed at the exit point. Further, your exits should do nothing more than what is explicitly allowed in the relevant IBM documentation.

If any of these exits can be replaced by using OS/EM's optional facilities, determine if the optional facilities meet all your needs. If your exits contain more functions than those supplied by OS/EM, consider recoding your exits leaving only those functions not supplied by OS/EM.

You will also need to determine at what point you want the optional OS/EM functions to be invoked, either before your own exits or after all your exits have been processed. It is entirely possible that a conflict can develop between your own exits and the optional functions. For example, the optional functions supplied for IKJEFF10 modify the JOB statement. If your IKJEFF10 exit depends on certain information in a certain format on the JOB statement, the OS/EM optional processing might result in a different result for your exit.

OS/EM Reload Function

In order to use the RELOAD function provided in the ISPF Interface, all user exits need to be defined to the Interface using the Basic Exits Functions. Although OS/EM will automatically find and load all user exits which have the standard IBM module names and are in the Linklist whether or not they have been defined to the Interface, the list of modules eligible to be reloaded is built from your entries in the Basic Exits Functions. If you prefer not to enter this information, refer to the "Reload Exits" section of the OS/EM User's Guide for instructions on reloading modules manually.

Note: This information will be added automatically to the interface during the upgrade process or during the 'REBUILD' function from the 'MAINTENANCE' section of the interface.

Third Party Exits

Many products, such as job schedulers and SYSOUT archival systems, depend on exits to accomplish their work. You should know at which exit points these supplied exits are invoked, and where they currently reside.

Many of these products also require the same exit point. You should determine in what order they should be invoked if OS/EM is to load and enable them.

JES2 Job Routing Option

The OS/EM optional feature *Job Routing* allows an installation to route jobs to specific LPARs within a MAS. The Job Routing Resource Communications dataset must be on DASD shared by each LPAR within the MAS. Additionally the Job Routing function must be enabled on each LPAR within a MAS concurrently. Failure to do so will result in jobs not being allowed to execute on LPARs where Job Routing is active if they have been through the interpreter on a LPAR without Job Routing. Conversely, LPARs within the MAS without Job Routing active may select jobs for execution without the specified resources.

Note For Users Upgrading From OS/EM 5.6 Or Earlier:

OS/EM Version 6 increases the number of resources that can be defined and, as a result, the maximum record size for the Job Routing Resource dataset has been increased. Existing users should consider redefining the Resource dataset to take advantage of this enhancement. Refer to Installation Step 19.

RACF User Exits

At installations where it is not permissible for a 3rd party product to manage RACF user exits, you may specify to OS/EM to use **SAF** as the security system in use (see Step 5 of the installation instructions.) This will disable OS/EM from managing RACF exits as well as disallowing use of any OS/EM features for RACF such as Surrogate Password Control, while still allowing calls to RACF for validation of other controls such as JOBCLASSCHECK (see Step 4 of the installation instructions.)

Dataset Naming Convention

If your installation does not currently have a consistent dataset naming convention, one should be developed to make full use of the OS/EM DASD allocation built-in facility. At a minimum, the naming convention should be able to distinguish between production and test datasets. Ideally, your convention should be able to segregate the various types of datasets in your installation, datasets used primarily for online applications, those datasets used primarily for batch, etc.

Think in terms of classes of data. That is, you might have datasets used for online applications. These datasets should be allocated for the least amount of volume, channel, and control unit contention. Such datasets would constitute a class in OS/EM terms, a dataset name group.

To ensure that these dataset name groups get the processing you want them to have, volumes should be pooled. If you have volumes that have multiple physical and logical paths, these volumes should be reserved for those datasets that have critical access requirements for online datasets. By listing these volumes in a particular OS/EM volume group and designating the proper dataset name group to this volume group, you can ensure that all such datasets will be properly allocated.

If your installation has an existing dataset naming convention, determine if an adequate number of dataset name groups can be created to accomplish your allocation goals. You may find that, without too much re-working of your existing convention, you can group datasets in a satisfactory manner.

OS/EM can also be of benefit in migrating to a new dataset naming convention. You can define a couple of dataset name groups representing a subset of the new convention, establish one or two volume groups for these dataset name groups, and as you allocate datasets under the new names, they will be placed on these reserved volumes. Once volumes are free of datasets under the old names, they can then be used to establish new volume groups with dataset name groups representing another subset of the new convention. Migration can then be done in small, easy steps.

Remember, OS/EM DASD allocation neither imposes, nor demands, any specific naming convention. OS/EM dataset name groups can consist entirely of discrete dataset names. However, maintenance of such dataset name groups would be problematic. And, without some means of functionally grouping datasets, your allocation rules would be very general at best and may not achieve the desired results.

Tape Allocation Rules

Most likely your installation already has rules concerning the use of tape devices by test jobs. These may be codified in some standards manual; or an informal set of rules, sometimes enforced by operators when there are not enough tape devices to go around. Whatever the rules, you should give some thought as to how you want to implement this OS/EM function. Remember, this function is intended primarily as a means to enforce your installation's standards concerning tape usage by test jobs. The wrong MAXTAPE value applied to a production job class would certainly not win you any friends in your operations group.

Also remember that tape devices are counted as allocation proceeds; therefore, jobs may cancel that did not cancel before (due to the job getting the devices, and possibly forcing other production jobs to wait until the devices are deallocated). You should give thought to running this function in WARN mode so that violations will be apparent to users before their jobs start canceling.

Command Checking

Determine which users, if any, will be allowed to submit operating system and JES2 commands in JCL. The simplest approach would be to severely limit this ability, say to a few system programmers, and RACF define resources COMMAND.* and JES2.* only; and only permit the appropriate userids. However, if you have other requirements, just ensure that the appropriate resource definitions are in place before invoking this function.

See "Step 4: Define Security" on page INST-11 and "OS/EM External Security Profiles Summary" on page RACF-1 for more information regarding command security profiles.

Job Classes

Many OS/EM optional functions may be applied on a job class basis. This means that your installation should have a well-defined set of rules for job class usage. Any rules you develop should account for the following:

- If you run CICS, or other transaction processing system, as a batch job, you should have separate production and test classes. Typically, the production class(es) will have a higher dispatching priority than almost anything else in the system. The test class(es) will be much lower (give thought to placing these classes at a lower priority than TSO. If these test systems hang, they can lock out your TSO users).

- If you are going to control tape usage for test jobs, you need enough classes defined to handle the various allocation rules you develop. You probably will want to tie job turnaround time to the number of tape devices the job uses. That is, a quick turnaround job such as a compile would normally not require any tape devices. A job that requires three, or more, tape devices could be given a long turnaround time.

- The number of production job classes should be held to a minimum. It is not the number of job classes that determines how many production jobs can run, but the number of initiators assigned to these classes.

However, you should have at least one class reserved for those production jobs that consume excessive resources and single-thread such jobs through this class. We also recommend that you reserve one production class for those jobs that absolutely need to be executed when they are submitted. Such jobs would be the SMF dump job; and, if your CICS journal is on disk, the job that dumps a full disk journal to tape.

Job Class Checking

Some of the optional OS/EM control functions allow you to check that a specified job class is valid for the job. These classes must be defined to your security system using the classname FACILITY (or IBMFAC for CA-TOPSECRET) and resource JOBCLASS.x where x is the desired class. For RACF users, if the resource is not defined, OS/EM will by default allow access to the resource. CA-ACF2 users must define the appropriate JOBCLASS.x or JOBCLASS.* profiles otherwise jobs will fail.

See "Step 4: Define Security" on page INST-11 for more information regarding job class security.

OS/EM IEFUSI Option

The optional OS/EM IEFUSI function is applied based on the weight assigned to each selection criteria type: program name, job class or job name. Before applying storage limits, determine, at the very least, your installation's use of job classes. If, for example, you start CICS as a job, you would not want to specify the CICS job class with the wrong storage limits. In this case, it would be better to specify DFHSIP as a program name and assign it to a REGION keyword with the appropriate limits.

Possible S71A Abends

When using SMF exit IEFU83, including the OS/EM extended function Catalog Account Control, it is possible that SVC dumps will be produced for S71A abends. These abends are normally suppressed by the Catalog Address Space where they occur, but when CAS is called by IEFU83 a dump may be produced as OS/EM's SMF Controller may detect the abend. The same problem may be encountered without OS/EM as the SMF ESTAE routine IEEMB830 would then detect the abend.

IBM recommends that you set a SLIP trap in IEASLP00 in SYS1.PARMLIB to suppress the dump. An example for ABEND71A is:

```
SLIP SET,C=71A,ID=X71A,A=NODUMP,END
```

This information is documented in IBM APAR OW13864.

Important Information For New OS/EM Users

JES2 MAS Environments

OS/EM should be operational on all members of a Multi-Access Spool (MAS) environment. However, if this is not immediately possible due to operational or change control considerations, the following rules must be followed:

* OS/EM PTF UK00439 (created on 9/13/2006) must be applied.
* OS/EM Job Routing and Classing must be disabled.

If these conditions are not met, jobs may remain in the input queue indefinitely. This due to incompatibilities between the JCL conversion and job selection processes between the OS/EM and non-OS/EM systems. Under those circumstances, job selection will occur on the following basis:

* **Jobs converted by an OS/EM system -** these jobs can be selected by any system on the MAS.
* **Jobs converted by a non-OS/EM system -** these jobs will not be eligible for selection by any system on the MAS that runs OS/EM. These jobs could be selected by non-OS/EM system. A job that cannot be selected by a non-OS/EM system (e.g. unavailable job class, SYSAFF references a system with OS/EM) will remain in the input queue.

It is recommended that no OS/EM Extended Functions are enabled until all systems in the MAS are running OS/EM. This will ensure that jobs are processed in a consistent manner regardless of which system performs the JCL conversion and job selection.

Important Information When Upgrading To OS/EM 6.1

Operational Compatibility With Version 5.x Or Earlier

OS/EM version 6 can coexist with other systems that share the same Multi-Access Spool configuration (MAS) that operate OS/EM version 5.6 (OS/EM 5.5 & and earlier *cannot* coexist with Version 6). Users must ensure that all version 5.6 systems are at the most current maintenance level (contact OS/EM support to ensure that this is the case prior to activating version 6).

It should be noted, however, that functionality new to version 6 will not work or will produce unpredictable results unless all systems on the MAS operate with version 6. These functional components are:

- DFSMShsm Dataset Early Recall
- Expanded support for up to 127 ROUTE statements
- Expanded support for up to 127 CNTL statements
- Expanded support for up to 127 dependent job control statements
- Expanded Job Routing Resources (increased Resource Dataset record length)
- Controlling Job Routing by PDS member name and WLM Scheduling environment
- Dataset Name Conflict Resolution
- Limiting the number of concurrent executions of a selected program

New Prefixes For OS/EM Version 6.1

OS/EM 6.1 introduces new three byte prefixes for all OS/EM load modules, ISPF resources (panels, skeletons, tables), REXX procedures, messages, etc. The old prefix **OS$** is replaced by **FEM**. For load modules that support ESA/390 architecture (i.e. 31-bit addressing), the prefix **OS@** is replaced by **FEN**.

Note For ESA/390 Architecture Users:

> There is no requirement for users to explicitly specify FENxxxxx module names in any installation definitions or commands. OS/EM will automatically load these modules if it detects that it is running in an ESA/390 environment.

Every effort has been made to make this change as transparent as possible, however this change does affect the user in the following areas:

- **Security of the OS/EM system control utility (FEMCNTL) -** refer to Installation Step 4 in the Installation chapter of this manual.

- **Automated Operations Based on OS/EM Messages -** users who automate system operations based on OS/EM SYSLOG messages will need to modify their Automated Operations (AO) utility or Message Processing Facility (MPF) definitions to reflect the new OS/EM message prefix (now **FEM**).

- **Automated Operations That Issue OS/EM Commands -** users who use automated operations to issue OS/EM commands must modify these controls to reflect the new command prefix (e.g. change OS$CNTL commands to FEMCNTL).

Installation

OS/EM is distributed as a pre-built SMP/E environment. The installation process is performed through an ISPF dialogue that guides the user to:

1. Define and load the SMP/E datasets
2. Define and load the OS/EM target and distribution libraries
3. Generate the appropriate JES offset tables
4. Define and build the OS/EM executable libraries and control datasets

Additional installation steps involve setting up system environment and other related subsystems (e.g. RACF, DFSMShsm) to support OS/EM operation.

Some changes to the system PARMLIB will be required to enable OS/EM operation.

Very Important:

- It is strongly recommended that, as part of the installation process, that cumulative maintenance be applied to the base distribution to bring it up to the current maintenance level. Users should contact OS/EM support to obtain the cumulative maintenance. Also refer to "OS/EM Maintenance" on page MAINT-1.

System Requirements

This section identifies the system requirements for installing and running OS/EM.

- z/OS 1.4 or later

- z/OS 1.7 users must use OS/EM Version 6.1 (OS/EM 6.0 & earlier does not support z/OS 1.7)

- An available Type 3 SVC number for JES3 only, which you choose, or let OS/EM dynamically choose one

Installation Procedure

OS/EM is distributed via CD. This CD contains a binary distribution file named
HOSM610.DIST.PACK. As the name implies, the data is in the packed (or 'TERSED') format using the
TRSMAIN utility. Users who do not have the TRSMAIN utility installed on their system can obtain it
from the IBM Technical Support website:

> **http://techsupport.services.ibm.com/390/trsmain.html**

Download the distribution file into a sequential dataset with the following attributes:

> RECFM=FB,LRECL=1024,BLKSIZE=6144,SPACE=(CYL,(30,5))

The distribution dataset contains a pre-built SMP/E environment which is loaded into the pre-allocated
datasets. An ISPF dialogue is provided to guide the user through the installation process (this is similar
to a ServerPac installation procedure). Follow these instructions carefully to avoid errors when attempting
to load the SMP/E environment.

Step 1: Load the Installation Library

The Installation Library contains the ISPF dialogue and JCL skeletons that are used to define and load
all the OS/EM datasets. Extract the Installation Library using the following JCL:

```
//jobname  JOB (acct info),'name',CLASS=A,MSGCLASS=X
//*
//UNPKDIST EXEC PGM=TRSMAIN,PARM=UNPACK
//SYSPRINT DD SYSOUT=*
//INFILE   DD DSN=osem.dist.dataset,DISP=OLD
//OUTFILE  DD DSN=&&PDS,DISP=(NEW,PASS),
//            UNIT=SYSDA,SPACE=(CYL,(15,30,15),RLSE)
//*
//EXTRPREP EXEC PGM=TRSMAIN,PARM=UNPACK
//SYSPRINT DD SYSOUT=*
//INFILE   DD DSN=&&PDS(PREP),DISP=(OLD,DELETE)
//OUTFILE  DD DSN=hlq.OSEM.PREP,DISP=(,CATLG,DELETE),
//            UNIT=SYSDA,SPACE=(27920,(20,15,15),RLSE),
//            VOL=SER=SYS000
```

- Replace the JOB statement with one that meets your installation's requirements.
- Replace the DSN= for the INFILE dataset in the UNPKDIST job step to point to the downloaded
  OS/EM distribution dataset.
- Replace the DSN= for the OUTFILE dataset in the EXTRPREP job step to meet your installation's
  requirements, and specify an appropriate DASD esoteric name and volume serial number.

Step 2: Execute the OS/EM Installation Dialogue

Execute the Installation Dialog by entering the following TSO command:

```
ex 'hlq.OSEM.PREP(FEMINST)' 'hlq.OSEM.PREP'
```

Ensure that dataset names specified in the above command is the same that was used in installation step 1.

The following menu will be displayed:

```
OS/EM -------------- OS/EM Installation Preparation -------------- Version 6.1
Option ===>

                                                  UserID   -SPRCB
                      1  Set Variables            System ID-PROD
                      2  Verify/Change Generated DSNames   Time     -14:54
                      3  Allocate DLIB/TLIB Datasets       Terminal -3278
                      4  Allocate SMP/E Datasets           PF Keys  -12
                      5  Allocate Executable Datasets
                      6  Load SMP/E Environment
                      7  Receive Maintenance
                      8  Apply Maintenance
                      9  Create JES Offset Table
                     10  Copy SMP/E to Executable




  F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel


  Figure 1.   OS/EM Installation Menu
```

Step 3: Load the Pre-built SMP/E Environment

The pre-built OS/EM SMP/E environment is loaded by executing the selection items in the main menu in sequence.

1. **Set Variables** This option defines the parameters and library names to be used for subsequent installation steps. Set the values according to your installation's naming conventions.

   The first panel defines variables for the SMP/E environment.

```
 OS/EM --------------- OS/EM Installation Variables --------------- Version 6.1
 COMMAND ===>

      Library Type              High Level Qualifier       Product Qualifier
 SMP/E Libraries          ===> MVS$SMP              ===> HOSM610
 Distribution Libraries   ===> SYSA                ===> HOSM610
 Target Libraries         ===> SYS2A               ===> HOSM610
 Executable Libraries     ===> SYS2                ===> OSEM.HOSM610
   OS/EM LINKLIB (optional) ===> SYS1              ===> OSEM.HOSM610
 SMP/E Relfile Prefix     ===> SYS2A.REL
 SMP/E Zone Names:  TARGET  ===> OSEMTGT           DLIB ===> OSEMDLB

 Unit and Volume Names:
   SMP/E Unit       ===> SYSDA     Volume  ===> SMS001
   DLIB Unit        ===> SYSDA     Volume  ===>
   TLIB Unit        ===> SYSDA     Volume  ===>
   Executable Unit  ===> SYSDA     Volume  ===>
    LINKLIB Unit    ===> SYSDA     Volume  ===> OS39M1  (If blank exec used)
   Work File Unit   ===> SYSDA


 Press END to enter required system library names.
 F1=Help    F2=Split    F3=Exit    F7=Up     F8=Down    F9=Swap    F12=Cancel
```

Figure 2. OS/EM Installation Variables

   Notes:

   • The High Level Qualifier and Product Qualifier specifications can have multiple nodes (e.g. OSEM.VER610). Do not end either of these qualifiers with a period (.).

   • The OS/EM LINKLIB definitions for the DSN, Unit & Volume names are optional fields and are used if the user requires a different dataset specification from the other executable library parameters. For example, the user may have a requirement to locate the OS/EM LINKLIB in the master catalog but keep the other libraries in a user catalog.

   If these fields are left blank, the Executable Library name specifications will be used for the OS/EM LINKLIB.

   • The SMP/E Unit and Volume specifications are required. The Unit and Volume specifications for the distribution, target, executable and work datasets are optional when there is SMS dataset management.

   Pressing PF3 will display the OS/EM Required System Libraries panel.

```
    OS/EM --------------- OS/EM Installation Variables --------------- Version 6.1
    COMMAND ===>

    Enter fully qualified dataset names.   Quotes are allowed but ignored.
                                                              Unit    Volser
    OS/EM Install File: SYS2A.HOSM610.DIST                  _____  _____

    TRSMAIN Library:    _____  _____  _____

    COBOL SCEELKED:     CEE.SCEELKED
    MVS MACLIB:         SYS1.MACLIB                          _____  _____
    MVS MODGEN:         SYS1.MODGEN                          _____  _____
    TCPIP SEZACMAC:     TCPIP.SEZACMAC                       _____  _____

    JES2 SHASMAC:       SYS1.SHASMAC                         _____  _____
    JES2 SHASSRC:       SYS1.SHASSRC                         _____  _____
    JES2 SHASLNKE:      SYS1.SHASLINK                        _____  _____

    JES3 SIATMAC:       _____  _____  _____

    Press HELP to determine which libraries should be used here.


     F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap    F12=Cancel
```

Figure 3.   OS/EM Required System Libraries

Define the installation dataset and supporting system libraries.

Notes:

•   Dataset name specifications are fully qualified. Any quotes (') are ignored.

•   The TRSMAIN Library DSN is optional. If the field is left blank than it is assumed that the
    TRSMAIN load module is located in a library defined to the LNKLST.

•   The system libraries are:

    MVS Macros   This is the system macro library (normally named SYS1.MACLIB).

    MVS MODGEN   This is the SYSGEN or module generation macro library (normally
                            named SYS1.MODGEN).

    TCPIP Macros   This is the TCPIP macro library (normally named
                            TCPIP.SEZACMAC).

    JES2 Macros   This is the JES2 macro library (normally named SYS1.SHASMAC).

    JES2 Source   This is the JES2 source library (normally named SYS1.SHASSRC).

    JES2 Load   This is the JES2 link or load library. Depending on the release level
                            of JES2, the library is normally named SYS1.SHASLINK or named
                            SYS1.SHASLNKE).

    JES3 Macros   This is the JES3 macro library (normally named SYS1.SIATMAC).

    The Unit and Volser fields are not required if the dataset is cataloged. The information may
    be necessary if the product is being installed on a new SYSRES volume (i.e. not the current
    SYSRES).

2. **Verify/Change Generated DSNames** This option allows the user to review and alter any of the
   dataset names that are to be generated during the installation process.

```
OS/EM-------------- Verify/Change Generated DSNames -------- Row 1 to 15 of 42
 Command ===>                                            Scroll ===> CSR

Overtype Dataset name to update entry.  Enter HELP for more information and an
explanation of the  'C' column codes of blank, 'C' and 'F'.

Type      Description              Dataset Name                             C
CSI       SMP/E GLOBAL CSI         MVS$SMP.HOSM610.GLOBAL.CSI
SMPLOG    SMP/E LOG FILE           MVS$SMP.HOSM610.GLOBAL.SMPLOG
SMPLOGA   SMP/E LOG FILE           MVS$SMP.HOSM610.GLOBAL.SMPLOGA
SMPPTS    SMP/E PTS LIBRARY        MVS$SMP.HOSM610.GLOBAL.SMPPTS
AISPEXEC  DLIB REXX LIBRARY        SYSP.HOSM610.AISPEXEC
AISPMENU  DLIB MESSAGE LIBRARY     SYSP.HOSM610.AISPMENU
AISPPENU  DLIB PANEL LIBRARY       SYSP.HOSM610.AISPPENU
AISPSENU  DLIB SKELETON LIBRARY    SYSP.HOSM610.AISPSENU
AISPTENU  DLIB TABLE LIBRARY       SYSP.HOSM610.AISPTENU
AOBJLIB   DLIB OBJECT MODULES      SYSP.HOSM610.AOBJLIB
ASAMPLIB  DLIB SAMPLE LIBRARY      SYSP.HOSM610.ASAMPLIB
ASEMLENU  DLIB BOOKMGR BOOKS       SYSP.HOSM610.ASEMLENU
ASEMOENU  DLIB BOOKMGR SHELVES     SYSP.HOSM610.ASEMOENU
ASEMXENU  DLIB BOOKMGR INDEXES     SYSP.HOSM610.ASEMXENU
SMPLOG    SMP/E DLIB LOG FILE      SYSP.HOSM610.SMPLOG
 F1=HELP      F2=SPLIT    F3=END       F4=RETURN    F5=RFIND     F6=RCHANGE
 F7=UP        F8=DOWN     F9=SWAP      F10=LEFT     F11=RIGHT    F12=RETRIEVE
```

Figure 4. Verify/Change OS/EM Datasets

- Scroll through the datasets using the Up / Down PF keys (PF7 / PF8).

- Dataset names can be changed by overtyping the dataset name field and pressing enter.

- A changed DSN can be restored to the original specification by blanking out the dataset name
  field.

- The **C** column on the right hand side of the panel indicates the change status of the dataset:

  blank   The dataset name is defined via the standards defined by the installation variables.
  C   The dataset name has been changed through this panel.
  F   The dataset name is not defined by the installation variables, but is explicitly defined
              during installation and/or maintenance.

Subsequent installation steps will submit jobs. For each job that will be submitted, the following
panel will be displayed:

```
OS/EM ---------------- ALLOCATE DLIB/TLIB DATASETS --------------- Version 6.1
COMMAND ===>


  Select from the following:
    1 - Submit the Job
    2 - Browse the Job
    3 - Edit the Job


  Job Statement Information:  Verify before proceeding

  ===> //SPRCBA JOB (ACCT),ALLOCATION,
  ===> //         MSGCLASS=X,CLASS=A,NOTIFY=&SYSUID,REGION=0M
  ===> //*
  ===> //*

 Select option 1 to submit job, or press PF3 (END) to exit.




  F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap    F12=Cancel
```

Figure 5.   OS/EM Installation Job Submission

Alter the JOB statement to meet your installation's standards and then select option 1 to submit the
job. You may browse or edit the JCL prior to submission using options 2 and 3.

3. **Allocate DLIB/TLIB Datasets** This step will allocate the OS/EM Distribution and Target libraries
    (load libraries, ISPF libraries, sample library). You should receive a return code of zero for this job.

4. **Allocate SMP/E Datasets** This step will allocate the SMP/E datasets for the OS/EM system. You
    should receive a return code of zero for this job.

5. **Allocate Executable Datasets** This step will allocate the datasets that OS/EM will use for execution.
    You should receive a return code of zero for this job.

    Note :

       These three allocation jobs will delete any existing datasets with the defined naming standards
       prior to allocating the new datasets.

6. **Load SMP/E Environment** This step will load the SMP/E environment from the OS/EM distrib-
    ution dataset. You should receive a return code of zero for this job.

7. **Receive Maintenance** This step will unpack the OS/EM cumulative maintenance dataset and SMP/E RECEIVE the SYSMODs and HOLDDATA dataset. These datasets should have been obtained at the same time as the OS/EM distribution dataset.

The following panel will be presented:

```
OS/EM --------------------- SMP/E RECEIVE ---------------------- Version 6.1
Command ===>

 Enter the DSN of the file containing HOLDDATA.  This should be the text
 file uploaded to your host and have a RECFM of FB and a LRECL of 80.

 HOLDDATA File       ===> _____


 Enter the DSN of the file containing SYSMODs to be received.  This should be
 the packed file uploaded to your host and have a RECFM of FB and a LRECL of
 1024.

 Cumulative Fix File ===> _____






   F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 6.   SMP/E Functions Menu

Enter the fully qualified name of the packed cumulative maintenance dataset and the HOLDDATA dataset. Do not use quotes. All other required datasets (i.e. the load library that has the TRSMAIN utility and the SMP/E CSI) are defined in the installation variables.

The job should complete with a return code of zero. For more information regarding the RECEIVE process or for any problem determination procedures, consult the relevant IBM SMP/E references.

8. **Apply Maintenance** This step will SMP/E APPLY the received maintenance for the OS/EM product.

The following panel will be presented:

```
OS/EM --------------------- SMP/E APPLY ----------------------- Version 6.1
Command ===>

                            1 -Apply Check

                            2 -Apply


                 Bypass system holds? ===> NO    (Yes/No)




 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel

```

Figure 7.   SMP/E APPLY Maintenance

Select the desired APPLY function and the BYPASS option. It is recommended that an APPLY CHECK is run prior to the APPLY to insure all requisites and HOLD requirements are satisfied.

All required datasets are defined in the installation variables.

The job should complete with a return code of zero (or four if HOLDs are present and have been bypassed). For more information regarding the APPLY process, the CHECK and BYPASS options, or for any problem determination procedures, consult the relevant IBM SMP/E references.

9. **Generate JES Offset Table** You will be presented with a panel where you can choose to generate the offset table for JES2 or JES3.

    VERY IMPORTANT

- The generation job should complete with a maximum return code of one (1) for the JES2 offset table or zero (0) for the JES3 offset table.

- For JES2, the offset table is a load module with the name FEMJ2OFx where x is a suffix that is specific to the release of JES2 that is running on that system.

- For JES3, the offset table is a load module with the name FEMJ3OFF.

- If your installation uses multiple JES systems with different release or maintenance levels, the JES offset table must be generated on each of these systems.

- OS/EM will analyze the JES Offset Table during initialization and will issue warning or error messages if it detects a mismatch between the table and the current JES environment.

- S0C1 & S0C4 abends during JES initialization are very often caused by OS/EM loading a JES Offset Table that was not assembled under the current JES environment. The query report in the IPL.REPORT dataset (pointed to by the SYSTSPRT DD in the OSEM initialization procedure) displays the assembly date and source load library for the Offset Table (FEMJ2OFx or FEMJ3OFF) that was loaded by OS/EM.

10. **Copy SMP/E to Executable** This step will build the OS/EM executable datasets from the SMP/E environment. You should receive a return code of zero for this job.

Once all installation steps have been completed, terminate the dialogue by pressing PF3.

Step 4: Define Security

OS/EM 6.1 provides new security functions and additional controls within existing functions. Existing OS/EM users should review this section carefully to ensure that all necessary security resources are defined.

OS/EM Function Security

A number of OS/EM optional functions can be controlled through your installation's security system (RACF, CA-TOPSECRET or CA-ACF2). These functions include:

- Job Class Checking
- JCL Parameter Checking (e.g. Job Account Numbers, DDNAME, PRTY, etc)
- SYSOUT Parameter Checking (e.g. FCB, DEST, WRITER, etc)
- MVS Operator Commands
- JES2 Operator Commands
- OS/EM JES2 Operator Commands (i.e. new JES2 commands provided by OS/EM)
- FEMCNTL Functions
- OS/EM ISPF Dialog Function Security

If you intend to use these functions, the proper definitions must be in place before OS/EM can enforce the use of these resources.

Refer to "OS/EM External Security Profiles Summary" on page RACF-1 for a list of external security resources that are used for these functions.

Refer to the OS/EM User Guide for controlling these functions.

Job Class Checking

When Job Class Checking is enabled (OS/EM JCL Controls), external security will be checked for user authority to use the specified job class. Job class resources take the form JOBCLASS.x where x is the desired job class. Users must have at least READ access to the resource. For example, if JOBCLASSCHECKING is active and a user wishes to submit a job to run with CLASS=A, then they must be permitted access to the resource JOBCLASS.A.

A generic profile (JOBCLASS.*) can be defined to include all job classes.

JOBCLASS resource profiles are defined in the FACILITY class (CA-TOPSECRET users will use the IBMFAC class).

Note:

- **RACF Users -** If JOBCLASSCHECKING is in effect, but the resources are not defined to your security system, **submission will be allowed**.
- **CA-ACF2 Users -** If JOBCLASSCHECKING is in effect, but the resources are not defined to your security system, **submission will not be allowed**.

JCL Parameter and SYSOUT Parameter Checking

OS/EM JCL Controls allow JCL & SYSOUT parameters to be secured through external security.

The user can specify the resource class and profile names to be used when validating the JCL & SYSOUT parameters. If these are not specified, the default class is FACILITY (IBMFAC for CA-TOPSECRET) and the JCL & SYSOUT parameter resources take the form JCL.parameter.value.

For example, to control the use of JCL parameter PRTY=15, you would define the resource JCL.PRTY.15 and provide READ authority to the appropriate users (the OS/EM PRTY JCL Controls will need to be enabled and defined to use the security system).

Important Notes:

- Some JCL & SYSOUT parameters support an asterisk as a value (e.g. SYSOUT=*). Specifying the asterisk as a secured value (e.g. JCL.SYSOUT.*) does not secure the value '*' but rather creates a generic profile that defines access to all values for that parameter.

- This function allows the user to determine whether to accept or reject a parameter value if that value is not defined to external security. Therefore, it may not be necessary to define every possible value for a particular parameter. Refer to the OS/EM User Guide for more information about this function.

MVS and JES2 Operator Command Checking

Operating System and JES2 Command Controls (found in the Job Controls selection menu) provides security for commands being issued from jobs. When enabled, JCL is checked when it is being submitted from TSO for any operating system and/or JES2 command statements and external security is checked for authorization to issue these commands.

The FACILITY class (or IBMFAC) resource takes the form COMMAND.cmd for operating system commands, and JES2.$cmd for JES2 commands. Users must have at least READ access to the resource to be authorized to issue the command.

For operating system commands, cmd is the long form of the command. For example, COMMAND.MOUNT would be specified as the resource name for establishing authority to issue MVS MOUNT commands (do not code COMMAND.M).

For JES2 commands, cmd is the single-character command (e.g. JES2.$T). There are four exceptions to this rule:

- JES2.$ADD
- JES2.$DEL
- JES2.$TRACE
- JES2.$VS

Generic profiles may be defined to include all commands (i.e. COMMAND.* and JES2.*). These resources are useful when you want to restrict the authority to issue certain commands via submitted JCL, but some users should not be restricted. Use of these resources will mean that each and every command does not have to be defined.

Note:

- **RACF Users -** If Operating System and/or JES2 Command controls are active but the resource for the requested command is not defined to the security system, **the execution of the command will be allowed**.
- **CA-ACF2 Users -** If Operating System and/or JES2 Command controls are active but the resource for the requested command is not defined to the security system, **the execution of the command will not be allowed**.

Refer to the OS/EM User Guide for more information regarding this facility.

OS/EM JES2 Operator Command Checking

OS/EM provides additional JES2 commands for displaying & controlling job status and the Job Routing functions. Use of these commands can be controlled through external security. For a list of the commands and the associated resources refer to "OS/EM JES2 Command Checking" on page RACF-2.

Important Note:

ACF2 users must have these resources defined otherwise the commands will fail.

FEMCNTL Command Checking

The use of the FEMCNTL command can be controlled via the external security system. The class is FACILITY|IBMFAC and the resource is FEMCNTL.sysid.function, where sysid is the four character SMF id of the system, and function is one of the following:

ALLOC
CODE
DASD
DASDCNTL
DUMP
HSM
ISPF
JES2
JES3
MISC
POOL
QUERY
RACF | ACF2 | TOPS
RELOAD
SAF
SMF
SVC
SYSTEM
TSO

A generic resource **FEMCNTL.sysid.*** can be used to permit all FEMCNTL functions. READ access to this profile or the other profiles listed above is sufficient to authorize use of the appropriate FEMCNTL function.

Usage Notes:

- **RACF Users -** If the generic profile is not defined, the resource FEMCNTL.sysid.RACF must be defined before any RACF commands may be issued. Protection of other commands is optional.

  If a particular FEMCNTL function is executed and there is no resource profile defined for that function (and there is no generic profile), OS/EM will issue the warning message FEMATH047 to indicate that the function is not protected. The execution of the command will continue normally.

- **CA-ACF2 Users -** If FEMCNTL profile(s) are not defined, execution of FEMCNTL commands will not be permitted.

- RACF, ACF2 and TOPS are mutually exclusive (although there is no harm in defining two or all of the resources). Use the value specified in the INITPARM field for the OSEM Subsystem definition (in IEFSSNxx). If SAF is specified in the INITPARM, none of the external security resources need to be defined.

- ACF2 and TOPS are only required when using the new Administration Dialog Security facility.

Important Note For Users Upgrading From OS/EM 6.0 Or Earlier

OS/EM 6.1 introduces new three byte prefixes for all OS/EM load modules, ISPF resources (panels, skeletons, tables), CLISTs, REXX procedures, messages, etc. The old prefix **OS$** is replaced by **FEM**. Every effort has been made to make this change as transparent as possible, however this change does affect the security resources that are used to secure the OS/EM system control command (FEMCNTL). Users who currently secure this function must ensure that new FACILITY|IBMFAC resources are defined to their security system. The old resource name **OS$CNTL.sysid.function** is replaced by **FEMCNTL.sysid.function**. The simplest approach to achieve this is to make copies of the existing resources. For example:

```
RDEFINE FACILITY FEMCNTL.sysid.ALLOC -
    FROM(OS$CNTL.sysid.ALLOC) FCLASS(FACILITY)
```

If a generic profile is being used, then the RACF command would be:

```
RDEFINE FACILITY FEMCNTL.sysid.* -
    FROM(OS$CNTL.sysid.*) FCLASS(FACILITY) FGENERIC
```

Notes:

- OS/EM SAMPLIB member RACCTLCP contains the RACF commands to create the new FEMCNTL resources from the existing OS$CNTL resources.
- OS/EM SAMPLIB member RACCTLDE contains the RACF commands to delete the OS$CNTL resources (this should only be done when you have completely migrated to 6.1).

Administration Dialog Security

OS/EM ISPF dialog functions can be controlled via the external security system. Discrete and/or generic profiles can be defined to control access to individual functions and/or functional groups. Profiles (FACILITY | IBMFAC class) have the following name structure:

OSEM.sysid.ADMIN.function

where

sysid is the SMF system name (SID parameter in the SMFPRMxx PARMLIB member)

function is the explicit or generic function name

Refer to "ISPF Admin Dialog Security" on page RACF-4 for a list of administration function names.

Usage Notes:

- **RACF Users -** If administration function profiles are not defined, access to the panels is permitted.

- **CA-ACF2 Users -** If administration function profiles are not defined, access to the panels is not permitted.

CA-ACF2 TSO Command Authorization

CA-ACF2 users must define the following commands as authorized TSO commands:

FEMCNTL

FEMCKSEC

FEMLIB

Step 5: Define Subsystem Name OSEM

Note :

> All users upgrading from prior versions of OS/EM must perform this step because the subsystem initialization module is changed (and the subsystem name is changed for users upgrading from 5.x or earlier).

OS/EM runs as a MVS subsystem. Therefore, the subsystem name must be defined. Edit your SYS1.PARMLIB member IEFSSNxx to add OSEM as the subsystem name. The member IEFSSN61 in the OS/EM SAMPLIB can be copied into your current IEFSSN member in SYS1.PARMLIB or copy IEFSSN61 into SYS1.PARMLIB and update the IEASYSxx SSN= parameter (e.g. SSN=(00,61)).

Notes:

* The OS/EM subsystem **must** be defined **after** the JES subsystem entry.

```
SUBSYS SUBNAME(OSEM)
   INITRTN(FEMIPL)
   INITPARM('subs,MSG=x,SVC=nnn,SEC=yyyy,CLASS=zzzzzzzz,SMF=xx')
                                             ,SMF=(xx,yyy)')
                                             ,SMF=(,yyy)')
```

OSEM is the sub-system name, FEMIPL is the execution module that establishes the OS/EM environment.

The additional entries are the initialization parameters that are

The INITPARM string is passed to the subsystem initialization routine. This string contains the following parameters:

subs The OS/EM Job Entry Subsystem to control

> JES2
> JES3

> **Note:** If the sub-system parameter is not specified, OS/EM will look at the JESCT to determine the primary Job Entry sub-system in use (JES2 or JES3). If the primary Job Entry sub-system cannot be determined from the JESCT, OS/EM will search the active LPA to determine if HASPSSSM for JES2, or IATSI34 for JES3 is available to set the primary Job Entry sub-system. If neither the HASPSSSM nor IATSI34 is in the active LPA, OS/EM will load the interfaces for both JES2 and JES3.

x The message support required during OS/EM Sub-system initialization

> **0** Errors Only
> **1** Default - Includes Started/Ended and Interface module loaded messages
> **2** All messages

nnn The SVC number you want OS/EM to use with JES3 only. If you omit this parameter (SVC=nnn), as in the example, OS/EM starts scanning for an available SVC number and will use the first available number. The OS/EM scan starts at SVC number 255 and works backwards.

yyyy Defines the security system installed at your installation. You must code this operand, along with the CLASS parameter, if you intend to use any of the OS/EM functions that depend on security system definitions.

> RACF - Resource Access Control Facility
> TOPS - CA-TOPSECRET
> ACF2 - CA-ACF2

SAF - System Authorization Facility

Note: SAF may be coded to disable OS/EM's ability to manage RACF exits.

zzzzzzzz   Resource class for authorization checking

FACILITY - for RACF
FACILITY - for CA-ACF2
FACILITY - for SAF
IBMFAC   - for CA-TOPSECRET **or**
DATASET - for CA-TOPSECRET

xx   Suffix of SMFPRM member to be invoked after FEMIPL executes

yyy   SMF number to use for audit records.

Note: See SMF Record Format in the appendix for the format of these SMF records.

Step 6: Create OSEM Procedure

The OSEM procedure is automatically invoked by the OS/EM subsystem initialization. This procedure initializes the OS/EM environment.

The SAMPLIB member OSEM contains a sample procedure. Copy this member into a PROCLIB pointed to by your Master Scheduler JCL and update it to reflect your dataset naming.

```
//OSEM      PROC PROG=OS$INIT      <=== SEE NOTES BELOW
//*
//*----------------------------------------------------------------------*
//* OS/EM SUBSYSTEM INITIALIZATION PROC
//*
//* THIS PROC MUST BE IN A PROCLIB REFERENCED BY THE MASTER
//* SUBSYSTEM - USUALLY SYS1.PROCLIB - CHECK YOUR MSTJCL00
//*----------------------------------------------------------------------*
//*
//* COMBINED OSEM PROC FOR OS/EM V6.X RELEASES
//*
//*----------------------------------------------------------------------*
//* BEGINNING WITH OS/EM 6.1 THIS PROC HAS THE SYMBOLIC PARAMETER
//* 'PROG'.  WHEN STARTING THE PROC MANUALLY YOU MUST ENSURE THAT YOU
//* SPECIFY IT IF YOU ARE RUNNING OS/EM 6.1 OR ABOVE.  ENTER:
//* 'S OSEM,PROG=FEMINIT'.  THE PROG PARAMETER DOES NOT NEED TO BE
//* ENTERED ON OS/EM VERSION 6.0 AS THE DEFAULT VALUE IS OS$INIT.
//* YOU MAY ENTER THE COMMAND AS 'S OSEM,PROG=FEMINIT,SUB=MSTR' WHICH
//* WILL ALLOW THE PROC TO EXECUTE EVEN IF JES2 IS INACTIVE.
//*
//* THE ONLY TWO VALID VALUES FOR THE PROG PARAMETER ARE:
//* OS$INIT - OS/EM VERSION 6.0
//* FEMINIT - OS/EM VERSION 6.1 AND ABOVE
//*----------------------------------------------------------------------*
//* HOW THIS PROC SUPPORTS MULTIPLE VERSIONS OF OS/EM:
//*
//* OS/EM NOW SHIPS WITH THE LOAD MODULE FEMSIDCK WHICH HAS AN ALIAS OF
//* OS$SIDCK WHICH WAS SHIPPED IN PRIOR RELEASES OF OS/EM.  IN VERSION
//* 6.1 THIS PROGRAM LOOKS FOR A PARM VALUE OF FEMINIT.  IF THE PARM
//* MATCHES IT ENDS WITH A RETURN CODE OF '0' ALLOWING THE FEMINIT
//* STEP TO EXECUTE.  IF THE PARM RESOLVES TO OS$INIT AS IT WOULD FOR
//* AN OLDER RELEASE OF OS/EM IT WILL END WITH A RETURN CODE OF '4'
//* WHICH WILL CAUSE STEP FEMINIT TO BE BYPASSED AND INSTEAD EXECUTE
//* THE STEP OS$INIT.
//*
//* AS THE OS/EM COMMAND PROCESSOR HAS BEEN RENAMED YOU CAN NOT USE
//* THE SAME PARMLIB FOR VERSION 6.1 AND PRIOR RELEASES.
//*
//*----------------------------------------------------------------------*
//* CHANGE LOG:
//* UK00500 09/09/06 UPDATED COMMENTS
//* UK00503 09/14/06 UPDATED COMMENTS
//*
//*
//*----------------------------------------------------------------------*
```

```
//VER61     EXEC PGM=OS$SIDCK,PARM=&PROG,TIME=(0,15)
//          IF VER61.RC = 0 THEN
//*
//* OS/EM V6.1 RUNNING ON THIS SYSTEM
//*
//FEMINIT   EXEC PGM=&PROG,TIME=(0,45)
//SYSTSPRT DD   DISP=OLD,DSN=SYS1.OSEM.VER61.IPL.REPORT
//SYSMDUMP DD   DISP=OLD,DSN=SYS1.OSEM.VER61.DUMP
//SYSTSIN  DD DSN=SYS1.OSEM.VER61.PARMLIB(TIME),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(CODEINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(JES2INIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(JES3INIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(MVSINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(DASDINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(DSNINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(HSMINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(JCLINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(JOBINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(JOBRINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(MISCINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(VOLINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(POOLINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(PREFINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(RACFINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(RSTRINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(SVCINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(TIMEINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(TPSHINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.VER61.PARMLIB(QUERY),DISP=SHR
//          ELSE
//*
//* OS/EM VERSION PRIOR TO 6.1 RUNNING
//*
//OS$INIT   EXEC PGM=&PROG,TIME=(0,45)
//SYSTSPRT DD   DISP=OLD,DSN=SYS1.OSEM.IPL.REPORT
//SYSMDUMP DD   DISP=OLD,DSN=SYS1.OSEM.DUMP
//SYSTSIN  DD DSN=SYS1.OSEM.PARMLIB(TIME),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(CODEINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(JES2INIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(JES3INIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(MVSINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(DASDINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(DSNINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(HSMINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(JCLINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(JOBINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(JOBRINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(MISCINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(VOLINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(POOLINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(PREFINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(RACFINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(RSTRINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(SVCINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(TIMEINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(TPSHINIT),DISP=SHR
//           DD DSN=SYS1.OSEM.PARMLIB(QUERY),DISP=SHR
//          ENDIF
//*
```

Important Usage Notes:

- Ensure that 'xhlq' is set to the dataset name high-level qualifier for the OS/EM executable datasets.

- The OS/EM Dump dataset and the IPL Report dataset (pointed to by the SYSMDUMP and SYSTSPRT DDs respectively) should be unique for each system. Users should consider incorporating a variable such as **&SYSNAME** into the DSN specification to ensure that datasets are unique for each system.

- The general approach is to have a single OS/EM PARMLIB for all systems in a SYSPLEX / MAS. If the same PROCLIB is to be used by more than one SYSPLEX / MAS then users should consider incorporating a variable to ensure DSN uniqueness (e.g. the **&SYSPLEX** variable).

- In this example, the SYSTSIN DD statement is a concatenation that points to the initialization members that build the OS/EM environment. This is the way in which initialization members are built by the ISPF interface.

- The OSEM started task must have update authority for datasets defined in the procedure and read authority for any load libraries that have user exit modules that OS/EM will be loading.

- The PROC STEP VER61 and the conditional JCL provides support for users who are migrating to OS/EM 6.1 from 6.0 and/or will be operating mixed 6.x systems that share the same PROCLIB. This accommodates the change of load module names that was introduced with OS/EM 6.1 and will allow easy fallback and/or co-existing 6.0 & 6.1 systems.

- Users who are considering changing the OSEM procedure should take special note:

  Starting with OS/EM 6.1, the OS/EM subsystem initialization routine (FEMIPL) issues the following command to invoke the OS/EM environment initialization:

  ```
  S OSEM,PROG=FEMINIT,SUB=MSTR
  ```

  The OSEM procedure MUST contain a reference to the &PROG variable somewhere in the JCL (even if it is in a comment statement). If there is no reference to this variable, the OSEM procedure will fail with a JCL error and the environment will not be initialized.

Step 7: Define OS/EM Load Library to LINKLST

Perform one of the following procedures:

1. If your IEASYSxx PARMLIB member uses the PROG= parameter:

    *   Copy the OS/EM SAMPLIB member PROGL6 into your system PARMLIB.
    *   Update PROGL6 to point to the LNKLST name used in your system and modify the DSNAME to match the OS/EM executable load library name.
    *   Update IEASYSxx to include the PROGL6 member in the list (e.g. PROG=(00,L1,L6))

2. If your IEASYSxx PARMLIB member uses the LNK= parameter:

    *   Copy the OS/EM SAMPLIB member LNKLST61 into your system PARMLIB. Update the member to ensure that the executable load library name is correct.
    *   Update IEASYSxx to include the LNKLST61 member in the list (e.g. LNK=(00,61))

Note:

> Use caution if your site uses both the LNK= and PROG= parameters. A **LNKLST ACTIVATE** statement in a PROGxx member will cause the LNKLSTxx member(s) to be ignored.

Step 8: Authorize OS/EM Executable Load Library

Perform one of the following procedures:

1. If your IEASYSxx PARMLIB member uses the PROG= parameter:

    *   Copy the OS/EM SAMPLIB member PROGOS into your system PARMLIB.
    *   Update PROGOS to specify the correct executable load library name and the volume name where the library resides (as specified in installation step 2).
    *   Update IEASYSxx to include the PROGOS member in the list (e.g. PROG=(00,L1,OS,L6))

2. If your IEASYSxx PARMLIB member uses the APF= parameter:

    *   Edit the IEAAPFxx member and add the SAMPLIB member IEAAPF61
    *   Update the OS/EM load library definition to specify the correct executable load library name and the volume name where the library resides (as defined in installation step 2).

Note:

> Users may use both IEAAPFxx and PROGxx to define authorized load libraries, however there are restrictions related to dynamic authorization lists. Users should consult the MVS Initialization and Tuning Reference if you intend to use both mechanisms.
>
> **The OS/EM executable load library should be explicitly defined as APF authorized.** The definition of the library to the LINKLST implicitly defines APF authorization. However, several of the OS/EM utility job streams defines the OS/EM load library in a STEPLIB, which nullifies the implicit authorization.

Step 9: Copy FEMSTART SAMPLIB Member

- Copy the member FEMSTART from the OS/EM SAMPLIB into a SYSPROC library that is concatenated to your TSO logon procedure.

- Modify the symbolic parameters in the **SITE SPECIFIC PARMS** block in the FEMSTART CLIST to match the names of the ISPF libraries that you will be using. If this is a first time install, the symbolic OLDTLIB should point to your new table library for OS/EM.

Note:

The FEMSTART CLIST has a symbolic parameter **LINKLIB** in the **SITE SPECIFIC PARMS** section. This allows the user to use the 6.1 ISPF functions before the library has been defined to the system LNKLST. Once the library is in the LNKLST, this symbolic parameter should be changed to **LINKLIB**().

Step 10: Add the ISPF Interface

Since you will use the ISPF interface on a regular basis, you should place an entry for the interface on an ISPF menu, preferably a menu that is not widely available to your regular ISPF users.

If you use **O** as the selection letter, the entry in the menu's)PROC section would be:

```
O,'CMD(FEMSTART) NOCHECK'
```

You will also need to add the following line at the end of the menu's)PROC section to allow users to go directly to an OS/EM sub-menu.

```
&NXOPT = .TRAIL
```

Step 11: Create ISPF Tables for OS/EM Version 6.1

This procedure will build the initial OS/EM PARMLIB and ISPF Table library entries for your environment. This should only be used by new OS/EM users. Users migrating from prior releases of OS/EM should go to installation step 12.

• Start the ISPF interface from ISPF option 6 by entering %FEMSTART.

```
OS/EM ------------------ Primary Option Menu ------------------ Version 6.1
Option ===>

                                              UserID   -SPJRT
                     1  System Level Controls  System ID-BLUE
                        Maintenance Functions  Time     -15:29
                        Installation Functions Terminal -3278
                                              PF Keys  -24
                     2  Basic Exit Functions
                     3  Extended OS/EM Functions
                     4  Query OS/EM Status
                     5  Reload Exits
                     6  Set JES name / currently: JES2
                     7  Execute Pending Changes
                     8  Build Initialization Member

                     T  Tutorial
                     X  Exit from OS/EM
```

Figure 8.   OS/EM Primary Menu

• Select **Installation Functions** (Option 1) from the Primary Menu.

```
OS/EM --------------- MAINTENANCE AND INSTALLATION -------------- Version 6.1
SELECTION ===>

                          SYSTEM LEVEL CONTROLS
                   1  Authorization Codes
                   2  Enable/Disable Expiration Warning Message
                   3  Abend Notify TSO IDs
                   4  SMF Recording Record Type Number
                   5  Performance Counts and Timings
                   6  Enable/Disable Execute Online Warning Message
                              MAINTENANCE
                   7  Pending Changes Table Clean-up
                   8  Rebuild OS/EM Tables from Query Function
                   9  SMP/E Functions for OS/EM
                  10  Assemble Offset Table
                  11  Copy SMP/E Libraries to Executable Libraries
                  12  Update Installation Variables
                  13  Verify/Change Generated DSNames
                  14  Update System Tables
                              INSTALLATION
                  15  Create Tables for Version 6.1  (New Install Only)
                  16  Upgrade to OS/EM Version 6.1

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 9.   OS/EM Installation Functions

• Select **Create Tables for Version 6.1** from the Maintenance and Installation panel.

```
OS/EM -------------------- INSTALLATION PROCESS ----------------- Version 6.1
COMMAND ===>


   PLEASE WAIT. . . . . . . .

   Various tables are being created to support OS/EM basic and option
   functions. This is a one-time process and will take a few moments to
   complete.

                        BASIC EXIT OPTIONS
```

Figure 10. Table Creation Progress

This process may take several minutes. When complete, the OS/EM Tables and Initialization members will be created.

Notes:

- For more information about this process see **Installation, Create** in the OS/EM User Guide.
- In the event that this procedure does not complete successfully, ***do not simply re-run the Create option.*** Refer to **Installation, Create** in the OS/EM User Guide for corrective procedures.

Step 12: Upgrade OS/EM Tables to Version 6.1

If this is a new installation, go to step 13.

The **Upgrade** function parses a Query Report of your current OS/EM environment to determine which exits and optional features you are using and stores that information in the OS/EM Version 6.1 PARMLIB and ISPF Table library.

Perform the following procedure to upgrade to OS/EM Version 6.1:

- Start the **OS/EM 6.1 ISPF interface** from ISPF option 6 by entering %FEMSTART (or whatever CLIST name you used in installation step 11 to differentiate the CLIST from your current OS/EM environment).

```
OS/EM ------------------- Primary Option Menu ------------------- Version 6.1
Option ===>

                                                 UserID   -SPJRT
                    1  System Level Controls      System ID-BLUE
                       Maintenance Functions      Time     -15:29
                       Installation Functions     Terminal -3278
                                                  PF Keys  -24
                    2  Basic Exit Functions
                    3  Extended OS/EM Functions
                    4  Query OS/EM Status
                    5  Reload Exits
                    6  Set JES name / currently: JES2
                    7  Execute Pending Changes
                    8  Build Initialization Member

                    T  Tutorial
                    X  Exit from OS/EM



 Figure 11.   OS/EM Primary Menu
```

- Select **Installation Functions** (Option 1) from the Primary Option Menu

```
OS/EM --------------- MAINTENANCE AND INSTALLATION -------------- Version 6.1
SELECTION ===>

                         SYSTEM LEVEL CONTROLS
              1  Authorization Codes
              2  Enable/Disable Expiration Warning Message
              3  Abend Notify TSO IDs
              4  SMF Recording Record Type Number
              5  Performance Counts and Timings
              6  Enable/Disable Execute Online Warning Message
                         MAINTENANCE
              7  Pending Changes Table Clean-up
              8  Rebuild OS/EM Tables from Query Function
              9  SMP/E Functions for OS/EM
             10  Assemble Offset Table
             11  Copy SMP/E Libraries to Executable Libraries
             12  Update Installation Variables
             13  Verify/Change Generated DSNames
             14  Update System Tables
                         INSTALLATION
             15  Create Tables for Version 6.1   (New Install Only)
             16  Upgrade to OS/EM Version 6.1


 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 12.   OS/EM Installation Functions

• Select **Upgrade to OS/EM Version 6.1** from the Maintenance and Installation panel.

```
OS/EM -------------------- VERIFY UPGRADE  -------------------- Version 6.1
COMMAND ===>


  Selecting this option will attempt to upgrade your existing OS/EM
  options into the format required by the current release of OS/EM.
  This is done by parsing a Query Report showing your existing options.

  If you are installing OS/EM on a system where OS/EM does not exist you
  may specify a file name which contains a Full Query Report from the system
  where OS/EM is currently running.

  Execute Query Function? ===>            (Yes/No)

    or
                                          (Query Report DSN)
  Use this Query Report    ===>


  Previous Table Library ===> 'SYS1.OSEM.VER56.ISPTLIB'
  Current  Table Library ===> 'SYS1.OSEM.TEST.SISPTENU'
  Current  Parm  Library ===> 'SYS1.OSEM.TEST.PARMLIB'
  Current  Command Library => 'SYS1.OSEM.SISPEXEC'
```

Figure 13.   Verify Upgrade Panel

Perform the following:

1.   Enter **YES** next to **Execute Query Function ?** if the OS/EM 6.1 upgrade process is to migrate
     the current OS/EM settings by executing an OS/EM query

          OR

2. Enter **NO** next to **Execute Query Function ?** and next to **Use this Query Report** enter the name of a dataset that contains the output of an OS/EM Query. The upgrade will migrate the OS/EM settings that are detailed in the saved report.

3. A list of datasets that are used by the upgrade function is displayed at the bottom of the panel. Verify that the dataset names are correct before proceeding. If the dataset names are incorrect press **PF3** and correct the FEMSTART CLIST (or whatever name was used in installation step 11) to reference the correct datasets.

```
OS/EM -------------------- INSTALLATION PROCESS ----------------- Version 6.1
COMMAND ===>


  PLEASE WAIT. . . . . . . .

  Various tables are being created to support OS/EM basic and option
  functions. This is a one-time process and will take a few moments to
  complete.

                         BASIC EXIT OPTIONS



```

Figure 14. Upgrade Progress Display

The upgrade process may take several minutes. When complete, the OS/EM settings from the current environment or the saved Query Report will be migrated to the OS/EM 6.1 tables.

Notes:

- For more information about this process see **Installation, Upgrade** in the OS/EM User Guide.
- Since the upgrade function rebuilds the initialization members, it is essential to execute this function before you IPL. Otherwise, the initialization members that the install procedure places into the OS/EM PARMLIB will be empty, and no OS/EM features or user exits may not be activated.

Step 13: Define OS/EM Authorization Codes

Users upgrading from a prior release of OS/EM should skip to Step 14 because Step 12 copies the existing authorization codes into the new tables.

- From the OS/EM ISPF Primary Option Menu, select **System Level Controls** (Option 1)

- Select **Authorization Codes** (Option 1) from the Maintenance and Installation panel.

- Enter the authorization code provided with the OS/EM software distribution package.

```
OS/EM ------------------------- AUTHORIZATION CODES ------------- Version 6.1
COMMAND ===>                                               SCROLL ===> CSR


 Line Cmds: (A)dd new code, (D)elete existing code, (S)elect for update

        Authorization
  Sel      Code            Description
   _     3CF8BB8233        Blue System_____
 
   _     2F83A6F119        Disaster Recovery Site_____
 
   _     3D66C1E203        Green System_____

***************************** Bottom of data *********************************
```

Figure 15. OS/EM Authorization Codes

See **Authorization Code, Definition and Use** in the OS/EM User Guide for more information.

Once the authorization code(s) has been entered, the OS/EM authorization code initialization member must be built so the OS/EM environment will start during the next IPL.

- Select **Build Initialization Member** (option 8) from the OS/EM Primary Menu.

```
OS/EM --------------- BUILD INITIALIZATION MEMBERS -------------- Version 6.1
COMMAND ===>

   Select the Initialization member(s) to build from the following list:

                              SYSTEM WIDE CONTROLS
                      _  1.x - System Level Controls

                              BASIC EXIT FUNCTIONS
                      _  2.1 - JES2 Exits
                      _  2.2 - JES3 Exits
                      _  2.3 - MVS Exits

                              EXTENDED FUNCTIONS
  _ 3.1  - Define Dataset name groups    _ 3.10.1 - DASD Allocation Controls
  _ 3.2  - Define Volume groups          _ 3.10.2 - Quickpool Rules
  _ 3.3  - HSM Optimizer                 _ 3.11   - RACF Controls
  _ 3.5  - ISPF File Prefix Controls     _ 3.12   - Restrict Devices
  _ 3.6  - JCL Controls                  _ 3.13   - SVC Delete/Replace
  _ 3.7  - Job Controls                  _ 3.14   - Tape Share Controls
  _ 3.8  - Job Routing/Classing          _ 3.15   - Time Controls
  _ 3.9  - Miscellaneous Controls

  F1=Help    F2=Split   F3=Exit    F7=Up     F8=Down   F9=Swap   F12=Cancel
```

Figure 16.   Build Initialization Members

- Enter a non-blank character next to the **SYSTEM** option.

See the OS/EM User Guide for complete instructions.

If you are only installing the HSM Optimizer Reports go to step 24.

Step 14: JES2 EXIT Implementation

New OS/EM Users

Defining JES2 User Exits To OS/EM

The OS/EM AUTOINSTALL feature (new to OS/EM Version 6) will process the JES2 initialization parameters and automatically place the defined user exits under OS/EM control. Therefore, there is nothing that a new user must do to implement existing JES2 exits in OS/EM.

However, since OS/EM provides centralized management of all common user exits, it makes more sense to explicitly define the user exits to OS/EM. These exits can be defined to OS/EM before or after the initial IPLs with OS/EM.

The OS/EM processing rules for JES2 exits are:

- Exits that are defined in the JES2 initialization parameters will be loaded and controlled by OS/EM. The console message FEM2TP258 will be issued for each exit point that is defined and these exits will be indicated with **LOADED BY JES** in an OS/EM query.
- If the same exit point is defined to both OS/EM and the JES2 parms (and both are defined as active/enabled), only the OS/EM definition will be used. This permits users to migrate from JES2 to OS/EM exit definitions without the need to immediately modify JES2 parameters.

A suggested migration strategy from JES2 PARM definitions to OS/EM is:

1. IPL the system using the existing JES2 PARM exit definitions.

2. Update the OS/EM tables:

    - Rebuild the OS/EM ISPF Table Library (this function is found in the Maintenance Functions selection panel.
    - Rebuild the **JES2 Basic Exit Functions** initialization member (this function is found in the Build Initialization Member function from the primary menu).

3. The exit definitions in the JES2 parameters will now be ignored in subsequent IPLs. The **EXIT(nnn)** and **LOADMOD** statements can be removed from the JES2 initialization parameters at the user's convenience.

Refer to the OS/EM User's Guide for more information regarding the **Rebuild OS/EM Tables** and **Build Initialization Member** functions.

Special Consideration For JES2 Exit 0

If you are using the JES2 Pre-Initialization Exit (EXIT 0) to control the start of the JES2 Initialization process, it must be Link Edited as a separate Load Module with a name other than **HASPXIT0**, and additional Exit Entry Points (such as EXIT19 or EXIT24, for example) should not be included. These should be assembled and Link Edited into a separate Load Module (or Modules) of their own and additionally defined to OS/EM, as appropriate.

Defining User Exits To Be Outside Of OS/EM Control

Occasionally, a third-party product insists that their JES2 User exit(s) be loaded first (i.e. outside the control of OS/EM and be first in the exit calling sequence). One example is the JES2 EXIT 5 for CA-ROSCOE. In order to satisfy the product's requirements, the following must be done when OS/EM is installed:

1. Deactivate the OS/EM AUTOINSTALL function for the affected JES2 user exit point(s). This is done through the OS/EM ISPF management dialog. Set the **AUTOINSTALL** option to **NO** for the specific JES2 user exit point(s). Refer to the section titled **JES2 Exit Point Options** in the OS/EM User's Guide.

2. Define the exit in the JES2 initialization parameters. It should be defined along the following lines:

    ```
    LOADMOD(modname)
    EXIT(nnn) ROUTINES=(entrypt,OSEMXnnn)
    ```

    where **modname** is the load module name and **entrypt** is the user exit's entry point name for the user exit that is to be loaded outside of OS/EM's control. The **OSEMXnnn** entry point specification defines the OS/EM JES2 user exit control module for this exit point (this is normally defined automatically when the AUTOINSTALL function is active).

3. There may be other user exits that are required for the affected user exit point(s). These will need to be removed from the JES2 Initialization parameters and defined through the OS/EM ISPF management dialog. Refer to the section titled **JES2 User Exit Module Definition** in the OS/EM User's Guide for more details. Ensure that the user exit(s) that must be loaded outside of OS/EM's control are **NOT** defined to OS/EM in this manner.

4. Build the OS/EM JES2 Basic Exits initialization parameters. Refer to the section titled **Build Initialization Members** in the OS/EM User's Guide.

Other Notes:

*   The OS/EM AUTOINSTALL feature is an optional function and can be disabled via the **Set JES Name** function (option 6 from the main menu).

*   The AUTOINSTALL feature is enabled by default. Users should use caution when disabling AUTOINSTALL on a global basis (in the JES definition) or for an individual JES exit point. When AUTOINSTALL is disabled, user exits defined in the JES initialization parameters (LOADMOD and EXIT statements) will be loaded and managed by JES (i.e. the exit(s) will not be controlled by OS/EM).

IBM Command Conversion Routine

Beginning with OS/390 Version 2 Release 4, IBM has provided a compatibility and migration aid in the form of a user Exit 5 routine. Without OS/EM, this exit is invoked automatically if you do not specify your own Exit 5. Since OS/EM enables Exit 5 this user exit will not be automatically invoked. To ensure that this exit continues to be available, you **must** define it to the OS/EM Basic Exits Function. The module name of this exit is **HASX05C** with an entry point name of **HASX5CTR**. Because this exit is not MVS re-entrant, you will need to code KEY: 1 on the OS/EM entry panel.

Users Upgrading From OS/EM Version 5.x or earlier

Prior versions of OS/EM required users to define OS/EM JES2 the interface module and the user exit points in the JES2 initialization parms. The OS/EM AUTOINSTALL feature (new to OS/EM Version 6.0) automatically adds the OS/EM JES2 Interface for all of the user exit points.

Users who are upgrading to OS/EM 6.1 **must remove** the OS/EM LOADMOD and EXIT(nnn) definitions from the JES2 initialization parms before IPLing with OSEM 6.1:

```
LOADMOD(OS$J2ITF) STORAGE=CSA

EXIT(001) ROUTINE=EXIT1,ENABLE,TRACE=NO
   *
   *
   *
EXIT(nnn) ROUTINE=EXITnnn,ENABLE,TRACE=NO
```

Important:

> *Failure to remove these definitions will cause OS/EM to attempt to dynamically define these exits during JES2 initialization. These definitions will fail (load module not found) and error messages will be issued, but JES2 and OS/EM initialization will continue normally.*

Users Upgrading From Prior Releases OS/EM Version 6

No upgrade actions are required.

Step 15: Set up PARMLIB Members

All OS/EM Users (New and Upgrading)

Copy the SAMPLIB member CSVLLA61 to the system PARMLIB. Edit this member to specify the OS/EM executable load library. This member is used by the OS/EM maintenance functions to refresh the Library Lookaside Directory (LLA).

New OS/EM Users

Make the following changes to the system PARMLIB:

1. **EXIT ADD definitions in PROGxx or EXITxx members.:** These members define system exit routines. OS/EM will now load and manage these exits and so you will need to remove these definitions from PARMLIB and add them to OS/EM.

    *   Start the OS/EM ISPF dialog (FEMSTART) and go to MVS Basic Exit Selection (2.3 from the Primary Menu) and define the user exits that are currently defined in PROGxx and/or EXITxx PARMLIB members. For more information, consult the OS/EM User's Guide.
    *   If exits are defined in a **EXITxx** member, remove the **EXIT=xx** definition from the IEASYSxx member.
    *   If exits are defined in a **PROGxx** member and this member contains only **EXIT ADD** definitions, remove the member suffix from the PROG= parameters in the IEASYSxx member. If the PROGxx member contains other definitions, edit the member and remove the **EXIT ADD** definitions.

Users Upgrading From OS/EM Version 5.x or earlier

OS/EM Version 6 introduces significant architectural changes that affect how it is configured to OS/390 & z/OS.

1. **EXIT ADD definitions in PROGxx member.:** Prior versions of OS/EM required that the OS/EM exit point management modules be defined to the operating system via **EXIT ADD** control statements in a PROGxx member. OS/EM Version 6 dynamically resolves the user exit points during initialization, and so the EXIT ADD statements must be removed.

    *   If the **EXIT ADD** definition statements are defined in their own PROGxx member, remove the member suffix entry from the PROG= parameter in the IEASYSxx member.
    *   If the **EXIT ADD** definition statements are defined in a PROGxx member along with other control statements, edit the member and delete the **EXIT ADD** entries.

        Note: If the **EXIT ADD** statements are not removed, message CSV431I will be issued at IPL time for each entry point (Module Not Found). This will not prevent OS/EM from initializing successfully.

2. **IEAFIXxx Entries** Prior versions of OS/EM required selected modules to be loaded into the Fixed Link Pack Area (FLPA) by specifying them in IEAFIXxx members. This is no longer required and these definitions must be removed from the system initialization parameters. The entries can be removed by one of the following methods:

    *   If the OS/EM entries are defined in an IEAFIXxx member along with definitions for other applications, delete the OS/EM definitions from the member.
    *   If the OS/EM entries are defined its own member, remove the member suffix specification from the FIX= parameter of the IEASYSxx member. If the OS/EM member suffix is the only one specified (i.e. FIX=xx), remove the FIX= parameter from the IEASYSxx member.

3. **IEALPA61** Prior versions of OS/EM required selected modules to be loaded into the Modified Pageable Link Pack Area (MLPA) by specifying them in IEALPAxx members. This is no longer required and these definitions must be removed from the system initialization parameters. The entries can be removed by one of the following methods:

   - If the OS/EM entries are defined in an IEALPAxx member along with definitions for other applications, delete the OS/EM definitions from the member.
   - If the OS/EM entries are defined its own member, remove the member suffix specification from the MLPA= parameter of the IEASYSxx member. If the OS/EM member suffix is the only one specified (i.e. MLPA=xx), remove the MLPA= parameter from the IEASYSxx member.

Users Upgrading From Prior Releases OS/EM Version 6

No upgrade actions are required.

Step 16: Update HSM Parmlib Member ARCCMDxx

This step may be skipped during an upgrade of OS/EM, however you should review your ARCCMDxx member to be sure all DFHSM exits are specified.

In order to activate the HSM Optimizer functions the DFHSM ARCCMDxx parm member must be updated to enable all the DFHSM exits.

```
SETSYS EXITON(AD BD BE CB CD CR ED IN MD MM)
SETSYS EXITON(MV M2 RD RP SA SD SK TD TE TV)
```

Step 17: Update SMF Parmlib Member SMFPRMxx

This step may be skipped during an upgrade of OS/EM, however you should review your SMFPRMxx member to be sure all SMF exits are enabled. The EXITS parameter should be specified on both the SYS and SUBSYS keywords, as the following example shows:

```
SYS(NOTYPE(16:19,99),EXITS(IEFACTRT,IEFUAV,IEFUJI,IEFUJP,IEFUJV,
        IEFUSI,IEFUSO,IEFUTL,IEFU29,IEFU83,IEFU84,IEFU85),
        INTERVAL(003030),NODETAIL)
SUBSYS(STC,EXITS(IEFACTRT,IEFUAV,IEFUJI,IEFUJP,IEFUJV,IEFUSI,
        IEFUSO,IEFUTL,IEFU29,IEFU83,IEFU84,IEFU85))
```

Note:

>   **Users of z/OS 1.9 and later** should add **IEFU29L** to the SMF exits lists above.

Step 18: Password Authentication (RACF users only)

This step may be skipped during an upgrade.

RACF provides three types of password authentication:

1. In-house or vendor supplied exit

2. RACF masking algorithm to perform encoding

3. RACF DES algorithm to perform authentication

Prior to RACF release 2.1 the default authentication method was the masking algorithm. Beginning with RACF release 2.1, a two-step method of checking is the default, where RACF uses both the masking algorithm and the DES algorithm.

You **must** control the type of authentication used via OS/EM if you are running RACF 2.1 or above.

*   If you are using your own authentication exit, you need to define the exit to OS/EM using the ISPF Facility MVS Basic Exit Support.

*   If you want to use only the masking algorithm, specify ICHDEX01 as primary user exit one using the ISPF Facility MVS Basic Exit Support. This program resides in SYS1.LINKLIB and unconditionally returns with a return code of **4**, which tells RACF to use the masking algorithm.

*   If you want to use only the DES algorithm, you will need to specify your own exit as the primary user exit using the ISPF Facility MVS Basic Exit Support. This exit **must** return with a return code of **8** to force the DES algorithm to be used.

*   To use the two-step method of checking, which is the default beginning with release 2.1 of RACF, nothing needs to be done as this is OS/EM's default mode of operation.

Note: For more information on using the ISPF Facility MVS Basic Exit Support, see the OS/EM User Guide. For more information regarding RACF Password Authentication, refer to the RACF System Programmer's Guide.

Step 19: Define Job Routing Resource Communications Dataset

Users that wish to use the OS/EM Job Routing/Classing functions must define a Job Routing Resource Communications dataset. This dataset must be located on a shared DASD volume that can be accessed by all LPARs in the MAS.

The Communications dataset contains 32 fixed length records - one record for each system within the MAS. Each record is made up of a 4 byte header plus 45 bytes for each active resource on the system.

New OS/EM Users

New users must allocate a Resource dataset with the following characteristics:

```
RECFM=F,LRECL=nnnnn,BLKSIZE=nnnnn,DSORG=PS,SPACE=(nnnnn,(32),,CONTIG)
```

where nnnnn is the record / block size. This is calculated with the following algorithm:

```
45 * Max_Number_Resource_Entries + 4
```

The minimum record length is 4505 (allowing a maximum of 100 active resources per system) and the maximum record length is 32719 (737 active resources). It is recommended that the maximum value is used since the dataset is very small and will not increase in size.

Only allocate 32 blocks for the primary extent and zero for the secondary allocation. Any allocation exceeding this will simply be wasted allocated space.

Users Upgrading From OS/EM Version 5.x or earlier

OS/EM Version 6 increases the maximum number of resources that can defined from 100 to 727. While the current Job Routing Resource dataset will still work with OS/EM Version 6.0, users should consider migrating the dataset to support the increased number of resources.

OS/EM SAMPLIB member **RDSCOPY** allocates a new Resource dataset and migrates the data from the existing Resource dataset. The JCL needs to be modified to specify the desired record length. The record length is calculated as follows:

```
45 * Max_Number_Resource_Entries + 4
```

The minimum record length is 4505 and the maximum is 32719. It is recommended that the maximum value is used.

Note: Users must ensure that the new dataset name is defined in the Job Routing System Level Controls panel before IPLing the system.

IMPORTANT

> If you are running in a Multi-Access Spool (MAS) environment, you **must not** increase the size of the Resource Dataset record until all systems are running OS/EM 6.x.

Users Upgrading From Prior Releases OS/EM Version 6

No upgrade actions are required.

Step 20: Enable OS/EM Support Of ISPF Installation-Wide Exits

To use the OS/EM support of the ISPF installation-wide exits, you must have set the EXITS keyword on the ISPMTAIL macro to YES, or by using the ISPCCONF command to change the ISPDFLTS setting 'Enable ISPF Exits'.

For detailed instructions, refer to the ISPF Planning and Customizing manual, section Tailoring ISPF Defaults.

Also be sure that you do not have a version of ISPEXITS available in a STEPLIB in any ISPF logon procedure, otherwise ISPEXITS will be loaded from the STEPLIB and not from the OS/EM load library. Any exit (and associated data area) coded in your ISPEXITS module must be defined to OS/EM via the Basic Exits function.

Step 21: Activate ISPF Dialog Security

Users who do not wish to activate the OS/EM ISPF Dialog security can skip to Step 22. This step can be done at any time after the installation process.

Prior to activating this feature, refer to "Administration Dialog Security" on page INST-14 and "ISPF Admin Dialog Security" on page RACF-4 to ensure that the appropriate external security profiles are defined.

Edit the OS/EM PARMLIB member QUERY and un-comment the **FEMCNTL SYSTEM** control statement.

```
/* ----------------------------------------------------------------*/
/* UNCOMMENT THE FOLLOWING STATEMENT TO ACTIVATE ADMIN SECURITY    */
/*                                                                 */
/*FEMCNTL SYSTEM ADMINSEC
/* ----------------------------------------------------------------*/
/*                                                                 */
FEMCNTL QUERY ALL
```

Step 22: IPL System

IPL the system. OS/EM will initialize with the parameters you placed in the parmlib members pointed to by the OSEM procedure.

Use the ISPF interface at any time to modify processing options and/or user exits, or to build initialization members that your installation requires.

Step 23: Verify OS/EM Installation

Perform the following tasks to verify that OS/EM has been installed correctly:

1. Review the SYSLOG after the IPL. Ensure that the following message is issued at the completion of the OS/EM subsystem initialization:

    ```
    FEMIPL020 FEMIPL ENDED - RC = xx
    ```

    If this message is not present, the OS/EM subsystem initialization process was not performed.

    - Verify that the correct IEFSSNxx member(s) are being loaded and the OSEM subsystem is correctly defined (installation step 5).
    - Ensure that the OS/EM executable load library is correctly defined the system LNKLST and is APF authorized (if it is not, the subsystem initialization modules will not be executed).
    - Scan the SYSLOG for any error messages relating to the subsystem and LNKLST initialization during IPL.

    Useful MVS commands are:

    ```
    D IPLINFO          to display the basic IPL information
    D SSI              to display the subsystem information
    D PROG,LNKLST      to display the LNKLST and APF status
    ```

    If the subsystem initialization message is present but the return code is not zero, scan the SYSLOG for preceding OS/EM messages that may indicate the cause of the initialization error.

2. The last thing that the OS/EM subsystem initialization process will perform (assuming that initialization is successful) is to start the OSEM started task. The OSEM started task completes the OS/EM initialization process and will terminate once initialization is complete. Users can verify that the initialization process was completed successfully by scanning the SYSLOG for the following message:

    ```
    IEF142I OSEM OSEM - STEP WAS EXECUTED - COND CODE xxxx
    ```

    If this message is not found, browse the SYSLOG for MVS or OS/EM messages that would indicate why the procedure was not invoked. Common errors are JCL errors or the OSEM procedure is not found.

    If the message is found, but the condition code is not zero, the SYSLOG may have other OS/EM messages that will indicate the source of the error(s). There may also be errors parsing the OS/EM initialization statements. Browse the OS/EM IPL.REPORT dataset (pointed to by the SYSTSPRT DD in the OSEM procedure) for any errors in processing the FEMCNTL commands.

    If the message is found and the condition code is zero, the OS/EM system has been successfully initialized.

3. When OS/EM is successfully initialized, it is recommended that the OS/EM IPL.REPORT (pointed to by the SYSTSPRT DD in the OSEM procedure) be browsed to ensure that all the FEMCNTL initialization statements are successfully executed.

    The IPL.REPORT also contains a query report which displays the status of all OS/EM functions. This report should be reviewed to ensure that OS/EM is performing all the functions that the user is expecting.

    Note : The query report in the IPL.REPORT will not reflect the ultimate status of certain functions (e.g. Job Routing, Tape Sharing) because they are initialized after the time that the query is executed. In order to ensure that the query report completely reflects the operational status of OS/EM, users should perform a QUERY ALL function through the OS/EM ISPF administration panel.

Step 24: HSM Optimizer Reports

Refer to the OS/EM Version 6.1 Users Guide for information regarding the initialization and creation of the OS/EM HSM Optimizer Reports.

OS/EM Maintenance

Applying OS/EM Maintenance

OS/EM is installed and maintained with SMP/E. Maintenance is distributed in the form of individual PTFs and Cumulative Service. This maintenance is applied using the standard SMP/E RECEIVE / AP-PLY / ACCEPT process.

OS/EM Maintenance Functions

The OS/EM Maintenance and Installation functions (Option 1 from the OS/EM main menu) provides tools for implementing product maintenance after the PTFs have been applied with SMP/E.

```
 OS/EM --------------- MAINTENANCE AND INSTALLATION -------------- Version 6.1
 SELECTION ===>

                           SYSTEM LEVEL CONTROLS
                  1  Authorization Codes
                  2  Enable/Disable Expiration Warning Message
                  3  Abend Notify TSO IDs
                  4  SMF Recording Record Type Number
                  5  Performance Counts and Timings
                  6  Enable/Disable Execute Online Warning Message
                           MAINTENANCE
                  7  Pending Changes Table Clean-up
                  8  Rebuild OS/EM Tables from Query Function
                  9  SMP/E Functions for OS/EM
                 10  Assemble Offset Table
                 11  Copy SMP/E Libraries to Executable Libraries
                 12  Update Installation Variables
                 13  Verify/Change Generated DSNames
                 14  Update System Tables
                           INSTALLATION
                 15  Create Tables for Version 6.1  (New Install Only)
                 16  Upgrade to OS/EM Version 6.1


  F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel

```

Figure 17.   OS/EM Maintenance & Installation Menu

The following functions are applicable when applying product maintenance:

- **Rebuild OS/EM Tables From Query Function** (option 8) - this function may be required if maintenance affects the ISPF dialogues. Maintenance documentation and/or SMP/E HOLDDATA will indicate whether this function is required.

    Note: If you have valid changes pending, they should be executed prior to using this function, or those changes will be lost. See the "Execute Pending Changes" chapter in the OS/EM User Guide for more information on this process.

```
 OS/EM --------------------- VERIFY REBUILD -------------------- Version 6.1
 COMMAND ===>


  Selecting the REBUILD option will destroy all of the current OS/EM ISPF
  tables and rebuild them from either an existing FULL Query Report or by
  issuing the QUERY command directly.

  If you specify an existing Query Report, be sure that the previous table
  library specified is from the same system as the Query Report.  The previous
  table library will be used to obtain any descriptive information that may
  have been entered.



  Existing Query Report file (may be blank)
    ===>

  Previous Table Library (used only if Query Report specified)
    ===>

  Current Table Library (may not be changed, information only)
    ===> 'SPJRT.OSEM.VER61.SISPTENU'



```

Figure 18.   Verify Rebuild

Field entry is as follows:

1. Enter an existing **Query Report** which will be used in place of executing the query command directly (optional).

    If used, be sure to enclose the DSN in apostrophes (single quotes), otherwise your TSO ID will be appended to the front of the dataset name.

2. If you entered a Query Report DSN, you must also enter the name of the matching table library. If this library is not on shared DASD, make a temporary copy available on the system which will execute the rebuild function.

    Again, use apostrophes to qualify the dataset name.

3. Press **ENTER** to destroy all existing OS/EM ISPF tables and rebuild them based on current storage.

4. Press **PF3** (END) to cancel.

```
OS/EM ----------------- ISPF TABLE REBUILD UTILITY ------------- Version 6.1
COMMAND ===>


   PLEASE WAIT. . . . . . . .

   The OS/EM tables are being rebuilt.

   Generating function:  BASIC

   Depending on the options you have chosen, this process may take some
   time.

   Currently processing member:  FEMTBUJY



Figure 19.  ISPF Table Rebuild Utility
```

Since this process takes several minutes to complete, the above panel is displayed to let you know
what processing is currently being done.

- **SMP/E Functions for OS/EM** (option 9) -

  The SMP/E Functions provide dialogs for applying maintenance to the OS/EM product. This is a simplified form of the standard SMP/E ISPF dialog for the RECEIVE, APPLY and ACCEPT functions.

  It is not mandatory to use these functions to apply OS/EM maintenance (users can use the SMP/E dialogs and/or tailored JCL). However, these dialogs significantly streamline the maintenance process and insure that the correct datasets are used.

```
OS/EM -------------------- SMP/E FOR OS/EM -------------------- Version 6.1
Command ===>



                    1 - Receive SYSMODS and HOLDDATA
                    2 - Apply SYSMODS
                    3 - Accept SYSMODS




 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 20.   SMP/E Functions Menu

Each option will submit a job to complete the SMP/E function. A JOB statement skeleton panel will be presented which will allow the user to tailor the JOB statement, view / edit the JCL stream and submit the job.

```
OS/EM ------------------------ SMP/E RECEIVE -------------------- VERSION 6.1
COMMAND ===>


  Select from the following:
    1 - Submit the Job
    2 - Browse the Job
    3 - Edit the Job


  Job Statement Information: Verify before proceeding

  ===> //ROB6616  JOB (ACCT),'OS/EM RECEIVE',
  ===> //         MSGCLASS=X,CLASS=A,NOTIFY=&SYSUID,REGION=0M
  ===> //*
  ===> //*

 Select option 1 to submit job, or press PF3 (END) to exit.



 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 21.   SMP/E Job Skeleton

1. **Receive SYSMODS and HOLDDATA.** This option will unpack the OS/EM cumulative maintenance dataset (using the TRSMAIN utility) and then SMP/E RECEIVE the PTFs.

```
 OS/EM --------------------- SMP/E RECEIVE ---------------------- Version 6.1
 Command ===>

  Enter the DSN of the file containing HOLDDATA.  This should be the text
  file uploaded to your host and have a RECFM of FB and a LRECL of 80.

  HOLDDATA File       ===> _____


  Enter the DSN of the file containing SYSMODs to be received.  This should be
  the packed file uploaded to your host and have a RECFM of FB and a LRECL of
  1024.

  Cumulative Fix File ===> _____






    F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 22. SMP/E Functions Menu

Enter the fully qualified name of the packed cumulative maintenance dataset and the HOLDDATA dataset. Do not use quotes. All other required datasets (i.e. the load library that has the TRSMAIN utility and the SMP/E CSI) are defined in the installation variables.

The job should complete with a return code of zero. For more information regarding the RE-CEIVE process or for any problem determination procedures, consult the relevant IBM SMP/E references.

2. **Apply SYSMODS.** This option will SMP/E APPLY the received maintenance into the OS/EM target libraries.

```
OS/EM ---------------------- SMP/E APPLY ----------------------- Version 6.1
Command ===>

                            1 -Apply Check

                            2 -Apply


                Bypass system holds? ===> NO    (Yes/No)




 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 23. SMP/E APPLY Maintenance

Select the desired APPLY function and the BYPASS option. It is recommended that an APPLY CHECK is run prior to the APPLY to insure all requisites and HOLD requirements are satisfied.

All required datasets are defined in the installation variables.

The job should complete with a return code of zero (or four if HOLDs are present and have been bypassed). For more information regarding the APPLY process, the CHECK and BYPASS options, or for any problem determination procedures, consult the relevant IBM SMP/E references.

3. **Accept SYSMODS.** This option will SMP/E ACCEPT the received maintenance into the OS/EM distribution libraries.

```
OS/EM ---------------------- SMP/E ACCEPT ---------------------- Version 6.1
Command ===>

                            1 -Accept Check

                            2 -Accept


              Bypass system holds? ===> NO    (Yes/No)






 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel



Figure 24.  SMP/E ACCEPT Maintenance
```

Select the desired ACCEPT function and BYPASS option. It is recommended that an ACCEPT CHECK is run prior to the ACCEPT to insure all requisites and HOLD requirements are satisfied.

All required datasets are defined in the installation variables.

The job should complete with a return code of four. For more information regarding the APPLY process, the CHECK and BYPASS options, or for any problem determination procedures, consult the relevant IBM SMP/E references.

- **Assemble Offset Table** (option 10) - this function generates the OS/EM JES2 and/or JES3 offset tables.

  The JES Offset Table(s) must be generated under the following circumstances:

  - When upgrading releases of OS/EM (this is part of the OS/EM installation dialog)
  - After upgrading releases of JES2 / JES3 or applying maintenance to those products
  - After applying maintenance to OS/EM and PTF HOLDDATA indicates the need to generate the table

  When this option is selected, the user is presented with the following selection menu:

```
OS/EM ----------------- OS/EM JES OFFSET TABLES ---------------- Version 6.1
Option ===>

                      1  Enter Required Libraries
                      2  JES2 Offset Table
                      3  JES3 Offset Table




 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 25.   JES Offset Table Menu

1. **Enter Required Libraries**

    This function defines the MVS and JES libraries that are to be used for the Offset Table generation. These libraries must match the environment on which OS/EM is to run.

    The libraries are defined at installation time but may need to be modified if the Offset Table is being generated for a new environment (e.g. building a new set of SYSRES volumes).

    If the incorrect libraries are used, abends in OS/EM control modules and/or JES modules may result.

```
OS/EM ------------ OS/EM LIBRARIES FOR OFFSET TABLES ------------ VERSION 6.1
COMMAND ===>
                                                           More:      +
 Enter the libraries to be used to assemble the JES offset table.

 Specify libraries:                                         Unit   Volser
 MVS  Macros  ===> SYS1.MACLIB                            _____ _____
 MVS  MODGEN  ===> SYS1.MODGEN                            _____ _____
 TCPIP Macros ===> TCPIP.SEZACMAC                         _____ _____

 JES2 Macros  ===> SYS1.SHASMAC                           _____ _____
 JES2 Source  ===> SYS1.SHASSRC                           _____ _____
 JES2 Load    ===> SYS1.SHASLNKE                          _____ _____

 JES3 Macros  ===> _____ _____ _____

 Use the UNIT and VOLSER fields only if you need libraries not cataloged.
 Specify the SYS1 libraries (the libraries currently active for this IPL) if
 applying OS/EM maintenance, if preparing to apply JES2 maintenance specify
 the SMP/E target libraries (or the libraries which will be used to IPL
 the JES2 updates.)

 The libraries specified here MUST match the libraries which will be used
 at IPL time.  This means if you are preparing to apply JES2 maintenance you
 should enter the library names which contain the updated macros/source/load
 modules.  Then when these libraries are copied to the SYS1 libraries the new
 offset table should be copied at the same time.  Contact Trident Support if
 you have any questions about this procedure.

 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 26.   Library Definitions for JES Offset Table

Enter the appropriate library dataset names that are / will be in effect when OS/EM will be initialized.

MVS Macros	This is the system macro library (normally named SYS1.MACLIB).
MVS MODGEN	This is the SYSGEN or module generation macro library (normally named SYS1.MODGEN).
TCPIP Macros	This is the TCPIP macro library (normally named TCPIP.SEZACMAC).
JES2 Macros	This is the JES2 macro library (normally named SYS1.SHASMAC).
JES2 Source	This is the JES2 source library (normally named SYS1.SHASSRC).
JES2 Load	This is the JES2 link or load library. Depending on the release level of JES2, the library is normally named SYS1.SHASLINK or named SYS1.SHASLNKE).
JES3 Macros	This is the JES3 macro library (normally named SYS1.SIATMAC).

If the JES Offset Table generation is for the current system, the cataloged libraries should be used and so it shouldn't be necessary to enter anything in the UNIT and VOLSER fields.

If the JES Offset Table generation is for a new environment using different SYSRES volumes, the UNIT and VOLSER fields must point to the new volumes to be used when the system is IPLed.

When the JES Offset Table menu options 2 or 3 are selected, the user is presented with a skeleton JOB JCL statement that can be modified prior to submitting the Offset Table generation job.

```
OS/EM ------------------- CREATE JES2 OFFSET TABLE -------------- VERSION 6.1
COMMAND ===>


  Select from the following:
    1 - Submit the Job
    2 - Browse the Job
    3 - Edit the Job


  Job Statement Information: Verify before proceeding

  ===> //ROB6616  JOB (ACCT),'JES2 OFFSET TABLE',
  ===> //         MSGCLASS=X,CLASS=A,NOTIFY=&SYSUID,REGION=0M
  ===> //*
  ===> //*

 Select option 1 to submit job, or press PF3 (END) to exit.



  F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap    F12=Cancel
```

Figure 27. JES Offset Table JOB Statement

VERY IMPORTANT

- The generation job should complete with a maximum return code of one (1) for the JES2 offset table or zero (0) for the JES3 offset table.

- For JES2, the offset table is a load module with the name FEMJ2OFx where x is a suffix that is specific to the release of JES2 that is running on that system.

- For JES3, the offset table is a load module with the name FEMJ3OFF.

- If your installation uses multiple JES systems with different release or maintenance levels, the JES offset table must be generated on each of these systems.

- OS/EM will analyze the JES Offset Table during initialization and will issue warning or error messages if it detects a mismatch between the table and the current JES environment.

- S0C1 & S0C4 abends during JES initialization are very often caused by OS/EM loading a JES Offset Table that was not assembled under the current JES environment. The query report in the IPL.REPORT dataset (pointed to by the SYSTSPRT DD in the OSEM initialization procedure) displays the assembly date and source load library for the Offset Table (FEMJ2OFx or FEMJ3OFF) that was loaded by OS/EM.

- The JES Offset Tables are bound into the OS/EM target LINKLIB. When generating these tables for an existing OS/EM 6.1 environment **the load module(s) must be copied into the executable LINKLIB and then reloaded.** Refer to "Copy SMP/E Libraries to Executable Libraries" and "Implementing OS/EM Maintenance" in this chapter).

- **Copy SMP/E Libraries to Executable Libraries** (option 11) - this function copies the contents of the selected SMP/E target libraries to the corresponding executable libraries. This must be performed whenever maintenance is to be implemented on the operational system.

```
 OS/EM ------------- COPY SMP/E TARGET TO EXECUTABLE ------------- Version 6.1
 COMMAND ===>

 Select the libraries to be copied, the libraries may be optionally
 compressed.  Also LLA may be refreshed for the LINKLIB.

 SMP/E TARGET LIBRARY             EXECUTABLE LIBRARY          CMPRS COPY REFR
 SYS4T.HOSM610.LINKLIB                                          _    Y    Y
                            --> SYS4.OSEM.LINKLIB
 SYS4T.HOSM610.SISPMENU                                         _    _
                            --> SYS4.OSEM.SISPMENU
 SYS4T.HOSM610.SISPPENU                                         Y    Y
                            --> SYS4.OSEM.SISPPENU
 SYS4T.HOSM610.SISPSENU                                         _    _
                            --> SYS4.OSEM.SISPSENU
 SYS4T.HOSM610.SISPEXEC                                         _    _
                            --> SYS4.OSEM.SISPEXEC


 Enter CSVLLA Suffix for 'F LLA,UPDATE=xx' command ===>  61  (Used if REFR=Y)



 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down   F9=Swap   F12=Cancel
```

Figure 28.   Copy SMP/E Libraries

The selection columns are :

CMPRS   Enter **Y** if you want to compress the selected executable library prior to copying the contents of the corresponding target library.

COPY   Enter **Y** if you want to copy the selected target library to the corresponding executable library.

REFR   This applies only to the executable load library. Enter **Y** and specify the appropriate suffix for the system PARMLIB CSVLLAxx member if you wish to refresh the Library Lookaside (LLA) after the executable load library has been copied.

Once the appropriate libraries have been selected, pressing **PF3** will result in the JCL JOB statement selection panel being presented. Make the necessary changes and submit the job (option 1).

Note:

- The copies of ISPF libraries are performed with DISP=OLD for the executable libraries. This will mean that the copy will not start if the OS/EM ISPF dialog is in use.

- **Update Installation Variables** (option 12) - this function allows the user to make changes to the OS/EM Installation Variables that were set during the initial installation of the product. Alterations to these variables will affect the operation of the OS/EM Maintenance functions.

  Changes made to the installation variables will affect the JCL that is submitted for the maintenance functions (e.g. JES Offset Table generation).

  The principal purpose of this function is to allow the user to change executable library definitions. This permits the maintenance of multiple iterations of the OS/EM system libraries from the one ISPF environment.

```
OS/EM --------------- OS/EM Installation Variables --------------- Version 6.1
COMMAND ===>

     Library Type              High Level Qualifier      Product Qualifier
  SMP/E Libraries          ===> MVS$SMP             ===> HOSM610
  Distribution Libraries   ===> SYSA                ===> HOSM610
  Target Libraries         ===> SYS2A               ===> HOSM610
  Executable Libraries     ===> SYS2                ===> OSEM.HOSM610
    OS/EM LINKLIB (optional) ===> SYS1              ===> OSEM.HOSM610
  SMP/E Relfile Prefix     ===> SYS2A.REL
  SMP/E Zone Names:  TARGET ===> OSEMTGT        DLIB ===> OSEMDLB

  Unit and Volume Names:
    SMP/E Unit      ===> SYSDA     Volume ===> SMS001
    DLIB Unit       ===> SYSDA     Volume ===>
    TLIB Unit       ===> SYSDA     Volume ===>
    Executable Unit ===> SYSDA     Volume ===>
     LINKLIB Unit   ===> SYSDA     Volume ===> OS39M1  (If blank exec used)
    Work File Unit  ===> SYSDA


  Press END to enter required system library names.
  F1=Help    F2=Split   F3=Exit    F7=Up     F8=Down    F9=Swap   F12=Cancel
```

Figure 29. OS/EM Installation Variables

Notes:

- The High Level Qualifier and Product Qualifier specifications can have multiple nodes (e.g. OSEM.VER610). Do not end either of these qualifiers with a period (.).

- The OS/EM LINKLIB definitions for the DSN, Unit & Volume names are optional fields and are used if the user requires a different dataset specification from the other executable library parameters. For example, the user may have a requirement to locate the OS/EM LINKLIB in the master catalog but keep the other libraries in a user catalog.

  If these fields are left blank, the Executable Library name specifications will be used for the OS/EM LINKLIB.

- The SMP/E Unit and Volume specifications are required. The Unit and Volume specifications for the distribution, target, executable and work datasets are optional when there is SMS dataset management.

Very Important:

Use extreme caution when modifying SMP/E, target and distribution library specifications. This dialog does not change dataset & library definitions defined within SMP/E (i.e. DDDEF entries for the OS/EM system). Problems when attempting to maintain the OS/EM system are likely if there is a mismatch between these installation variables and the SMP/E environment.

Pressing PF3 will display the OS/EM Required System Libraries panel.

```
OS/EM --------------- OS/EM Installation Variables --------------- Version 6.1
COMMAND ===>

Enter fully qualified dataset names.  Quotes are allowed but ignored.
                                                           Unit    Volser
OS/EM Install File: SYS2A.HOSM610.DIST                   _____ _____

TRSMAIN Library:    _____ _____ _____

COBOL SCEELKED:     CEE.SCEELKED
MVS MACLIB:         SYS1.MACLIB                           _____ _____
MVS MODGEN:         SYS1.MODGEN                           _____ _____
TCPIP SEZACMAC:     TCPIP.SEZACMAC                        _____ _____

JES2 SHASMAC:       SYS1.SHASMAC                          _____ _____
JES2 SHASSRC:       SYS1.SHASSRC                          _____ _____
JES2 SHASLNKE:      SYS1.SHASLINK                         _____ _____

JES3 SIATMAC:       _____ _____ _____

Press HELP to determine which libraries should be used here.


 F1=Help    F2=Split   F3=Exit    F7=Up      F8=Down    F9=Swap   F12=Cancel
```

Figure 30.   OS/EM Installation Variables

Notes:

- Dataset name specifications are fully qualified. Any quotes (') are ignored.

- The TRSMAIN Library DSN is optional. If the field is left blank than it is assumed that the TRSMAIN load module is located in a library defined to the LNKLST.

- The system libraries are:

  MVS Macros   This is the system macro library (normally named SYS1.MACLIB).

  MVS MODGEN   This is the SYSGEN or module generation macro library (normally named SYS1.MODGEN).

  TCPIP Macros   This is the TCPIP macro library (normally named TCPIP.SEZACMAC).

  JES2 Macros   This is the JES2 macro library (normally named SYS1.SHASMAC).

  JES2 Source   This is the JES2 source library (normally named SYS1.SHASSRC).

  JES2 Load   This is the JES2 link or load library. Depending on the release level of JES2, the library is normally named SYS1.SHASLINK or named SYS1.SHASLNKE).

  JES3 Macros   This is the JES3 macro library (normally named SYS1.SIATMAC).

  The Unit and Volser fields are not required if the dataset is cataloged. The information may be necessary if the product is being installed on a new SYSRES volume (i.e. not the current SYSRES).

- **Verify/Change Generated DSNames** (option 13) - this function allows the user to review and/or alter any of the dataset names that are to be used by the OS/EM maintenance functions.

```
OS/EM-------------- Verify/Change Generated DSNames -------- Row 1 to 15 of 42
 Command ===>                                              Scroll ===> CSR

Overtype Dataset name to update entry.  Enter HELP for more information and an
explanation of the  'C' column codes of blank, 'C' and 'F'.

Type      Description               Dataset Name                          C
CSI       SMP/E GLOBAL CSI          MVS$SMP.HOSM610.GLOBAL.CSI
SMPLOG    SMP/E LOG FILE            MVS$SMP.HOSM610.GLOBAL.SMPLOG
SMPLOGA   SMP/E LOG FILE            MVS$SMP.HOSM610.GLOBAL.SMPLOGA
SMPPTS    SMP/E PTS LIBRARY         MVS$SMP.HOSM610.GLOBAL.SMPPTS
AISPEXEC  DLIB REXX LIBRARY         SYSP.HOSM610.AISPEXEC
AISPMENU  DLIB MESSAGE LIBRARY      SYSP.HOSM610.AISPMENU
AISPPENU  DLIB PANEL LIBRARY        SYSP.HOSM610.AISPPENU
AISPSENU  DLIB SKELETON LIBRARY     SYSP.HOSM610.AISPSENU
AISPTENU  DLIB TABLE LIBRARY        SYSP.HOSM610.AISPTENU
AOBJLIB   DLIB OBJECT MODULES       SYSP.HOSM610.AOBJLIB
ASAMPLIB  DLIB SAMPLE LIBRARY       SYSP.HOSM610.ASAMPLIB
ASEMLENU  DLIB BOOKMGR BOOKS        SYSP.HOSM610.ASEMLENU
ASEMOENU  DLIB BOOKMGR SHELVES      SYSP.HOSM610.ASEMOENU
ASEMXENU  DLIB BOOKMGR INDEXES      SYSP.HOSM610.ASEMXENU
SMPLOG    SMP/E DLIB LOG FILE       SYSP.HOSM610.SMPLOG
 F1=HELP      F2=SPLIT     F3=END       F4=RETURN    F5=RFIND      F6=RCHANGE
 F7=UP        F8=DOWN      F9=SWAP      F10=LEFT     F11=RIGHT     F12=RETRIEVE
```

Figure 31.   Verify/Change OS/EM Datasets

- Scroll through the datasets using the Up / Down PF keys (PF7 / PF8).

- Dataset names can be changed by overtyping the dataset name field and pressing enter.

- A changed DSN can be restored to the original specification by blanking out the dataset name field.

- The **C** column on the right hand side of the panel indicates the change status of the dataset:

  blank   The dataset name is defined via the standards defined by the installation variables.
  C   The dataset name has been changed through this panel.
  F   The dataset name is not defined by the installation variables, but is explicitly defined during installation and/or maintenance.

Refer to the cautionary notes above relating to updating installation variables.

- **Update System Tables** (option 14) - this option is used to update OS/EM system tables that have been affected by maintenance to the product.

  This option only needs to be used when specifically instructed in SMP/E HOLDDATA for the affecting PTF(s).

  The following panel is an example of options that could be listed following maintenance.

```
OS/EM ------------------ UPDATE SYSTEM TABLES ------------------ Version 6.1
SELECTION ===>


          UK00620    1  OS/EM System Modules Reload Table

          UK00620    2  Job Routing Message Substitution Table









  F1=HELP     F2=SPLIT     F3=END       F4=RETURN    F5=RFIND     F6=RCHANGE
  F7=UP       F8=DOWN      F9=SWAP      F10=LEFT     F11=RIGHT    F12=RETRIEVE

```

Figure 32.   Update System Tables

- The PTF causing the necessary update is listed next to each selection.

- Select each option in turn to update the changed system table.

- After the system table has been rebuilt, the selection option will remain. If it is selected subsequently, a message will be displayed indicating that the table is at the appropriate maintenance level.

Implementing OS/EM Maintenance

The SMP/E target libraries that need to be copied will be dependent upon what members are affected by the maintenance that was applied. Users should check the SMP/E APPLY output to determine the affected libraries. If the maintenance affects a large number of members (e.g. cumulative maintenance that has a multiple PTFs), it may be more prudent to copy all libraries to insure that the maintenance is properly implemented.

PTFs that require special actions (e.g. an IPL, JES Offset Table generation, Table Library rebuild) will be indicated through maintenance documentation and/or PTF HOLDDATA. Users must insure that all actions are performed. Failure to do so could result in improper operation of the OS/EM environment.

Important Notes:

- If the JES Offset Table must be generated, this must be performed **before** copying the OS/EM load library.
- If the ISPF Table Library must be rebuilt, this must be performed **after** copying the OS/EM libraries.

If maintenance requires an IPL, it is recommended that the libraries be copied immediately prior to system termination.

When applying maintenance that does not require an IPL and OS/EM load modules are affected, the following procedure is recommended after the libraries have been copied:

- Ensure that the Library Lookaside (LLA) is refreshed by selecting the REFR option for the library copy.

- Reload the affected OS/EM system modules. This is done through the OS/EM ISPF Management Dialogue:

  1. Select **Reload Exits** at the primary menu
  2. Select **OS/EM System Modules**
  3. Place an 'S' next to the updated modules & press Enter
  4. Press **PF3** to execute the reloads

  IMPORTANT

  - OS/EM has a number of JES2 modules that are specific to the release of JES. These modules have the eighth byte of the module name as the release suffix. For example, the OS/EM system module FEMJ2GM will use FEMJ2GMx where x is the release-specific suffix (e.g. FEMJ2GMP). The user does not need to know which specific module needs to be loaded - OS/EM will do that automatically. For these JES2 load modules, the OS/EM System Modules list will contain only the 7 byte module name.

  - If an updated module is not in the OS/EM Systems Modules list, it means that it is not a memory-resident routine and, therefore, does not need to be reloaded.

Applying JES Maintenance

Any time that JES maintenance is applied, it is recommended that OS/EM maintenance is also applied because the two products are closely linked. Contact OS/EM support to obtain the latest maintenance for the product.

Whenever JES system maintenance is applied, the OS/EM JES Offset Table must be regenerated. This is done through the Maintenance and Installation function of the OS/EM ISPF dialogue (Option 1).

After the JES offset table is generated, it will need to copied from the OS/EM target LINKLIB into the executable LINKLIB.

Using Secondary JES2 Subsystems

Whenever you install a new version of JES2, and this release will operate as a secondary JES subsystem, you **MUST** use the ISPF interface and update the JES2 version number. Select option 6 **Set JES Name** on the Primary Option Menu and specify the version of JES you will be using. Once this is updated, select option 8 **Build Initialization Member** and select the following items:

- Basic Exit Functions

    - JES2

- Extended Functions

    - JCL
    - JOB
    - JOBR
    - TIME

Notes:

- This process should be done before you IPL with your new JES2 system or unpredictable results may occur requiring another IPL or a restart of JES2.

- This process is only relevant for secondary JES2 subsystems. The JES2 release information, if specified, is ignored for the primary JES subsystem and the release information is determined from the JES2 system during OS/EM initialization.

OS/EM External Security Profiles Summary

This is a summary of the external security profiles that OS/EM will use when the optional security functions are enabled.

Job Class Checking

> JOBCLASS.x

All JOBCLASS profiles are defined to the FACILITY class (IBMFAC for CA-TopSecret).

Operating System and JES2 Command Checking

COMMAND.*	Generic profile for all operating system commands
COMMAND.cmd	'cmd' must be full command verb (e.g. MOUNT)
JES2.*	Generic profile for all JES2 commands
JES2.$cmd	'cmd' is the single-character command (excluding ADD, DEL, TRACE & VS)

All command profiles are defined to the FACILITY class (IBMFAC for CA-TopSecret).

OS/EM JES2 Command Checking

The following table lists the OS/EM JES2 commands and the associated security resource and access authority required.

Command	Resource Name	Authority
$DB	jesx.DISPLAY.OSEM	READ
$DC	jesx.DISPLAY.OSEM	READ
$DP	jesx.DISPLAY.OSEM	READ
$DRESOURCE	jesx.DISPLAY.OSEM	READ
$LF	jesx.DISPLAY.OSEM	READ
$LN	jesx.DISPLAY.OSEM	READ
$LQ	jesx.DISPLAY.OSEM	READ
$QA	jesx.ADD.OSEM	CONTROL
$QD	jesx.DELETE.OSEM	CONTROL
$Q'	jesx.MODIFY.OSEM	UPDATE
$QJ	jesx.MODIFY.OSEM	UPDATE

jesx is the JES2 subsystem name.

All command profiles are defined to the OPERCMDS class.

JCL & SYSOUT Parameter Checking

Users can optionally define the security class and profile names to be checked when controlling the use of JCL & SYSOUT parameters. Refer to the JCL Controls section of the OS/EM User's Guide for more information regarding this option.

If the class and profile names are not defined, the following FACILITY class (IBMFAC for CA-TopSecret) profiles will be used:

    JCL.parm.value

where valid 'parm' values are:

    ACCTx (x = 1 through 6)
    ADDRSPC
    DATACLASS
    DDNAMES
    DPRTY
    EXPDT
    MGMTCLASS
    PERFORM
    PROTECT
    PRTY
    RETPD
    STORCLASS
    SUBSYS
    TIME (valid values are MAXIMUM, 1440, NOLIMIT & HIGH)
    UNIT
    USERLIB

BURST
CHARS
COPIES
DEST
FCB
FLASH
FORM
FORMDEF
MODIFY
MSGCLASS
OUTPRTY
PAGEDEF
PRMODE
SYSOUT
UCS
WRITER

FEMCNTL Command Security

External security can be used to secure the FEMCNTL functions. The FEMCNTL utility is used to enable / disable / alter OS/EM functions and user exits.

> FEMCNTL.sysid.command

where valid 'command' values are:

*	Generic profile for all FEMCNTL commands
ACF2	OS/EM ISPF Dialog security for CA-ACF2 users
ALLOC	Device allocation functions and user exits
CODE	OS/EM Authorization Code functions
DASD	DSN and Volume Group functions
DASDCNTL	DASD Quickpool functions and IGGPRE00 & IGGPOST0 user exits
DUMP	OS/EM Dump functions
HSM	HSM Optimizer functions and DFSMShsm user exits
ISPF	ISPF functions and user exits
JES2	JES2 functions and user exits
JES3	JES3 user exits
MISC	Miscellaneous functions
POOL	OS/EM Quickpool functions
QUERY	OS/EM Query function
RACF	RACF functions, OS/EM ISPF Dialog security for RACF users and user exits
RELOAD	OS/EM & user exit load module load / reload functions
SAF	SAF user exits
SMF	SMF functions and user exits
SVC	SVC Delete / Replace functions
SYSTEM	OS/EM general system functions
TOPS	OS/EM ISPF Dialog security for CA-TopSecret users
TSO	TSO functions and user exits

All function profiles are defined to the FACILITY class (IBMFAC for CA-TopSecret).

ISPF Admin Dialog Security

External security can be used to secure the ISPF Administration dialog functions. The profile names have the structure

OSEM.sysid.ADMIN.function

where sysid is the SMF system name (defined in the SID parameter of the SMFPRMxx PARMLIB member).

The 'function' name is hierarchical in structure to allow flexible security by functional group with generic profiles. For example:

OSEM.sysid.ADMIN.*   Profile for all ISPF administration functions

OSEM.sysid.ADMIN.MAINT.*   Profile for ISPF administration Maintenance functions

Valid 'function' values are:

MAINT.AUTH.CODE	Option 1.1
MAINT.ENABLE.EXPIRE.MSG	Option 1.2
MAINT.NOTIFY.GROUPS	Option 1.3.1
MAINT.NOTIFY.ALLOC	Option 1.3.2
MAINT.NOTIFY.DASD	Option 1.3.3
MAINT.NOTIFY.HSM	Option 1.3.4
MAINT.NOTIFY.ISPF	Option 1.3.5
MAINT.NOTIFY.JES2	Option 1.3.6
MAINT.NOTIFY.JES3	Option 1.3.7
MAINT.NOTIFY.MISC	Option 1.3.8
MAINT.NOTIFY.RACF	Option 1.3.9
MAINT.NOTIFY.SAF	Option 1.3.10
MAINT.NOTIFY.SMF	Option 1.3.11
MAINT.NOTIFY.TSO	Option 1.3.12
MAINT.NOTIFY.OSEM	Option 1.3.13
MAINT.NOTIFY.USER	Option 1.3.14
MAINT.SMF.RECORD.NUMBER	Option 1.4
MAINT.PERF.COUNTS	Option 1.5
MAINT.ENABLE.WARN.MSG	Option 1.6
MAINT.PEND.CHG.CLEANUP	Option 1.7
MAINT.REBUILD.TABLES	Option 1.8
MAINT.OFFSET.LIBS	Option 1.10.1
MAINT.JES2.OFFSET	Option 1.10.2
MAINT.JES3.OFFSET	Option 1.10.3
MAINT.COPY.SMPE2EXEC	Option 1.11
MAINT.INST.VARIABLES	Option 1.12
MAINT.GEN.DSNAMES	Option 1.13
MAINT.CREATE.TABLES	Option 1.15
MAINT.UPGRADE.TABLES	Option 1.16
BASIC.JES2.EXITS	Option 2.1
BASIC.JES3.EXITS	Option 2.2
BASIC.MVS.EXITS	Option 2.3
DEFINE.DSN.GROUPS	Option 3.1
DEFINE.VOL.GROUPS	Option 3.2
HSM.BKUP	Option 3.3.1
HSM.DEFRAG	Option 3.3.2
HSM.DBA	Option 3.3.3
HSM.DBU	Option 3.3.4
HSM.DIRECT.ML2	Option 3.3.5
HSM.EARLY.RECALL	Option 3.3.6
HSM.DSORG	Option 3.3.7

HSM.MIG	Option 3.3.8
HSM.ML2	Option 3.3.9
HSM.PRTY.REQUESTS.SYS	Option 3.3.10.1
HSM.PRTY.RECALL.REQS	Option 3.3.10.2
HSM.PRTY.RECOVER.REQS	Option 3.3.10.3
HSM.QUICK.DELETE	Option 3.3.11
HSM.REBLOCK	Option 3.3.12
HSM.RECALL.VOL.SELECT	Option 3.3.13
HSM.REPORTS	Option 3.4.1
HSM.SMF.COLLECT	Option 3.4.2
HSM.DEFINE.REPT.FILES	Option 3.4.3
ISPF.PREFIX	Option 3.5
JCL.ACCOUNT.NUMBERS	Option 3.6.1
JCL.EZPROC	Option 3.6.2
JCL.JOB.CLASS.CHECKING	Option 3.6.3.1
JCL.JOB.NAME.CHECKING	Option 3.6.3.2
JCL.FORCE.OPEN	Option 3.6.4
JCL.OTHER.ADDRSPC	Option 3.6.5.1
JCL.OTHER.DATACLASS	Option 3.6.5.2
JCL.OTHER.DDNAMES	Option 3.6.5.3
JCL.OTHER.DPRTY	Option 3.6.5.4
JCL.OTHER.EXPDT	Option 3.6.5.5
JCL.OTHER.MGMTCLASS	Option 3.6.5.6
JCL.OTHER.PERFORM	Option 3.6.5.7
JCL.OTHER.PROTECT	Option 3.6.5.8
JCL.OTHER.PRTY	Option 3.6.5.9
JCL.OTHER.RETPD	Option 3.6.5.10
JCL.OTHER.STORCLASS	Option 3.6.5.11
JCL.OTHER.SUBSYS	Option 3.6.5.12
JCL.OTHER.TIME	Option 3.6.5.13
JCL.OTHER.UNIT	Option 3.6.5.14
JCL.OTHER.USERLIB	Option 3.6.5.15
JCL.STEPLIB.SYSTEM	Option 3.6.6.1
JCL.STEPLIB.SEL.LISTS	Option 3.6.6.2
JCL.SYSOUT.BURST	Option 3.6.7.1
JCL.SYSOUT.CHARS	Option 3.6.7.2
JCL.SYSOUT.COPIES	Option 3.6.7.3
JCL.SYSOUT.DEST	Option 3.6.7.4
JCL.SYSOUT.FCB	Option 3.6.7.5
JCL.SYSOUT.FLASH	Option 3.6.7.6
JCL.SYSOUT.FORM	Option 3.6.7.7
JCL.SYSOUT.FORMDEF	Option 3.6.7.8
JCL.SYSOUT.MODIFY	Option 3.6.7.9
JCL.SYSOUT.MSGCLASS	Option 3.6.7.10
JCL.SYSOUT.OUTPRTY	Option 3.6.7.11
JCL.SYSOUT.PAGEDEF	Option 3.6.7.12
JCL.SYSOUT.PRMODE	Option 3.6.7.13
JCL.SYSOUT.SYSOUT	Option 3.6.7.14
JCL.SYSOUT.UCS	Option 3.6.7.15
JCL.SYSOUT.WRITER	Option 3.6.7.16
JCL.TAPE.CONTROLS	Option 3.6.8
JCL.VIRTUAL.STORAGE	Option 3.6.9
JOB.ADD.NOTIFY	Option 3.7.1
JOB.CONTROL.JES2.CMDS	Option 3.7.2
JOB.CONTROL.MVS.CMDS	Option 3.7.3
JOB.DSN.CONFLICT.RESOL	Option 3.7.4
JOB.JOB.STEP.NOTIFY	Option 3.7.5
JOB.LIMITS.BY.USER	Option 3.7.6.1
JOB.PROGRAM.LIMITS	Option 3.7.6.2

JOB.JOB.START.MESSAGE	Option 3.7.7
JOB.JOB.STEP.STATISTICS	Option 3.7.8
JOB.NOT.CATALOGED2	Option 3.7.9
JOB.REFORMAT.JOB.ACCT	Option 3.7.10
SET.JES.NAME	Option 3.7.11
JOB.SURROGATE.PASSWORDS	Option 3.7.12
JOB.SYSOUT.EXTEND.JES2	Option 3.7.13.1
JOB.SYSOUT.EXTEND.OUTLM	Option 3.7.13.2
JOB.TSO.LOGOFF.STATS	Option 3.7.14
JOB.VERIFY.USER.RACF	Option 3.7.15
JOB.VERIFY.USER.JOBNAME	Option 3.7.16
JOBROUTE.SYSTEM.LEVEL	Option 3.8.1
JOBROUTE.JECL.DEFAULTS	Option 3.8.2
JOBROUTE.MSG.SUB	Option 3.8.3
JOBROUTE.ROUTING.GROUPS	Option 3.8.4
JOBROUTE.CHANGE.JOBCLS	Option 3.8.5
JOBROUTE.CHANGE.SCHENV	Option 3.8.6
JOBROUTE.CHANGE.SRVCLS	Option 3.8.7
JOBROUTE.CHANGE.XEQNODE	Option 3.8.8
SET.JES.NAME	Option 3.8.9
MISC.ACF2.NONCANCEL	Option 3.9.1
MISC.CATALOG.ACCOUNT	Option 3.9.2
MISC.ESTIMATED.COSTS	Option 3.9.3
MISC.SMF.DUMP	Option 3.9.4.1
MISC.SMF.DUMP.IEFU29L	Option 3.9.4.2
MISC.TSO.PGM.INTERCEPT	Option 3.9.5
MISC.WTO	Option 3.9.6
QUICKPOOL.DASD.ALLOC	Option 3.10.1
QUICKPOOL.RULES	Option 3.10.2
RACF.DISCRETE.PROFILES	Option 3.11.1
RACF.EXTERNAL.TAPE	Option 3.11.2
RACF.RESTRICT.PASSWORD	Option 3.11.3
RESTRICT.DEVICES	Option 3.12
SVC.REPLACE	Option 3.13
TAPESHR.SYSTEM.LEVEL	Option 3.14.1
TAPESHR.DEVICE.LEVEL	Option 3.14.2
TIME.JOB.TIME	Option 3.15.1
TIME.SYSTEM.LEVEL	Option 3.15.2
TIME.SELECTION.LISTS	Option 3.15.3
QUERY.STATUS	Option 4
RELOAD.JES2.USER.MODS	Option 5.1
RELOAD.JES3.USER.MODS	Option 5.2
RELOAD.MVS.USER.MODS	Option 5.3
RELOAD.SYSTEM.MODS	Option 5.4
RELOAD.RACF.TABLES	Option 5.5
SET.JES.NAME	Option 6
XEQ.PENDING.CHANGES	Option 7
BUILD.INIT.MEMBER	Option 8

All administration function profiles are defined to the FACILITY class (IBMFAC for CA-TopSecret).

Other RACF Resources

Resource Name	Description
DISCRETE.PROFILE.class	These resources are used by the RACF Discrete Profiles function to control the definition of discrete profiles. 'class' is the name of the resource class that is being controlled. READ access permits a user to create discrete profiles. See 'RACF Discrete Profiles' in the OS/EM User Guide. This is a FACILITY class resource.
EXTERNAL.TAPE	This resources is used by the External Tape Controls function to allow users to open datasets that have no defined profile. the resource class that is being controlled. READ access permits a user to open external datasets. See 'External Tape Control' in the OS/EM User Guide. This is a FACILITY class resource.

User Defined Resources

The following OS/EM functions use external security resources, the names of which are defined by the user.

OS/EM Function	Description
Job Limiting	External security can be used to allow users to bypass the job limiting controls. READ access to the defined resource will permit a user to execute more concurrent jobs than may be allowed by the job limiting rules. This resource is optional. If it is not defined all users' jobs will be subject to the job limiting controls. See 'Job Limits By User' in the OS/EM User Guide. Example - BYPASS.JOB.LIMITS
SYSOUT Extensions	External security can be used to grant SYSOUT extensions when the output limits are exceeded. Read access to the defined resource will grant SYSOUT extensions to the user's job (the size of the extension is defined in the SYSOUT Extension Controls). This resource is optional. If it is not defined all users' jobs will be subject to the SYSOUT extension controls. See 'SYSOUT Extensions' in the OS/EM User Guide. Example - EXTEND.SYSOUT
Time Extensions	External security can be used to grant CPU and/or wait time extensions when the job / step / wait time limits are exceeded. Read access to the defined resource(s) will grant CPU or wait extensions to the user's job / step. (the size of the extension is defined in the Time Extensions System Level Controls. These resources are optional. If they are not defined all users' jobs will be subject to the Time extension controls. See 'SYSOUT Extensions' in the OS/EM User Guide. Example - EXTEND.JOBCPU, EXTEND.STEPCPU, EXTEND.WAIT

All User Defined profiles are defined to the FACILITY class (IBMFAC for CA-TopSecret).

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