PATCHING

PTFLE

16. Generates control statements and JCL needed to apply PTFs; the application function also invokes the linkage editor.

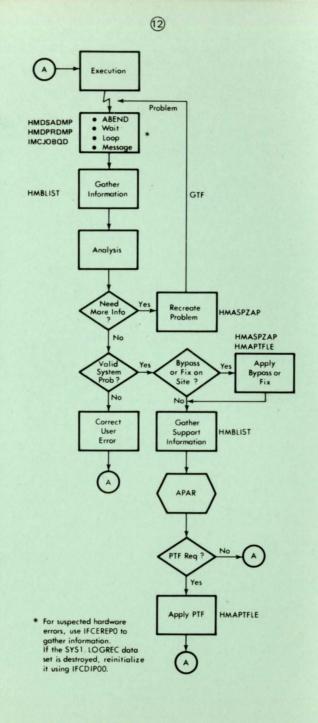17. Generates control statements and JCL needed to apply ICRs.

SPZAP

18. Modifies data in a load module.

19. Sets traps by inserting invalid instructions or user-written SVCs.

20. Dumps load modules by CSECT to allow examination of the text.

21. Dumps selected data to verify the count, key and contents of the data.

DIP00

22. Reinitializes the SYS1.LOGREC data set if destroyed.

Notes:

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A → Execution

HMDSADMP
HMDPRDMP
IMCJOBQD

- ABEND
- Wait
- Loop
- Message

*

Problem

HMBLIST → Gather Information

GTF

Analysis

Need More Info ? — Yes → Recreate Problem   HMASPZAP

No

HMASPZAP
HMAPTFLE

Valid System Prob ? — Yes → Bypass or Fix on Site ? — Yes → Apply Bypass or Fix

No   No

Correct User Error   Gather Support Information   HMBLIST

A

APAR

PTF Req ? — No → A

Yes

Apply PTF   HMAPTFLE

A

* For suspected hardware errors, use IFCEREP0 to gather information.
If the SYS1.LOGREC data set is destroyed, reinitialize it using IFCDIP00.

IBM® OS/VS Service Aids Reference Summary

GX28-0634-0

IFCDIP00

Program Type: OS/VS problem program.

Function: Reinitializes or reallocates the SYS1.LOGREC data set.

Invoked by: JCL, such as the following:

```
//MYJOB   JOB  MSGLEVEL=(1,1)
//STEP    EXEC PGM=IFCDIP00
//SERERDS DD   DSNAME=SYS1.LOGREC,UNIT=2311,
//             DISP=(OLD,KEEP),VOL=SER=111111
/*
```

Controlled by: Variations in the SERERDS DD statement.

Output: Initialized or reallocated SYS1.LOGREC data set.

IFCEREP0

Program Type: OS/VS problem program.

Function: Formats and prints selected error records in the SYS1.LOGREC data set.

Invoked by: JCL, such as the following:

```
//MYJOB   JOB  MSGLEVEL=(1,1)
//STEP    EXEC PGM=IFCEREP0,PARM='keyword=value'
//SERLOG  DD   DSNAME=SYS1.LOGREC,DISP=(OLD,KEEP)
//EREPPT  DD   SYSOUT=A
/*
```

Controlled by: Keyword parameters in the PARM= field of EXEC statement. Omitting a keyword causes the corresponding default value to take effect. When all defaults are in effect, IFCEREP0 summarizes, accumulates, and prints all records in the SYS1.LOGREC data set.

Output: Listing of summarized and printed records.

GTF (Generalized Trace Facility)

Program Type: Standard feature of OS/VS.

Function: Traces all or selected system events, such as I/O interruptions, SIO operations, etc.

Invoked by: START command, such as the following:

```
START  GTF,outputdevice,outputvolume,(MODE=EXT)
       or
START  GTF,,,(MODE=INT)
```

Controlled by: Trace options, specified in response to prompting message HHL100A. The trace options are: SYS[P], SYSM, SIO[P], IO[P], SVC[P], PI[P], EXT, DSP, USR, PCI, and TRC. The optional P shown with some options is used to request prompting for specific device addresses, interrupt codes, etc. If you omit P, GTF will trace all events in the specified category.

SYS and its variations include and override the functions requested by SIO, IO, SVC, PI, and EXT. Do not specify any of these with SYS.

Here is an example of trace options specified correctly:

```
TRACE=SYSP,DSP,PCI,TRC
```

Output: For MODE=EXT, a trace data set residing on an external device. For MODE=INT, trace buffers residing in main storage. Use the EDIT function of HMDPRDMP to format and print trace data.

IMCJOBQD

Program Type: Stand-alone program, supplied as an object module in component library SYS1.ASAMPLIB. Use IEBPTPCH to punch the module into cards.

Function: Formats and prints all or selected records in the system job queue (SYS1.SYSJOBQE data set) and in the scheduler work area data set (SWADS).

Invoked by: Performing the IPL function on the object deck that contains IMCJOBQD.

Controlled by: Commands entered in response to prompting messages. In response to message IMC000A, press INTERRUPT key to accept defaults, or enter:

```
O=outputdeviceaddress,Q=queuedeviceaddress[,S]
```

Use the optional S to request prompting message IMC001A, which requests selective dumping options. In response, enter:

```
[QCR=queueid][,JOBNAME=(name)]
```

When message IMC001A is reissued, respond in one of these ways:

- Enter END to terminate JOBQD processing.
- Specify more select parameters.
- Enter:

```
SWADS=(procname.id₁,procname.id₂...,procname.idₙ)
```

If you omit S in responding to message IMC000A, prompting message IMC020A is issued. Respond by entering up to 4 initiator procedure names for which you want SWADS to be printed. JOBQD terminates automatically after printing the last SWADS.

HMDSADMP

Program Type: Stand-alone program, supplied as a macro definition in the system macro library SYS1.MACLIB.

Function: Produces high-speed or low-speed dump of real storage. The high-speed version can also dump the page data sets.

Invoked by: Performing IPL procedure on stand-alone dump program, created by assembling the macro instruction and executing the resulting job stream to initialize the dump program on a residence volume.

Controlled by: Variations in coding the macro instruction, whose simplest form is:

```
HMDSADMP   IPL=resvolume,TYPE=speed,OUTPUT=device
```

Only the following combinations are valid:

```
IPL=TTAPE,TYPE=HI,OUTPUT=Tcuu
IPL=D350,TYPE=HI,OUTPUT=Tcuu
IPL=D350,TYPE=LO,OUTPUT=Tcuu
IPL=D350,TYPE=LO,OUTPUT=P00E
```

For information about other parameters, refer to **OS/VS Service Aids.**

Output: Unformatted hexadecimal dump written to tape or printer. Use HMDPRDMP to print high-speed tape output, IEBPTPCH to print low-speed tape output.

HMBLIST

Program Type: OS/VS problem program.

Function: Formats and prints object modules and load modules. Lists CSECT identification records.

Invoked by: JCL, such as the following:

```
//MYJOB   JOB  MSGLEVEL=(1,1)
//STEP    EXEC PGM=HMBLIST
//INPUT   DD   DSN=libname,DISP=OLD
//SYSPRINT DD  SYSOUT=A
//SYSIN   DD   *
/*
```

Controlled by: Control statements, as follows:

```
LISTLOAD [OUTPUT=type][,TITLE=('title')]
         [,DDN=inputddname][,MEMBER=membername]
```

Requests load module processing. OUTPUT=parameter requests either MODLIST (formatted listing plus ESD and RLD records), XREF (module map and cross-reference listing), or BOTH.

```
LISTOBJ [TITLE=('title')][,DDN=inputddname]
        [,MEMBER=membername]
```

Requests listing of object modules.

```
LISTIDR [OUTPUT=type][,TITLE=('title')]
        [,DDN=inputddname][,MEMBER=membername]
```

Requests listing of a load module's CSECT identification records. OUTPUT= parameter requests either IDENT (only records containing HMASPZAP or user-supplied data) or ALL. Note that in all three cases if you omit the DDN= parameter, HMBLIST assumes a default ddname of SYSLIB.

```
LISTLPA
```

Requests mapping of the reenterable load module area.

Output: Separate listing for each control statement.

Notes:

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HMDPRDMP

Program Type: OS/VS problem program.

Function: Formats and prints dump data sets, including page data sets, and GTF trace data.

Invoked by: JCL, such as the following:

```
//MYJOB    JOB  MSGLEVEL=(1,1)
//STEP     EXEC PGM=HMDPRDMP
//TAPE     DD   DSNAME=dsname,VOL=SER=volser,UNIT=ddd
//         [LABEL=(label)],DISP=OLD
//PRINTER  DD   SYSOUT=A
//SYSPRINT DD   SYSOUT=A
[//SYSUT1  DD   UNIT=ddd,SPACE=(2052,(n,10))]
[//SYSUT2  DD   UNIT=2400,VOL=SER=DUMP,LABEL=(,NL),DISP=NEW]
[//SYSIN   DD   *]
/*
```

The DD statements shown in brackets are used as follows:

SYSUT1 -- required when input data set contains a dump and resides on a direct access device.

SYSUT2 -- required when clearing the SYS1.DUMP data set.

Note: never use SYSUT1 and SYSUT2 in the same job step.

SYSIN -- required when entering control statements in the input stream.

For details about any of the parameters used in this example, see **OS/VS Service Aids.**

Controlled by: Control statements, entered either on cards in the input stream or in reply to prompting messages. They are:

CVT=pointer -- specifies the location of the CVT.

SEGTAB=pointer -- specifies the location of the segment table.

NEWDUMP DDNAME=ddname -- defines the input data set.

NEWTAPE -- defines the first of several input data sets on a single tape volume.

GO -- requests a preset combination of QCBTRACE, LPAMAP, FORMAT, EDIT, and PRINT ALL.

ONGO value -- resets the combination of control statements requested in the GO statement.

TITLE text -- requests a specific dump title.

QCBTRACE -- requests a trace of QCBs in the input data set.

LPAMAP -- requests a link pack area map.

FORMAT -- requests formatting of major control blocks.

PRINT value -- requests printing of ALL or part of the input data set.

EDIT value -- requests formatting of all or selected trace records.

END -- requests normal termination, or, if no other control statements are specified, requests loading of the data set defined by the SYSUT2 DD statement.

Note: for descriptions of the keywords used with the NEWDUMP, PRINT, ONGO, and EDIT control statements, refer to **OS/VS Service Aids.**

Output: Formatted and printed dump or trace data.

HMAPTFLE

Program Type: OS/VS problem program.

Function: Application Function: Generates control statements and invokes linkage editor to apply PTF dynamically.

Generate Function: Generates JCL and control statements to apply PTFs or ICRs in a later step.

Invoked by: Application Function: JCL, such as the following:

```
//MYJOB    JOB      MSGLEVEL=(1,1)
//STEP     EXEC     PTFLE,USE='IEWL',LIB1=SVCLIB
//PTF.MODF DD       *
        Control statements
        PTF object deck
        IDENTIFY control statement
/*
```

The cataloged procedure PTFLE contains symbolic parameters whose default values are USE='IEWL' and LIB1=LINKLIB. For more information, refer to **OS/VS Service Aids.**

Generate Function: JCL, such as the following (Note that the generate function does not have a cataloged procedure):

```
//GENER    JOB      MSGLEVEL=(1,1)
//STEP     EXEC     PGM=HMAPTFLE
//PRINT    DD       SYSOUT=A
//OUTF     DD       UNIT=2400,LABEL=(,NL),DISP=(NEW,KEEP),
//         VOL=SER=OUTPUT
//PCHF     DD       UNIT=2400,LABEL=(,NL),DISP=OLD,
//         VOL=SER=SYSGEN,DCB=(LRECL=80,BLKSIZE=80)
//MODF     DD       *
        Control statements
/*
```

Controlled by: HMAPTFLE Control statement, whose format is:
```
modulename    SSI    comments
```
The module name must begin in column 1; the SSI number must begin in column 10. Comments may begin in column 19. For the application function, a Linkage Editor IDENTIFY control statement is also required:
```
IDENTIFY        csectname('data')[,csectname(,data')]
```

Output: Application Function: Module updated with applied PTF.

Generate Function: Job stream required to apply PTF in a later step.

Notes:

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HMASPZAP

Program Type: OS/VS problem program.

Function: Inspect and/or modify data in a load module or in a data set on a direct access device (apply local fix).

Invoked by: JCL, such as the following:

```
//MYJOB    JOB  MSGLEVEL=(1,1)
//STEP     EXEC PGM=HMASPZAP
//SYSPRINT DD   SYSOUT=A
//SYSLIB   DD   DSNAME=dsname,DISP=SHR
//SYSIN    DD   *
        [CONSOLE]
        [control statements]
/*
```

Controlled by: Control statements, supplied either as cards in the input stream, or if CONSOLE is present in the input stream, as responses to prompting message HMA116A. The control statements are:

NAME member csect -- specifies the CSECT to be updated.

CCHHR address -- specifies the address of the field to be updated.

VERIFY offset content -- requests comparison between field specified in offset parameter and data supplied in content parameter.

REP offset data -- requests replacement of field specified in offset parameter by field supplied in data parameter.

IDRDATA user -- provides data to be placed in the user data field of an updated CSECT Identification record.

SETSSI xxyynnnn -- requests updating SSI data with value supplied in xxyynnnn parameter.

DUMP[T] member csect -- requests dumping of a csect (or ALL csects) in the load module specified in the csect parameter. The optional T also requests translation of the dump data.

ABSDUMP[T] value -- requests dumping selected records (specify starting and ending track addresses in the value field), a member (specify membername in the value field), or an entire data set (specify ALL in the value field). The optional T also requests translation of the dump data.

BASE offset -- requests adjustment of relative displacements by supplying base address in offset field.

Output: Formatted hexadecimal dump or translated dump, and modified CSECTs.

SYMPTOM	INFORMATION GATHERING		MAPPING, FORMATTING, AND PRINTING				PATCHING		
	SADMP	GTF	PRDMP	LIST	EREPO	JOBQD	PTFLE	SPZAP	DIPOO
Warm Start Failure	1	—	5c-e	—	—	13	—	19	—
Scheduler ABEND	—	2	6	7,8	—	13	—	19	—
Writer ABEND	—	2	6	—	—	15	—	19	—
Problem Program ABEND	—	4	6	8	—	—	—	19	—
Recursive ABEND	1	2	5a,5c-d,6	8	—	14	—	19	—
Disabled Loop	1	2	5c-e,6	—	—	—	—	—	—
Problem Program Loop	—	4	6	8	—	—	—	—	—
Large Loop with I/O	1	2	5a,5c-e,6b-d	—	—	—	—	19	—
DAR Loop	1	2	5c,5e,6	8	11	—	—	—	22
Hard Wait	1	2	5c-e	7,8	11	—	—	—	22
Enabled Wait	1	2	5b,6	8	11	—	—	—	22
Reader/Interpreter Failure	—	—	—	—	—	13	—	19	—
I/O Failure (e.g. console)	1	3	5a-e,6b-d	—	11,12	—	—	19,21	—
Allocation Failure	1	—	5b-d	8	—	—	—	19	—
Enqueued Job Lost	—	—	—	—	—	15	—	—	—
Chain Scheduler Problem	1	3	5a,5c-e,6b-d	—	—	—	—	—	—
Access Method Failure	—	3	6	—	12	—	—	21	—
Data Management Prgm Check	—	2,4	6	8	—	—	—	—	—
Module Level Unknown	—	—	—	9	—	—	—	20	—
User Modification Unknown	—	—	—	10	—	—	—	20	—
Applying PTF	—	—	—	—	—	—	16	18	—
Applying ICR	—	—	—	—	—	—	17	—	—
Applying Local Fix	—	—	—	—	—	—	16	18	—
APAR Documentation	1	2,4	5a,5c-e,6	9	—	13	—	20	—
Print SYS1.DUMP	—	—	5b-d,6	—	—	—	—	—	—
Capturing System before Re-IPL	1	—	5a-e,6	—	—	—	—	—	—

INFORMATION GATHERING

SADMP

1. Dumps the contents of real or virtual storage to a tape, which can be formatted and printed using PRDMP. (Note that SADMP output may also be directed to a printer.)

GTF

2. Traces all system events.
3. Traces selected events, such as I/O interruptions, SIO operations, etc.
4. Traces user programs with GTRACE macro instruction.

MAPPING, FORMATTING, AND PRINTING

PRDMP

5. Formats and prints the following from SADMP high-speed output:
   a. Link pack area.
   b. Queue control block trace.
   c. Major control blocks.
   d. Selected areas of storage by virtual or real address.
   e. Operating system nucleus.
6. Formats and prints selected records from the GTF trace data set or from trace buffers in a SYS1.DUMP or SADMP output data set. Records are selected by keywords such as:
   a. JOBNAME
   b. I/O.
   c. SVC.
   d. SIO.

LIST

7. Lists specific object modules, load modules or load modules in a data set.
8. Maps control sections and overlay structure and lists cross-references within a load module.
9. Lists CSECT identification records for specific load modules.
10. Lists translation data, linkage editor modification data, or SPZAP modifications to control sections in a load module.

EREPO

11. Selects, formats and prints records from the SYS1.LOGREC data set, by record type:
    a. Machine check and/or inboard.
    b. Outboard.
12. Selects records by device type or device address.

JOBQD

13. Dumps entire SYS1.SYSJOBQE data set.
14. Selects, formats and prints job queue records associated with a specific job.
15. Selects, formats, and prints job queue records associated with a specific work queue.