z/OS Introduction and Workshop

SMP/E

Unit Objectives

After completing this unit, you should be able to:

- Describe SMP/E

- Describe SYSMOD

- List 4 Types of SYSMODs

- Describe Global Zone

- Describe Target and Distribution Libraries

- List 4 SMP/E Commands for Managing Software Maintenance

What is SMP/E?

SMP/E (System Management Program / Extended) is the basic tool for installing and maintaining software in z/OS.

SMP/E controls these changes at the **"element"** level by:

➢Selecting the elements to be installed from a large number of potential changes

➢Calling system utility programs to install the changes

➢Keeping records of the installed changes

SMP/E can be run either using

➢Batch jobs (JCL)

➢Dialogs (panels) under ISPF

SMP/E Terminology

The combination of **elements** and **control information** is called a system modification, or *SYSMOD*.

There are four types of **SYSMOD**s:

1) Function SYSMODs (or functions) I

Introduce a new product, a new version or release of a product, or updated functions for an existing product into the system

2) PTFs

Tested fixes for reported problems

3) APARs

Authorized program analysis reports (APARs) are temporary fixes designed to fix or bypass a problem for the first reporter of the problem

4) User modifications (USERMODs)

SYSMODs built by you, either to change IBM code or to add independent functions to the system
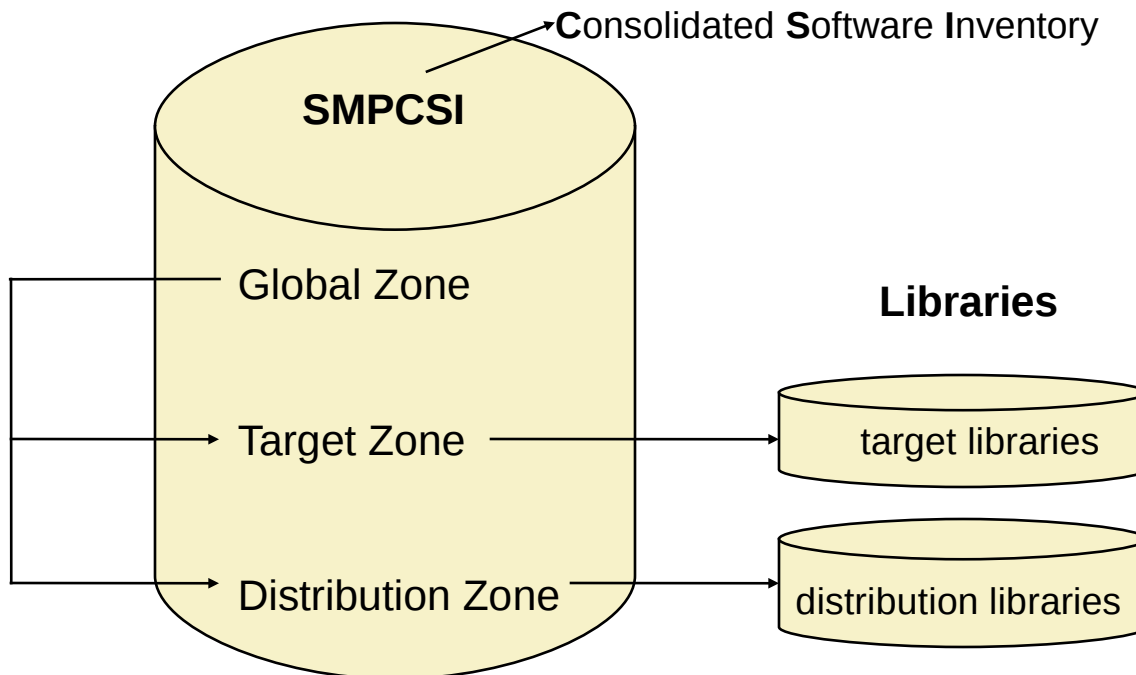
SMP/E Data Sets

Data sets used by SMP/E

Target libraries contain the executable code needed to run your system

Distribution libraries (DLIBs) contain the master copy of each element for a system.
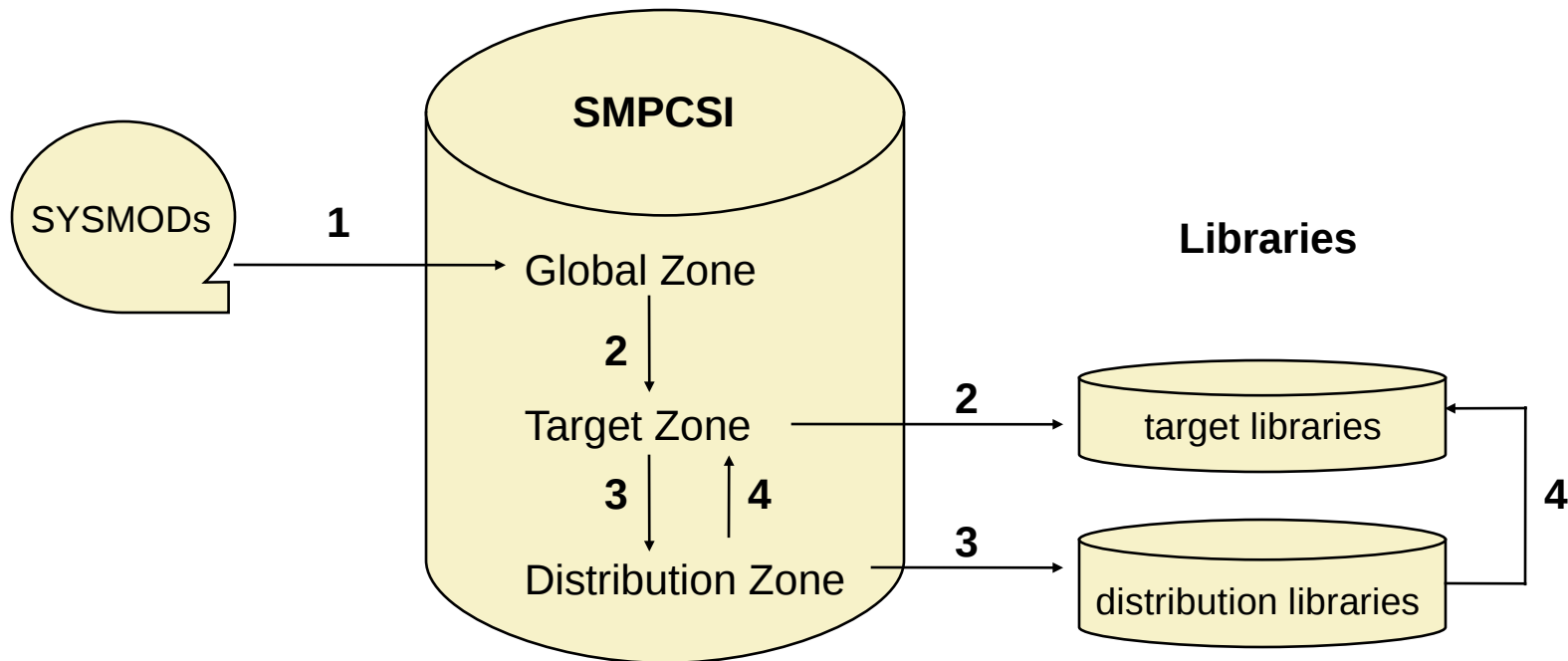
SMPCSI (CSI) data sets are Virtual Sequential Access Method (VSAM) data sets used to control the installation process and record the results of processing.

Consolidated **S**oftware **I**nventory

SMPCSI

Global Zone

Libraries

Target Zone ——————→ target libraries

Distribution Zone ——————→ distribution libraries

SMP/E Command Processing

Commands used by SMP/E

1) RECEIVE – reads sysmods into SMP data sets

2) APPLY – updates target libraries with sysmods

3) ACCEPT – updates distribution libraries making changes permanent

4) RESTORE – remove sysmod from the system (only before **ACCEPT** of sysmod)

SMPCSI

SYSMODs

1

Global Zone

2

Target Zone

3   **4**

Distribution Zone

Libraries

2

target libraries

3

distribution libraries

4

SMP/E Dialogs (Panels)

```
--------------------- SMP/E PRIMARY OPTION MENU ---------------- SMP/E 35.44
===> □

    0    SETTINGS            - Configure settings for the SMP/E dialogs
    1    ADMINISTRATION      - Administer the SMPCSI contents
    2    SYSMOD MANAGEMENT   - Receive SYSMODs and HOLDDATA
                               and install SYSMODs
    3    QUERY               - Display SMPCSI information
    4    COMMAND GENERATION  - Generate SMP/E commands
    5    RECEIVE             - Receive SYSMODs, HOLDDATA and
                               support information
    6    MIGRATION ASSISTANT - Generate Planning and Migration Reports
    7    ORDER MANAGEMENT    - Manage ORDER entries in the global zone

    D    DESCRIBE            - An overview of the dialogs
    T    TUTORIAL            - Details on using the dialogs
    W    WHAT IS NEW         - What is New in SMP/E

Specify the name of the CSI that contains the global zone:
   SMPCSI DATA SET    ===>
(Leave blank for a list of SMPCSI data set names.)

Specify YES to have DD statements for SYSOUT and temporary
data sets generated. Specify NO, to use DDDEFs.
   Generate DD statements   ===> NO
```

SMP/E Dialogs (Panels)

```
-------------------- SMP/E PRIMARY OPTION MENU --------------- SMP/E 35.44
===> 3

   0    SETTINGS             - Configure settings for the SMP/E dialogs
   1    ADMINISTRATION       - Administer the SMPCSI contents
   2    SYSMOD MANAGEMENT    - Receive SYSMODs and HOLDDATA
                               and install SYSMODs
   3    QUERY                - Display SMPCSI information
   4    COMMAND GENERATION   - Generate SMP/E commands
   5    RECEIVE              - Receive SYSMODs, HOLDDATA and
                               support information
   6    MIGRATION ASSISTANT - Generate Planning and Migration Reports
   7    ORDER MANAGEMENT     - Manage ORDER entries in the global zone

   D    DESCRIBE             - An overview of the dialogs
   T    TUTORIAL             - Details on using the dialogs
   W    WHAT IS NEW          - What is New in SMP/E

Specify the name of the CSI that contains the global zone:
   SMPCSI DATA SET    ===> 'mvs.global.csi'
(Leave blank for a list of SMPCSI data set names.)

Specify YES to have DD statements for SYSOUT and temporary
data sets generated. Specify NO, to use DDDEFs.
   Generate DD statements   ===> NO
```

SMP/E CSI Data Set Names

```
                        QUERY - ZONE SELECTION                    Row 1 of 7
===>                                                     SCROLL ===> PAGE

Select the zone that you want to query:

S     NAME      TYPE       CSI DATA SET
      CSQ600D   DLIB       CSQ600.CSQ600D.CSI
      CSQ600T   TARGET     CSQ600.CSQ600T.CSI
      CSQ701D   DLIB       CSQ701.CSQ701D.CSI
      CSQ701T   TARGET     CSQ701.CSQ701T.CSI
      GLOBAL    GLOBAL     MVS.GLOBAL.CSI
      MVSD      DLIB       MVS.MVSD.CSI
      MVST      TARGET     MVS.MVST.CSI
******************************* Bottom of data ********************************
```

A problem occurred and isolation of problem implicated
IGW system component and specifically module IGWLHHS

IBM Support Center asked "Is UA83940 applied?"

CSI QUERY

===>

Specify the zone, entry type, and name to be queried:

    ZONE NAME   ===> MVST   Name of the zone to be queried.
                               To display a list of all zones,
                               leave blank

    ENTRY TYPE   ===> SYSMOD   Entry type to be queried.
                               To display a list of all valid
                               entry types, leave ENTRY TYPE
                               and ENTRY NAME blank

    ENTRY NAME   ===> UA83940   Entry name to be queried.
                               Leave blank or use a wildcard
                               (entry name pattern) to display
                               a selection list.

To return to the Query selection menu, enter END .

CSI QUERY of MOD IGWLGLCN

```
                              CSI QUERY
 ===>

 Specify the zone, entry type, and name to be queried:

    ZONE NAME    ===> MVST       Name of the zone to be queried.
                                 To display a list of all zones,
                                 leave blank

    ENTRY TYPE   ===> mod        Entry type to be queried.
                                 To display a list of all valid
                                 entry types, leave ENTRY TYPE
                                 and ENTRY NAME blank

    ENTRY NAME   ===> igwlglcn   Entry name to be queried.
                                 Leave blank or use a wildcard
                                 (entry name pattern) to display
                                 a selection list.

 To return to the Query selection menu, enter END .
```

Results in CSI QUERY of MOD IGWLGLCN

```
                         CSI QUERY - MOD ENTRY                    Row 1 of 2
===>                                                       SCROLL ===> PAGE

  To return to the previous panel, enter END .

  Primary Command: FIND

  Entry Type:   MOD                           Zone Name: MVST
  Entry Name:   IGWLGLCN                       Zone Type: TARGET

    FMID:      HDZ2220                 LASTUPD: HDZ2220   TYPE=ADD
    RMID:      UA83940      DISTLIB: ACLMMOD0

  Link-edit Parameters:




        _____ _____ _____ _____ _____ _____ _____
LMOD      IGWLHHLS
CSECTS    IGWLGLCN
***************************** Bottom of data *****************************
```

CSI QUERY of LMOD IGWLHHLS

```
                              CSI QUERY
===>
Query processing complete for MOD IGWLGLCN
Specify the zone, entry type, and name to be queried:

   ZONE NAME    ===> MVST        Name of the zone to be queried.
                                 To display a list of all zones,
                                 leave blank

   ENTRY TYPE   ===> LMOD        Entry type to be queried.
                                 To display a list of all valid
                                 entry types, leave ENTRY TYPE
                                 and ENTRY NAME blank

   ENTRY NAME   ===> IGWLHHLS    Entry name to be queried.
                                 Leave blank or use a wildcard
                                 (entry name pattern) to display
                                 a selection list.

To return to the Query selection menu, enter END .
```

Results in CSI QUERY of LMOD IGWLHHLS

```
                         CSI QUERY - LMOD ENTRY                      Row 1 of 1
===>                                                            SCROLL ===> PAGE

To return to the previous panel, enter END .

Primary Command: FIND
NOTE: ENTER  L  ON COMMAND LINE TO DISPLAY LINK-EDIT DATA

Entry Type:  LMOD                             Zone Name: MVST
Entry Name:  IGWLHHLS                         Zone Type: TARGET

RETURN CODE: 0                        LASTUPD: HDZ2220    TYPE=ADD


Link-edit Parameters:
RENT,NCAL




        -------- -------- -------- -------- -------- -------- --------
SYSLIB    LPALIB
***************************** Bottom of data ****************************
```

CSI QUERY of DDDEF LPALIB

```
                          CSI QUERY
===>
Query processing complete for LMOD IGWLHHLS
Specify the zone, entry type, and name to be queried:

   ZONE NAME    ===> MVST      Name of the zone to be queried.
                               To display a list of all zones,
                               leave blank

   ENTRY TYPE   ===> DDDEF     Entry type to be queried.
                               To display a list of all valid
                               entry types, leave ENTRY TYPE
                               and ENTRY NAME blank

   ENTRY NAME   ===> LPALIB    Entry name to be queried.
                               Leave blank or use a wildcard
                               (entry name pattern) to display
                               a selection list.

To return to the Query selection menu, enter END .
```

Result of CSI QUERY of DDDEF LPALIB

```
                          CSI QUERY - DDDEF ENTRY                    Row 1 of 1
===>                                                            SCROLL ===> PAGE

  To return to the previous panel, enter END .

  Primary Command: FIND

  Entry Type:  DDDEF                             Zone Name: MVST
  Entry Name:  LPALIB                            Zone Type: TARGET

  DSNAME: SYS1.LPALIB

  VOLUME: VIMVSB       UNIT: SYSDA       DISP:    SHR
  SPACE :              PRIM:             SECOND:           DIR:
  SYSOUT CLASS:                          WAITFORDSN: YES
  PROTECT:
  DATACLAS:                              MGMTCLAS  :
  STORCLAS:                              DSNTYPE   :
           -------- -------- -------- -------- -------- -------- --------


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

Browse load module IGWLHHLS


```
  Menu   Functions  Confirm  Utilities  Help
 -------------------------------------------------------------------------
 BROWSE          SYS1.LPALIB                      Row 0001343 of 0001807
 Command ===>                                      Scroll ===> CSR
          Name      Prompt       Alias-of    Size      TTR    AC  AM   RM
 _____ IGWIRLRT             IGWIMF21   0003D148  01F00F  00  31  ANY
 _____ IGWLBRL2                        00024118  00A704  00  64  ANY
 _____ IGWLCSHR                        000002F0  009231  00  31  ANY
 _____ IGWLGEDC             IGWLHHLS   0007F508  03D606  00  31  ANY
 _____ IGWLGEDT             IGWLHHLS   0007F508  03D606  00  31  ANY
 _____ IGWLGRPO             IGWLHHLS   0007F508  03D606  00  31  ANY
 _____ IGWLGTSK             IGWLHHLS   0007F508  03D606  00  31  ANY
 _____ IGWLHANZ                        0001E4F8  01EC16  00  31  ANY
 _____ IGWLHAT1             IGWLHHLS   0007F508  03D606  00  31  ANY
 _____ IGWLHA22             IGWLHANZ   0001E4F8  01EC16  00  31  ANY
 s_____ IGWLHHLS                        0007F508  03D606  00  31  ANY
 _____ IGWLILIC                        000019A0  014A04  00  31  ANY
 _____ IGWLJ000                        0000AC18  00AA07  00  31  ANY
 _____ IGWLSSLS                        00009508  01A119  00  31  ANY
 _____ IGWLXFJO             IGWLXXCM   0001E2F8  012D07  00  31  ANY
 _____ IGWLXXCM                        0001E2F8  012D07  00  31  ANY
 _____ IGWMCMMO                        0000CC50  01A004  00  31  ANY
 _____ IGWMINIT             IGWMCMMO   0000CC50  01A004  00  31  ANY
 _____ IGWSDMPE             IGWFDMPE   00002E28  015103  00  31  ANY
```

Browse LMOD IGWLHHLS in LPALIB

```
 Menu   Utilities  Compilers  Help
 ----------------------------------------------------------------------------
 BROWSE     SYS1.LPALIB(IGWLHHLS)                    Line 0000000000 Col 001 080
 Command ===> f UA83940█                                       Scroll ===> CSR
 ******************************** Top of Data ********************************
 .......OIGWLGLCN.......CLNLGLCN...-....EO1LGLCN........IGWLHVO2..X....hEO1LH1AE
 .......OSO1LHVO1.......IGWLHJIX..;}....IGWLHVO1........CLNAJBRL..¢....CLNLREIN
 .......OCLNHFSJN.......IGWLHRLS.....)OCLNLHRLS........IGWLH1AB.......\LCLLH1AE
 .......OCLNTRAJB..#....IGWLHA2O........IGWLHA21........IGWLHLST.......CLNLHLST
 .......OIGWLHRES.......IGWLHRE6........IGWLHASR........CLNLHRES..<....IGWLHQA(
 .....<.OIGWLHET1......IGWLHEM1..OH...¢IGWLRDMP...-....IGWLESUB...{....CLNLESUE
 .....$.OIGWLETMX..sY...!IGWLEDMP...-....IGWLGTSK........CLNLGTSK...O...)IGWLGED(
 .....¦.OIGWLGTRQ.._....IGWLGGBI.. ....-IGWLGVOV..~H....IGWLGVOC..~8...%IGWLGNES
 .....`.OCLNLGSMP.......IGWLGSCM...%....CLNLGSCM........IGWLGXIT...y...OIGWLGRQ)
 ....h.OIGWLGIMX..;q...hIGWLGDMP...-....IGWLGLBI......YCLNLGLBI...}....IGWLGBVL
 ....p.OIGWLGSN2..<....CLNLHET1........IGWLHFTO........IGWLHZTO........NOPLHQA(
 ....w.-CLNLGIMX..;H...hCLNLGITI...&...gCLNLGIVL..a....fCLNLGENQ...6...aCLNLGDE(
 ...........................................................................
 ...5695PMB01 ....?....
 ...........569623400 ....PL/X-390  .........................¢...|........¦..,.%.)
 ....!.¬.-........g.......l.~.569623400 ...."PL/X-390  ...."...569623400 .....PL/)
 .........RSI50574786......UA77531......UA77528....?.UA83940......UA77531......UA
 ....RSI50580696......RSI50584568......UA81093......RSI50574270......RSI50572613.
 ...54.|....RSI50582097......UA77531......RSI50580291.!....RSI50573177.)....UA773
```

Browse LMOD IGWLHHLS in LPALIB

SMP SOURCEID QUERY of SMP target zone

```
                              SOURCEID QUERY
 ===>

 Specify the zone to be queried:

    ZONE NAME    ===> mvst█       Name of the zone to be queried.
                                  To display a list of all zones,
                                  leave blank




 To return to the Query selection menu, enter END .
```

SMP SOURCEID QUERY of SMP target zone
  Locate PUT levels

```
                    SOURCEID QUERY - SOURCEID SELECTION          Row 1 of 383
===> l put█                                              SCROLL ===> PAGE

Select one SOURCEID for TARGET zone MVST


S   SOURCEID                                                        ACTION
    EURO99
    HIPER
    IBM.Coexistence.z/OS.V2R1
    IBM.Coexistence.z/OS.V2R2
    IBM.Coexistence.z/OS.V2R3
    IBM.Coexistence.z/OSMF.V2R1
    IBM.Coexistence.ICSF.z/OS_V2R1-V2R2-HCR77C0
    IBM.Device.Disk.DS8000-2107
    IBM.Device.Disk.ESS-Shark-2105
    IBM.Device.Disk.RAMAC-VirtualArraySubsystem-9393
    IBM.Device.Disk.3390
    IBM.Device.FICONDirector.2032
    IBM.Device.FICONDirector.2042
    IBM.Device.FICONDirector.2062
    IBM.Device.Server.s/390Multiprise3000-7060
    IBM.Device.Server.zBC12-2828
    IBM.Device.Server.zBC12-2828.zHighPerformanceFICON
```

SMP SOURCEID QUERY of SMP target zone
Locate PUT level 1703

```
                          SOURCEID QUERY - SOURCEID SELECTION          Row 92 of 383
===> l put1703                                                        SCROLL ===> PAGE

Select one SOURCEID for TARGET zone MVST


S   SOURCEID                                                          ACTION
    PRP
    PUT0003
    PUT0004
    PUT0005
    PUT0006
    PUT0007
    PUT0008
    PUT0010
    PUT0011
    PUT0012
    PUT0101
    PUT0102
    PUT0103
    PUT0105
    PUT0106
    PUT0107
    PUT0108
```

SMP SOURCEID QUERY of SMP target zone
Select PUT1703

```
                        SOURCEID QUERY - SOURCEID SELECTION          Row 263 of 383
===>                                                          SCROLL ===> PAGE

Select one SOURCEID for TARGET zone MVST


  SOURCEID                                                      ACTION
  PUT1703
  RSU0005
  RSU0008
  RSU0011
  RSU0012
  RSU0102
  RSU0105
  RSU0109
  RSU0112
  RSU0203
  RSU0204
  RSU0205
  RSU0206
  RSU0209
  RSU0303
  RSU0306
  RSU0309
```

SMP SOURCEID QUERY of SMP target zone
Select UA83940 from PUT1703

```
                    SOURCEID QUERY - SYSMOD ENTRY SELECT              Row 1 of 102
===>                                                                 SCROLL ===> PAGE

SOURCEID: PUT1703

Select one SYSMOD to query from TARGET zone MVST

S    NAME       ACTION
s    UA83940
     UA83964
     UA83974
     UA83976
     UA83988
     UA83992
     UA91048
     UA91067
     UA91072
     UA91075
     UA91085
     UA91087
     UA91133
     UA91135
     UA91139
     UA91141
```

Results in CSI QUERY of SYSMOD UA83940

```
                        CSI QUERY - SYSMOD ENTRY                    Row 1 of 9
===>                                                           SCROLL ===> PAGE

   To return to the previous panel, enter END .


   Primary Command: FIND

   Entry Type:  SYSMOD                          Zone Name: MVST
   Entry Name:  UA83940                         Zone Type: TARGET
   Description:

      Type:     PTF                      Status: APP           BYP
      FMID:     HDZ2220
      Date/Time: 17.096    06:28:09     APP


            -------- -------- -------- -------- -------- -------- --------
   PRE      UA77531  UA80583
   SUP      AA51383  AA51516  UA83257

   SOURCEID HIPER
            IBM.Function.PDSE
```

Results in CSI QUERY of SYSMOD UA83940

```
                         CSI QUERY - SYSMOD ENTRY                    Row 6 of 9
===>                                                           SCROLL ===> PAGE

     To return to the previous panel, enter END .


     Primary Command: FIND

     Entry Type:  SYSMOD                           Zone Name: MVST
     Entry Name:  UA83940                          Zone Type: TARGET
     Description:

       Type:    PTF                    Status: APP              BYP
       FMID:    HDZ2220
       Date/Time: 17.096    06:28:09    APP



          _____ _____ _____ _____ _____ _____ _____
          IBM.ProductInstall-RequiredService
          PUT1703
          SMCCOR
     MOD      IGWLGLCN IGWLGRP0 IGWLHOBT
     ***************************** Bottom of data ******************************
```

SMP/E JCL Command Processing

```
Command ===> submit
****** *************************** Top of Data ***
000001 //SMPLIST JOB 1
000002 //GIM      EXEC PGM=GIMSMP,REGION=4096K
000003 //SMPCSI  DD DISP=SHR,DSN=MVS.GLOBAL.CSI
000004 //SMPLIST DD SYSOUT=*
000005 //SMPLOG  DD SYSOUT=*
000006 //SMPCNTL DD *
000007    SET BDY(MVST).
000008    LIST SYSMOD(UA83940).
000009    LIST MOD(IGWLGLCN).
000010    LIST LMOD(IGWLHHLS).
000011    LIST DDDEF(LPALIB).
000012 //* LIST FUNCTIONS.
****** *************************** Bottom of Data *
```

SMP/E Documentation & Information

IBM Redbooks

ABCs of z/OS System Programming Volume 2 - Chapter 5 (SG24-6982-02)

IBM Manuals

SMP/E for z/OS
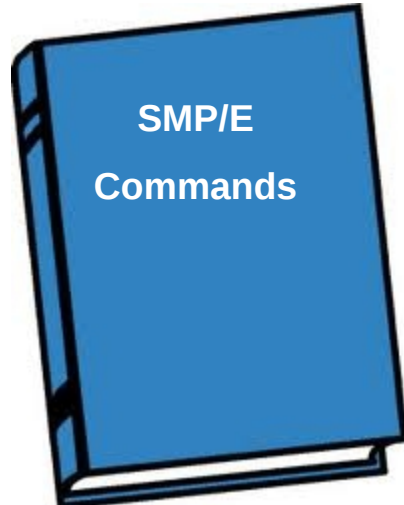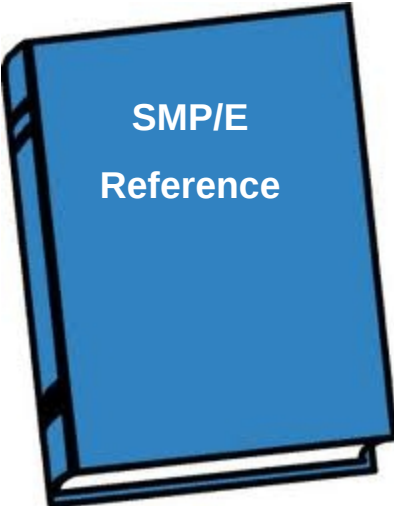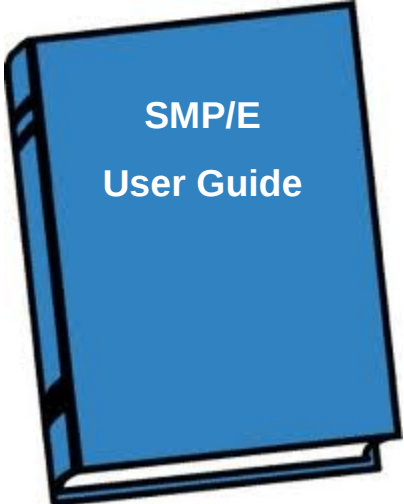
User's Guide (SA22-7773-18)

Reference (SA22-7772-16)

Commands (SA22-7771-15)

Software Product Program Directories (detailed installation instructions)

SMP/E Professional Manuals and Documentation

SMP/E User Guide

SMP/E Reference

SMP/E Commands

Chapter 5

Unit summary

Having completed this unit, you should be able to:

✓ Describe SMP/E

✓ Describe SYSMOD

✓ List 4 Types of SYSMODs

✓ Describe Global Zone

✓ Describe Target and Distribution Libraries

✓ List 4 SMP/E Commands for Managing Software Maintenance