

Extended High Performance Data Mover

Installation Guide

Version 7.0



November 2010, Revision AA

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About this Book

Scope

This manual describes the installation of Extended High Performance Data Mover (ExHPDM) 7.0. ExHPDM is a Sun/StorageTek software product that is a client and server-based solution that manages the I/O from application programs and interleaves it, at the block level, onto the media. ExHPDM addresses the issues associated with disk backup and recovery.

Intended Audience

This manual is intended primarily for systems programmers responsible for installing and maintaining ExHPDM software at their data centers. Data center operators and computer system administrators may also find information contained in this guide to be useful for reviewing and understanding ExHPDM concepts.

Users responsible for installation and maintenance of ExHPDM software involving the technical details should be familiar with the following software topics:

- MVS operating system
- System Modification Program (SMP/E)

About the Software

Extended High Performance Data Mover (ExHPDM) Version 7.0 is supported by this manual.

How this Manual is Organized

This manual is divided into five chapters and an index.

- **Chapter 1, “ExHPDM Pre-Installation Instructions”** describes the pre-installation tasks and considerations for installing ExHPDM, including a description of the installation tape, SMP/E function identifiers, instructions on how to load sample installation JCL, configuring the SMP/E database, and allocating data sets.
- **Chapter 2, “ExHPDM SMP/E Base Installation”** describes base function installation for ExHPDM. It describes special considerations and how to use SMP/E to receive, apply and accept the ExHPDM base functions.

- **Chapter 4, “Installing the Cumulative Service PTFs”** provides instructions for installing cumulative service PTFs using SMP/E, including receiving PTFs, resolving HOLDATA, applying PTFs, and accepting PTFs.
- **Chapter 5, “Installing the Corrective Service PTFs”** provides information similar to that in Chapter 3, except for corrective service PTFs.
- **Chapter 4, “ExHPDM Post-Installation Tasks”** describes how to authorize ExHPDM as an authorized program in MVS, create the ExHPDM subsystem, allocate the database and journal files, create the started task for the product, along with other important tasks to get the product running.

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Chapter 1. ExHPDM Pre-Installation Instructions

The following pre-installation information and tasks should be considered before ExHPDM is installed.

Upgrading from ExHPDM 3.0, 3.1, 6.1, or 6.2

If you are installing ExHPDM 7.0 as an upgrade from ExHPDM V3.0, V3.1, V6.1, or V6.2, simply install the base tape for ExHPDM 7.0.

ExHPDM Interfaces

ExHPDM has dependent software and hardware interfaces.

ExHPDM Software Interfaces

ExHPDM makes use of published MVS software interfaces and their callable services, including:

- VSAM
- ICF
- DFSMS Version 1.3 and higher
- DFSMSdss Version 1.4 and higher
- GTF
- DFSMSrmm.

ExHPDM V. 7.0 requires the SAS/C compiler and Resident/Transient/SPE libraries. It uses SAS/C 700D. SAS/C 700D is included on the product base tape as FMID ASAR700D and ASAT700D.

ExHPDM V. 7.0 also requires the Sun/STK common parser, which is included on the product base tape.

Where specified, ExHPDM optionally makes use of third-party (non-IBM) software interfaces, including:

- Innovation Data Processing FDR, FDRDSF, FDRTCOPY at Version 5.3 L31 and higher

- Innovation Data Processing FDRABR, including FDRAPPL, FDRTCOPY, FDRTSEL, and StorageTek HSDM at Version 5.3L40 and higher when licensed for FDR InstantBackup
- Computer Associates CA-1 Version 5.1 and higher
- Computer Associates CA-TLMS Version 5.4 and higher
- Allen Systems Group AutoMedia (Zara) with tape level T130A036 and higher
- BMC Control-T with PTF FI05302 for levels 5.0.0, 5.0.4 and 5.1.4
- Software Engineers of America (SEA) TAPE2000.
- ExHPDM Hardware Interfaces
- Innovation Data Processing FDR, including FDRCRYPT when licensed for FDRCRYPT

ExHPDM uses the MVS EXCPVR I/O driver for interface to tape drive hardware. The standard set of 3490 tape controller channel command words (CCWs) from the SYSTEM 390 architecture, as documented in the 3490 Tape Controller hardware manual and the equivalent OEMI specification are used for this interface.

Required APARs

Refer to IBMLink for detailed information about using these APARs.

All customers should review and, where applicable, install the following APARs from IBM. Refer to IBMLink for detailed information on these APARs.

- OW57709 DFSMSdss UIM
- OW26257 DFSMSdss UIM
- OW33495 DFSMSdss UIM
- OW31076 DFSMSdss UIM
- OW39773 DFSMSdss UIM
- OW40936 DFSMSdss UIM (HIPER)
- OW43203 DFSMSdss UIM
- OW42942 DFSMSdss UIM
- OW40567 DFSMSdss hand during cancel processing
- OW39376 DFSMSrmm MSGEDG8006E RC20 RSN4091 during volume scratch processing when using ExHPDM as an EDM to DFSMSrmm
- OW27808 Dynamic Allocation
- OW36980 Redwood 3590 image using "C" cartridges

All customers should review whether IBM PTF UW92373 has either been superseded, or rereq by other more recent maintenance. If this PTF is in an applied state, it has been found to cause serious ExHPDM VSAM Database errors, and it must be backed out.

Innovation Data Processing FDR Fixes

Where the Innovation Data Processing FDR products are being used with ExHPDM, review and install the following Computer Associates fixes: LO73771 (BC10689), LO74920 (BC10749), LO74923 (BC27532) when using CA-TopSecret Rel 5.

Chapter 2. Installing ExHPDM from Tape

Tape Installation Checklist

Table 1. ExHPDM Tape installation Checklist

| Step | Description of Action | Member Name in SMPE.JCL | Member Name in STKSAMP | Expected Return Code |
|------|---|-------------------------|------------------------|---|
| 1. | Allocate and initialize the SMP/E data sets | C1CSIBLD | | 0 |
| 2. | Define and update each zone | C2ZONES | | 0 |
| 3. | Define the required SMP/E DDDEFs for each zone | C3DDDEF | | 4 |
| 4. | Define ExHPDM product DDDEFs for each zone | I1DDDEFS | | 4 |
| 5. | Allocate the ExHPDM target and dlib data sets | I2ALLOC | | 0 |
| 6. | Receive ExHPDM functions | I3RCV | | 0 |
| 7. | Apply ExHPDM functions | I4APPLY | | 4 |
| 8. | Accept ExHPDM functions | I5ACCEPT | | 0 |
| 12. | Receive corrective service | V1RCV | | 0 |
| 13. | Apply the corrective service | V2APPLY | | 4 or 8 if bypass required and not specified |
| 14. | Accept the corrective service | V3ACCEPT | | 4 or 8 if bypass required and not specified |
| 15. | Authorize the load library - STKLOAD MVS SETPROG CMD or APF entry. | | | |
| 16. | Set up subsystem for ExHPDM server. MVS SETSSI CMD or SSN entry | | | |
| 17. | Setup procedure for started task | | SOVPROC | |

Table 1. ExHPDM Tape installation Checklist

| Step | Description of Action | Member Name in SMPE.JCL | Member Name in STKSAMP | Expected Return Code |
|-------------|---|--------------------------------|---|---|
| 18. | Allocate ExHPDM database and journals | | SOVDBDEF | 8 for the first time this job is run. 0 for subsequent runs. |
| 19. | Setup parameter library member | | SOVPRM00 | |
| 20. | Start ExHPDM | | | |
| 21. | Run client jobs to test dump and restore processing | | SOVSDM1 SOVDSRS1 SOVFDDM1 SOVFDRS1 | 0 |

Contents of the Installation Base Tape

ExHPDM Version 7.0 is contained on one 3480 standard label tape with the volume serial number of SOVVOL. The installation base tape contains the files listed in Table 2.

Table 2. Installation Base Tape Files

| File Number | Data Set Name | Description |
|--------------------|--|---|
| 1 | SMPMCS | ExHPDM SMP/E control statements |
| 2 | SSOV700.F1 | JCLIN for the ExHPDM base function Plus ExHPDM Installation JCL (Optional) |
| 3 | SSOV700.F2 | ExHPDM samplib members |
| 4 | SSOV700.F3 | ExHPDM load modules |
| 5 | SSKQ250.F1 | JCLIN for STK Common Parser components |
| 6 | SSKQ250.F2 | STK Common Parser components |
| 7 | ASAR70D.F1 | JCLIN for SAS/C selected components |
| 8 | ASAR70D.F2 | SAS/C selected components |
| 9 | ASAT70D.F1 | JCLIN for SAS/C selected resident components |
| 10 | ASAT70D.F2 | SAS/C selected resident components |
| 11 | SP\$.SMPTAPE.SS OV700.D101006.T1 74005 | (Audit/quality control information) |

ExHPDM SMP/E Function Identifiers

The ExHPDM software product is packaged in standard SMP/E format along with selected components of the SAS/C runtime library. ExHPDM Version 7.0, the Storage Technology Corporation Common Parser and SAS/C have the SMP/E function IDs (FMIDs) as listed in Table 3.

Table 3. SMP/E Function IDs (FMIDs)

| Function ID | Function |
|-------------|--|
| SSOV700 | ExHPDM base function |
| SSKQ250 | Common Parser |
| ASAR700D | SAS/C 7.0D selected components base function |
| ASAT700D | SAS/C 7.0D selected components |

Loading the Sample Installation JCL

A PDS containing the JCL, which can be used to install and maintain ExHPDM, is located on the base install tape. The use of this JCL is optional.

Unloading the JCL From the Base Tape

Use the following job to unload the JCL from the base install tape to a data set. Before submitting this job change the jobcard, SYSUT2 DSN, and UNIT fields as required.. A description of the contents of the install tape is in the section “Contents of the Installation Base Tape” on page 7.

```
//GETJCL JOB 'Account',
// 'Prorammer',
// MSGLEVEL=(1,1),REGION=0M,CLASS=S,MSGCLASS=R
/*
// SET TUNIT='3480' SMPPTFIN Unit -- Change as needed.
// SET VOL=SOV700 SMPPTFIN Volume -- Change as needed.
/* */
//UNLOAD EXEC PGM=IKJEFT01,REGION=16385K
//SYSPRINT DD SYSOUT=*
//SYSTSPRT DD SYSOUT=*
/*
//SYSUT1 DD DISP=SHR,DSN=SSOV700.F1,VOL=SER=&VOL,
// LABEL=(2,SL,EXPDT=98000),UNIT=(&TUNIT,,DEFER)
/*
//SYSTSIN DD *
    allocate dd(SYSUT2) mod catalog dir(10) dsntype(library) -
        avblock(10000) space(100,100) -
        dsn(your.SSOV700.SAMPLES.JCL)

    call *(IEBCOPY)
//SYSDSIN DD *
L1 COPY OUTDD=SYSUT2,INDD=((SYSUT1,R))
L2 EXCLUDE MEMBER=SSOV700
//
```

Using The Installation JCL

The SMPE.JCL library members @@NOTES and @@TOC contain information about using the installation JCL, as shown below.

NOTES FOR USING ExHPDM INSTALLATION JCL

This library contains sample JCL for installing the ExHPDM functions and cumulative service with SMP/E. Member @@TOC, the table of contents, lists the function of each member.

Follow the instructions in the ExHPDM INSTALLATION NOTES FOR MVS and in the documentation provided in each member before executing each job. Change the lower case variables in each job to valid upper case values. Execute the jobs in the order given.

There is an extensive amount of editing necessary to use the JCL. An optional edit macro is provided to help with the editing (member @SOVEDIT). Follow the instructions in the edit macro for its use.

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

ExHPDM INSTALLATION JCL CONTENTS

@@NOTES - Notes on using the installation JCL.
@@TOC - The table of contents.
@SOVEDIT - Edit macro used to modify installation JCL (optional).
@SOVRUN - Rexx exec to invoke @SOVEDIT against all members of the ExHPDM Installation JCL pds (optional).

SMP/E DATABASE BUILD

C1CSIBLD - Allocate and initialize the SMP/E data sets.
C2ZONES - Define and update each zone.
C3DDDEFS - Define the required DDDEFs for each zone.

FUNCTION INSTALLATION

I1DDDEFS - Define the DDDEFs.
I2ALLOC - Allocate the ExHPDM target and dlib data sets.
I3RCV - Receive the functions.
I4APPLY - Apply the functions.
I5ACCEPT - Accept the functions.

PREVENTIVE MAINTENANCE INSTALLATION

V1RCV - Receive the preventive service.
V2APPLY - Apply the preventive service.
V3ACCEPT - Accept the preventive service.

DATABASE REFORMAT PTF INSTALLATION

PJPTF - Receive and apply the V2.0 reformat PTF.
PJPTF - Receive and apply the V1.1 reformat PTF.

INSTALLATION FROM CD-ROM OR INTERNET DOWNLOAD

I60RNET - RECEIVE FROMNETWORK of the functions.
I60RNTS - RECEIVE FROMNTS of the functions.

MISCELLANEOUS TESTING UTILITIES

I10JCL - Reload installation JCL from tape.
I90DEL - Delete the entire product.

Note: You do not have to use the database reformat PTFs unless you are upgrading from V1.1 or V2.0.

Configuring the SMP/E Database

Configuring the SMP/E database consists of the following tasks:

1. Choosing an SMP/E CSI to use with ExHPDM
2. Defining the global zone requirements
3. Defining the SYSLIB concatenation
4. Defining the ExHPDM DDDEFS.

For each SMP/E task in this section, use the specified sample installation JCL library member, the SMP/E sysmod management dialogs, or, where available, the printed sample JCL to customize the SMP/E CSI as required. See “Loading the Sample Installation JCL” on page 8 for details on obtaining the sample installation JCL from the ExHPDM base tape.

Choosing an SMP/E CSI

ExHPDM should be installed in its own SMP/E CSI. The following limiting factors must be considered when deciding which SMP/E database to use:

- Because of the presence of SAS/C modules provided with ExHPDM, do **not** install ExHPDM in the same SMP/E CSI that contains program products that make use of the SAS/C runtime libraries.
- SMP/E requires that each element name is unique. ExHPDM uses the registered prefix of SOV to identify all of its elements to SMP/E. However, there is the possibility of name conflicts between ExHPDM element names and the names of elements owned by non-StorageTek products.ExH

If a new SMP/E CSI is created, then use installation JCL members specified in Table 4.

Table 4. Installation JCL Members for New SMP/E Database

| SMPE..JCL Member | Function |
|------------------|---|
| C1CSIBLD | Allocate and initialize the SMP/E data sets |
| C2ZONES | Define and update each zone |
| C3DDEFS | Define the required DDDEFS for each zone |

Note: If you are installing ExHPDM V7.0 into a SMP/E CSI that contains an existing version of ExHPDM then you must make sure that the space allocations for the target and distribution datasets at least match or preferably exceed the values given in Table 6. In addition the values for the SMPTLIB definitions must be the same as given in Table 4 and Table 5.

Defining Global Zone Requirements

There are several parameters within the SMP/E Zone that must be set to certain minimum values to ensure adequate space for the SMP/E Receive, Apply, and Accept processing. These parameters are described in this section.

Adding Linkage Editor Parameters

Add the following linkage editor parameters to the Global Zone Utilities linkage editor option PARM field:

```
LIST,LET,XREF,NCAL,SIZE(4096K,128K)
```

The NAME parameter can be omitted. This causes SMP/E to choose the default linkage editor. When the DFP level does not support the binder, IEWL is the default.

See installation SMPE.JCL member C2ZONES.

Updating Error Recovery Parameters

Update the error recovery parameters in the Global Zone Option with the following statement:

```
RETRYDDN(ALL)
```

This causes the Error Recovery utility to attempt to recover from all X37 abends when the Apply or Accept job includes the **RETRY(YES)** parameter.

See installation SMPE.JCL member C2ZONES.

Defining SMPTLIB DDDEF Parameter Allocations

The SMPTLIB DDDEF parameter must provide adequate space for the SMP/E RECEIVE process. This is verified in two locations within the SMP/E Global Zone.

Verify the SMPTLIB space parameters in the Global Zone DDDEF entry have the minimum allocations as listed in Table 5.

Table 5. SMPTLIB Space Parameter Allocations

| Space Unit | Minimum Allocation |
|------------|--------------------|
| Primary | 195 Tracks |
| Secondary | 15 Tracks |
| Directory | 250 Blocks |

Verify the SMPTLIB space parameters in the Global Zone OPTIONS DSSPACE/DSPREFIX entry have the minimum allocations in Table 6.

Table 6. SMPTLIB Space Parameters on Global Zone Options

| Space Unit | Minimum Allocation |
|------------|--------------------|
| Primary | 195 Tracks |
| Secondary | 15 Tracks |
| Directory | 250 Blocks |

See installation JCL members C2ZONES and C3DDDEFS.

Defining ExHPDM DDDEFs

Prior to performing the SMP/E installation of ExHPDM, the ExHPDM data sets can be defined to the SMP/E target and distribution zones. If DDDEFs are not used for the ExHPDM data sets, a DD statement needs to be included for each ExHPDM data set within the SMP/E PROC or JCL for any ExHPDM SMP/E tasks to be done.

The following sample job defines the ExHPDM DDDEFs to the SMP/E target and distribution zones. Before submitting this job, change the jobcard, “hlq1”, “smpehlq”, the target zone “tttt” and the distribution zone “dddd” fields as required.

This sample job is contained in the SMPE.JCL member I1DDDEFS.

```
//jobcard JOB 'accounting information'
//*
//STEP1 EXEC PGM=GIMSMP,REGION=4096K,PARM=
//SMPCSI DD DISP=SHR,DSN=smpehlq.CSI
//SMPLOG DD DISP=SHR,DSN=smpehlq.SMPLOG
//SMPLOGA DD DISP=SHR,DSN=smpehlq.SMPLOGA
//SMPSNAP DD DUMMY
//SMPDEBUG DD SYSOUT=*
//SMPOUT DD SYSOUT=*
//SMPRPT DD SYSOUT=*
//SMPLIST DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SMPPUNCH DD SYSOUT=*
//SMPCNTL DD *
SET BOUNDARY ( tttt ) .

UCLIN .

REP DDDEF ( ASOVRTNS )
  DATASET ( hlq1.ASOVRTNS )
  SHR
.
REP DDDEF ( ASAROBM )
  DATASET ( hlq1.ASAROBM )
  SHR
.
REP DDDEF ( ASAROMM )
  DATASET ( hlq1.ASAROMM )
  SHR
```

```

.
REP DDDEF (ASAROSM)
DATASET (hlq1.ASAROSM)
SHR
.
REP DDDEF (ASAROTM)
DATASET (hlq1.ASAROTM)
SHR
.
REP DDDEF (ASAROAM)
DATASET (hlq1.ASAROAM)
SHR
.
REP DDDEF (ASKQRTNS)
DATASET (hlq1.ASKQRTNS)
SHR
.
REP DDDEF (ASOVMAC)
DATASET (hlq1.ASOVMAC)
SHR
.
REP DDDEF (SKQRTNS)
DATASET (hlq1.SKQRTNS)
SHR
.
REP DDDEF (SOVRTNS)
DATASET (hlq1.SOVRTNS)
SHR
.
REP DDDEF (STKLOAD)
DATASET (hlq1.STKLOAD)
SHR
.
REP DDDEF (STKSAMP)
DATASET (hlq1.STKSAMP)
SHR
.
REP DDDEF (SSAROMOD)
DATASET (hlq1.SSAROMOD)
SHR
.

```

ENDUCL .

SET BOUNDARY (dddd) .
UCLIN .

```

REP DDDEF (ASOVRTNS)
DATASET (hlq1.ASOVRTNS)
SHR
.
REP DDDEF (ASAROBM)
DATASET (hlq1.ASAROBM)
SHR
.
REP DDDEF (ASAROMM)
DATASET (hlq1.ASAROMM)
SHR
.

```

```
REP DDDEF (ASAROSM)
DATASET (hlq1.ASAROSM)
SHR
.
REP DDDEF (ASAROTM)
DATASET (hlq1.ASAROTM)
SHR
.
REP DDDEF (ASAROAM)
DATASET (hlq1.ASAROAM)
SHR
.
REP DDDEF (ASKQRTNS)
DATASET (hlq1.ASKQRTNS)
SHR
.
REP DDDEF (ASOVMAC)
DATASET (hlq1.ASOVMAC)
SHR
.
ENDUCL .
```

Allocating Data Sets

Table 7 lists the attributes and the recommended number of directory blocks and space allowances for the ExHPDM target, distribution and global data sets. Space estimates are given in 3380 tracks. Note the recommended block sizes following the table.

See installation SMPE.JCL members C1CSIBLD and I2ALLOC.

Table 7. Distribution, Target, and Global Data Sets

| Data Set Name | DSORG | RECFM | LRECL | Block Size | 3380 Tracks | Dir Blocks | Note | Library Description |
|------------------|-------|-------|-------|------------|-------------|------------|-------|--------------------------------|
| hlq1.ASAROAM | PO | U | 0 | 6144 | 15 | 20 | 1 | SAS/C resident objects |
| hlq1.ASAROBM | PO | U | 0 | 6144 | 45 | 80 | 1 | SAS/C |
| hlq1.ASAROMM | PO | U | 0 | 6144 | 60 | 80 | 1 | SAS/C |
| hlq1.ASAROSM | PO | U | 0 | 6144 | 75 | 100 | 1 | SAS/C |
| hlq1.ASAROTM | PO | U | 0 | 6144 | 45 | 50 | 1 | SAS/C |
| hlq1.ASKQRTNS | PO | U | 0 | 6144 | 10 | 10 | 1 | Common Parser DLIB Objects |
| hlq1.SSAROMOD | PO | U | 0 | 6144 | 225 | 300 | 1 | SAS/C Combined Objects |
| hlq1.ASOVMAC | PO | FB | 80 | 3120 | 15 | 10 | 2 | ExHPDM Distribution Macro |
| hlq1.STKLOAD | PO | U | 0 | 32760 | 90 | 0 | 1,3,4 | StorageTek Common Load Library |
| hlq1.SKQRTNS | PO | U | 0 | 6144 | 10 | 10 | 1 | Common Parser Objects |
| hlq1.STKSAMP | PO | FB | 80 | 3120 | 15 | 10 | 2,3 | StorageTek Common Samples |
| hlq1.ASOVRTNS | PO | U | 0 | 6144 | 90 | 70 | 1 | ExHPDM DLIB modules |
| hlq1.SOVRTNS | PO | U | 0 | 6144 | 90 | 70 | 1 | ExHPDM TLIB modules |
| smpehlq.SMPLOG | PS | VB | 260 | 23476 | 75 | | | Global data set |
| smpehlq.SMPLOG A | PS | VB | 260 | 23476 | 5 | | | Global data set |
| smpehlq.SMPMTS | PO | FB | 80 | 2344 | 45 | 50 | | Global data set |
| smpehlq.SMPPTS | PO | FB | 80 | 23440 | 225 | 50 | | Global data set |
| smpehlq.SMPSCD S | PO | FB | 80 | 23440 | 45 | 90 | | Global data set |
| smpehlq.SMPSTS | PO | FB | 80 | 23440 | 5 | 10 | | Global data set |

Notes:

- The data set names in the table, “hlq1” and “smpehlq” refers to the assigned high-level qualifier(s).
- Block sizes are recommended.
- The recommended block size of each data set should be modeled after similar data sets. Use the number in the “Note” column in the table to find the model data set name in the following list:

Note 1: Same as SYS1.LINKLIB

Note 2: Same as SYS1.SAMPLIB

Note 3: This indicates the additional space requirement needed within this StorageTek common library to add these elements to that library.

Note 4: Dataset type is PDSE (LIBRARY).

Receiving the ExHPDM Functions

The following sample JCL can be used to receive the ExHPDM function. SMP/E requires approximately 400 tracks of 3380 equivalent DASD space to process the ExHPDM SMPLIBS. Before submitting this job, change the jobcard, “smpehlq” and UNIT fields as required. This sample JCL is contained in SMPE.JCL member I3RCV.

```
//jobcard JOB 'accounting information'
/*
//STEP1 EXEC PGM=GIMSMP,REGION=4096K,PARM=
//SMPCSI DD DISP=SHR,DSN=smpehlq.CSI
//SMPSNAP DD DUMMY
//SMPDEBUG DD SYSOUT=*
//SMPOUT DD SYSOUT=*
//SMPRPT DD SYSOUT=*
//SMPLIST DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SMPPUNCH DD SYSOUT=*
//SMPPTFIN DD DISP=OLD,
//      VOL=(,RETAIN,SER=SOVnnn),
//      UNIT=3480,
//      LABEL=(1,SL,EXPDT=98000),
//      DSN=SMPMCS
//SMPCNTL DD *

SET BOUNDARY ( GLOBAL ) .

RECEIVE SELECT ( SSOV700 /* BASE FUNCTION */
                SSKQ250 /* COMMON PARSER */

                ASAR70D /* SAS/C COMPONENTS */
                ASAT70D /* SAS/C COMPONENTS */
                )
SYSMODS
.
```

When the receive job has completed successfully, go to “Applying the ExHPDM Functions” on page 17.

Applying the ExHPDM Functions

The following sample JCL can be used to install the ExHPDM program into the appropriate target libraries. The APPLY CHECK option can be used as often as necessary to identify SMP/E processing problems before the actual APPLY process. All SMP/E detected problems must be resolved before the ExHPDM programs can be successfully installed. Before submitting this job change the jobcard, “smpehlq” and the target zone “tttt” fields as required.

This sample JCL is contained in SMPE.JCL member 14APPLY.

```
//jobcard JOB 'accounting information',
/*JOBPARM LINES=9999
/*
//STEP1 EXEC PGM=GIMSMP,REGION=4096K,PARM=""
//SMPCSI DD DISP=SHR,DSN=smpehlq.CSI
//SMPSNAP DD DUMMY
//SMPDEBUG DD SYSOUT=*
//SMPOUT DD SYSOUT=*
//SMRPT DD SYSOUT=*
//SMPLIST DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SMPPUNCH DD SYSOUT=*
//SMPCNTL DD *

SET BOUNDARY ( tttt ) .

APPLY SELECT ( ASAR70D /* SAS/C components */
              ASAT70D /* SAS/C components */
              SSOV700 /* ExHPDM */
              SSKQ250 /* Common PARSER */
            )
NOJCLINREPORT
RETRY ( YES )
.
```

Note: Expect a return code of 04 with SMP/E message GIM23903W for link-edit processing of ExHPDM modules into the SKQRTNS and SOVRTNS libraries. The Binder message IEW2454W is generated for each routine linked into these libraries. The link-edit processing of modules into the STKLOAD library should complete with a return code 0.

When the apply job has completed successfully, proceed to the next section “Accepting the ExHPDM Functions” on page 18.

Accepting the ExHPDM Functions

The following sample JCL can be used to accept the ExHPDM function. The ACCEPT CHECK option can be used as often as necessary to identify SMP/E processing problems before the actual ACCEPT process. All SMP/E detected problems must be resolved before the ExHPDM programs can be successfully accepted. Before submitting this job change the jobcard, “smpehlq” and the distribution zone “dddd” fields as required.

This sample JCL is contained in SMPE.JCL member I5ACCEPT.

```
//jobcard JOB 'accounting information'
/*
//STEP1 EXEC PGM=GIMSMP,REGION=4096K,PARM=""
//SMPCSI DD DISP=SHR,DSN=smpehlq.CSI
//SMPSNAP DD DUMMY
//SMPDEBUG DD SYSOUT=*
//SMPOUT DD SYSOUT=*
//SMPRPT DD SYSOUT=*
//SMPLIST DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SMPPUNCH DD SYSOUT=*
//SMPCNTL DD *

SET BOUNDARY ( dddd ) .

ACCEPT SELECT ( ASAR70D /* SAS/C components */
                ASAT70D /* SAS/C components */
                SSOV700 /* ExHPDM BASE function*/
                SSKQ250 /* Common PARSER */
                )
NOJCLINREPORT
RETRY ( YES )
.
```

When the accept job has completed successfully, go to “Installing the Cumulative Service PTFs” on page 27.

Chapter 3. Installing ExHPDM from CD

Unzipping the Product Folders from the Installation CD

To unzip the product folders from the installation CD:

- 1. Insert the installation CD into a CD drive.**

You will see a single .zip file.

- 2. Unzip the .zip file.**

You will see the following unzipped product folders:

- Software base.
- Legal documents.
- Product documentation.

Optionally, you may also see a folder with current cumulative maintenance.

Unloading the ExHPDM Base from the Installation CD

The following sections tell how to unload the ExHPDM base functions from the Installation CD-ROM.

Note: Note – After unloading the ExHPDM base functions, to receive the ExHPDM 7.0 FMID go to [“TSO RECEIVEing the LOADSAMP.xmit file ” on page 23.](#)

FTPing ExHPDM70.pax to z/OS Unix

The ExHPDM70.pax file contains the ExHPDM Base and sample JCL.

To FTP ExHPDM70.pax to z/OS Unix:

1. Create a z/OS Unix directory to receive the ExHPDM70.pax file:
 - a. Establish network connectivity between your workstation and and z/OS.
 - b. Enter z/OS Unix with a linemode terminal or by entering **OMVS** from the TSO READY prompt or enter **TSO OMVS** from an ISPF command line.
 - c. Use the **mkdir** command to create a new directory. For example, the **mkdir SMPNTS** command creates a new directory named **SMPNTS**. Use the **pwd** command to show the complete z/OS Unix path to **SMPNTS**.

Note: Note this path information, which you need in the SMP/E RECEIVE batch job FROMNTS.

2. Open a command window and change directory to the “software base” folder described in “Unzipping the Product Folders from the Installation CD” on page 20.

In the “software base’ folder, you will see the ExHPDM70.pax file.

3. Transfer the ExHPDM70.pax file, in binary, from the CD to the z/OS Unix directory using the following FTP commands:

```
ftp mvshost
user
password
cd /uss/userid/SMPNTS
binary
put ExHPDM70.pax
quit
```

5. Watch for FTP messages to ensure the successful transfer of ExHPDM70.pax to the new directory.

Note: You can also enter on to z/OS Unix, change directory (**cd**) to the SMPNTS directory and then enter the **ls** command from within the SMPNTS directory. The **ExHPDM70.pax** file should be listed.

Unpacking the ExHPDM70.pax File

This section tells how to unpack the ExHPDM70.pax file.

To unpack the ExHPDM70.pax file:

1. Enter z/OS Unix with a linemode terminal or by entering TSO OMVS from an ISPF command line or OMVS from the TSO READY prompt.

If you are still logged on to z/OS Unix and within the SMPNTS directory, go to [Step 3](#). Otherwise, continue with [Step 2](#).

2. Change directory (cd) to the SMPNTS directory.
3. To unpack the ExHPDM70.pax file:

```
pax -rvpp <ExHPDM70.pax
pax -rvpp -o to=IBM-1047 Samples <ExHPDM70.pax
pax -rvpp Samples/LOADSAMP.samp <ExHPDM70.pax
```

This file will unpack in place and will create the files and directories shown in [Table 1](#) and [Table 2](#).

Table 1. Contents of SMPNTS after unpacking the ExHPDM70.pax file

| File | Description |
|-----------------|--|
| ExHPDM70.gimzip | Directory input to SMP/E RECEIVE FROMNETWORK |
| ExHPDM70.pax | Archive file FTPed from the install CD |
| LOADSAMP.xmit | Samples formatted for TSO RECEIVE command |
| Samples | ExHPDM Installation JCL |

Table 2. Contents of the ExHPDM70.gimzip directory

| File | Data Set Name | Description |
|------|---------------|--|
| 1 | GIMPAF.XML | Product attribute file |
| 2 | GIMPAF.XSL | Style sheet |
| 3 | SMPHOLD | Directory containing SMP/E HOLD data |
| 4 | SMPPTFIN | Directory containing SMP/E PTFIN file for each product |
| 5 | SMPRELF | Directory containing SMP/E REL files for each product |

4. If desired, you can now delete the ExHPDM70.pax file to reclaim space:

```
rm ExHPDM70.pax
```

TSO RECEIVEing the LOADSAMP.xmit file

To TSO RECEIVE the LOADSAMP.xmit file, after you unpack the ExHPDM70.pax file, copy the LOADSAMP.xmit file to an MVS PDS data set using the following TSO commands:

```
allocate dd(LOADDD) pathopts(ORDONLY) filedata(BINARY) +  
path('/uss/userid/SMPNTS/LOADSAMP.xmit')
```

```
/* The '+' is a TSO continuation character, unnecessary if you can enter the entire command on  
a single line. */
```

```
receive indd(LOADDD)
```

```
/* You will receive a prompt similar to:
```

```
INMR906A Enter restore parameters or 'DELETE' or 'END' +
```

```
Answer this with: */
```

```
dsn(YOUR.EXHPDM70.SAMPLES.JCL) new
```

```
/* This command should complete with:
```

```
INMR001I Restore successful to dataset 'userid.YOUR.EXHPDM70.SAMPLES.JCL'
```

For more information, see: Refer to the accompanying sample documentation to customize the JCL members using @SOVEDIT and @SOVRUN.

Refer to the accompanying sample documentation to build and populate the CSI using members C1CSIBLD, C2ZONES, C3DDDEFS, I1DDDEFS, and I2ALLOC.

SMP/E RECEIVEing, ACCEPTing, and APPLYing the ExHPDM Functions from the ExHPDM Installation CD

Use the FROMNTS sample member to SMP/E RECEIVE the ExHPDM functions from Unix Systems Services (USS).

Follow the instructions in the prologue of the FROMNTS sample member and submit the batch job to receive the ExHPDM FMID.

The return code **must** be zero (0) for all steps executed in this job. If you receive a different return code, contact Sun StorageTek Software Support.

Refer to the accompanying sample documentation to APPLY and ACCEPT the base functions using members I4APPLY and I5ACCEPT.

Chapter 4. ExHPDM Post-Installation Tasks

After ExHPDM is installed the following post-installation steps must be completed to successfully use ExHPDM. Where indicated, samples have been provided in the hlq1.STKSAMP library which was installed during the SMP/E apply processing. This library is simply referred to as STKSAMP in the following steps. STKSAMP contains additional samples as described in the STKSAMP member @@SOVNDX.

Authorizing the ExHPDM Load Library

ExHPDM must run as an authorized program in MVS. The ExHPDM load libraries must be defined to the Authorized Program Facility list (APF) by any one of the following steps:

- Dynamically authorize ExHPDM by using the MVS SETPROG APF,ADD,DSNAME operator command, or
- Dynamically authorize ExHPDM by adding the ExHPDM load libraries to the MVS parameter library PROGxx member; for example, SYS1.PARMLIB(PROG00), and issuing the MVS SET PROG=xx operator command, or
- Authorize ExHPDM by adding the ExHPDM load libraries to the MVS parameter library members IEAAPFxx or PROGxx; for example, SYS1.PARMLIB(IEAAPF00) or SYS1.PARMLIB(PROG00), and IPLing the system.

Note: If you are installing ExHPDM 7.0 as an upgrade from Version 3.0, 3.1, or 6.1, point your load libraries to ExHPDM 7.0

Creating the ExHPDM Subsystem Entry

The ExHPDM server requires that an MVS subsystem is defined for its usage. Although any valid subsystem name may be selected, the name SOV is recommended. Subsequent post-installation steps assume the usage of the subsystem name SOV.

The subsystem name may be defined to MVS by any one of the following steps:

- Dynamically create the ExHPDM subsystem name by using the MVS SETSSI ADD,SUBNAME operator command, or
- Create the ExHPDM subsystem name by adding an entry for the subsystem name to the MVS parameter library member IEFSSNxx member; for example, SYS1.PARMLIB(IEFSSN00), and IPLing the system.

Additional parameters may be specified when defining the MVS subsystem to allow ExHPDM to start automatically during MVS subsystem initialization; for example, at IPL time. Refer to the *ExHPDM Operator and System Programmer Guide*, “Chapter 10. Changing MVS Parameter Files” for further information on defining the ExHPDM subsystem.

Note: When using FDRABR then the default ExHPDM subsystem name of SOV should be used to support the FDRABR DYNTAPE operand. If an ExHPDM subsystem name other than SOV is used, then contact Innovation Data Processing Support.

Allocating the ExHPDM Database and Journal Files

Prior to starting the ExHPDM server, a database must be allocated and, optionally, a journal may be allocated. The database is defined as a VSAM KSDS (Keyed Sequence Data Set) and the journal is defined as a PS (Physical Sequential) data set.

Note: See Warning below regarding size of journal.

The following JCL can be used to allocate the ExHPDM database and journal. Before submitting this job, change the jobcard, “dbhlq” and “dbvol” values as required.

This sample JCL is contained in the STKSAMP member SOVDBDEF.

```
//jobcard JOB 'accounting information'
//*
//DEFDBASE EXEC PGM=IDCAMS,REGION=4M
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
DEL dbhlq.SOV.DATABASE
DEL dbhlq.SOV.JOURNAL

DEF CLUSTER -
(NAME(dbhlq.SOV.DATABASE) -
VOLUMES(dbvol) -
SHR(4,4)) -
DATA -
(NAME(dbhlq.SOV.DATABASE.DATA) -
KEYS(63 0) -
RECORDSIZE(256 1024) -
FREESPACE(0 80) -
CYL(80 5) -
CISZ(7168) -
BUFFERSPACE(24576)) -
INDEX -
(NAME(dbhlq.SOV.DATABASE.INDEX) -
CISZ(2048))

ALLOC -
DSNAME('dbhlq.SOV.JOURNAL') -
NEW DSORG(PS) RECFM(F,B,S) LRECL(1) BLKSIZE(1032) -
TRACKS SPACE(50,0) VOLUME(dbvol)
//
```

The database may be shared by multiple ExHPDM servers. However, if journalling is to be used, a unique journal data set must be allocated for each ExHPDM server.

Warning: If journaling is used, ensure that the journal is equal to one-third the size of the database so that the journal is large enough to include all required updates. If the journal fills up during the compress processing, cancel the current backup job and ExHPDM server and restart and resubmit the backup job. It is recommended that the customer perform another backup after the initial backup is completed to clear the journal contents and create a backup of the database in compressed form.

Hint: When allocating multiple journal data sets, use an MVS system symbol value in the data set name to make it unique. For example, &SYSNAME may be used to make the journal unique to a particular system name:
dbhlq.SOV.&SYSNAME..JOURNAL.

Warning: The journal file may then be referenced using system symbols in a common SOVPRMxx startup parameter file. For example, the following may be used in the SOVPRMxx specification:
JOURNAL(dbhlq.sov.&sysname..journal).

Refer to *ExHPDM Operator and System Programmer Guide*, “Chapter 8. ExHPDM Administration Utility (SOVADMN),” “Considerations for Allocating the ExHPDM Database” for additional information on allocating the database, and “Chapter 5. ExHPDM Startup Parameter File,” “Sharing Parameter File Definitions Using System Symbols” for considerations when using multiple ExHPDM servers to share the same database.

Creating the ExHPDM Started Task Procedure

The ExHPDM server should be run as a started task as defined by an MVS started task procedure.

The following sample started task procedure can be used for the ExHPDM server. Change “hlq1” to the high level qualifier(s) used when performing the SMP/E apply processing and add the procedure to the production procedure library.

This sample started task procedure is contained in the STKSAMP member SOVPROC.

```
//SOVPROC PROC
/*-----
/*
/*          Sample startup procedure for ExHPDM
/*          -----
/*
/* Change 'hlq1' to the high level qualifier(s) used during the
/* install of ExHPDM.
/*
/* This sample startup proc uses the sample ExHPDM parameter member
/* SOVPRM00 installed in hlq1.STKSAMP. An alternate parameter
/* member may be selected by changing the PRM(00) on the EXEC PARM
/* to the appropriate suffix value. For example, to select
/* SOVPRM01 use PRM(01)
/*
/*-----
/*
/*
```

```

//SOVPROC EXEC PGM=SOVMAIN,PARM='PRM(00)',TIME=1440,REGION=0M
//*
/*-----
/*
/* StorageTek load library -
/*
/* Required if not in system linklist concatenation.
/*
/* This library must be APF authorized.
/*
/* Change hlq1.STKLOAD to the installed load library name.
/*
/*-----
/*
//STEPLIB DD DISP=SHR,DSN=hlq1.STKLOAD
/*
/*-----
/*
/* StorageTek parameter library Data Set - optional.
/*
/* The default member name for these startup parameters is
/* SOVPRM00.
/*
/* The STKPARMS DD is required if the parameters are not in
/* SYS1.PARMLIB.
/*
/* If the SOVPRM00 member cannot be located in the STKPARMS DD or
/* the STKPARMS DD has not been specified then SYS1.PARMLIB will be
/* used.
/*
/* Change hlq1.STKSAMP to the required parameter data set name.
/*
/*-----
/*
//STKPARMS DD DISP=SHR,DSN=hlq1.STKSAMP
/*
/*-----
/*
/* Standard SYSOUT and diagnostic output - optional.
/*
/*-----
/*
//SYSPRINT DD SYSOUT=*
//SYSTEM DD SYSOUT=*
/*
/* Dump Data Set - optional. Change <dumpds> to the
/* required dump data set name.
/*
/*SYSDUMP DD DISP=SHR,DSN=<dumpds>

```

Customizing the ExHPDM Startup Parameter File

The ExHPDM server uses a parameter file to define the way it should run. The started task procedure for the ExHPDM server which was set up in the previous step “Creating the ExHPDM Started Task Procedure” on page 27 uses the sample SOVPRM00 member contained in STKSAMP. Look at this SOVPRM00 member carefully. There are some very basic SELECT, CLASS, STREAM, and DEVICE keywords which should be customized.

The following show the basic usage of each of the keywords contained in the SOVPRM00 sample and an explanation of how they interrelate.

Refer to the *ExHPDM Operator and System Programmer Guide* “Chapter 5. ExHPDM Startup Parameter File” for a description of the startup parameter file and a description of each keyword. The only mandatory keyword in the startup parameter file is the DATABASE keyword. The defaults for all the other keywords could be accepted; however, the ExHPDM server that is started does not accept any connections.

Note: The startup parameter file may be specified using mixed case keywords and parameters. In the following sample the keywords have been shown in uppercase and the user supplied values have been specified in lowercase.

DATABASE and JOURNAL Keywords

The DATABASE keyword defines the database name, the backup database name and the database backup unit.

The JOURNAL keyword defines the journal data set, the backup journal data set and the journal backup unit. The journal data set is not required, however it is recommended.

Change “dbhlq” to the high level qualifier which was used when allocating the database in “Allocating the ExHPDM Database and Journal Files” on page 26 and change the backup unit “sysallda” reference to a suitable DASD esoteric or generic.

The ExHPDM database and journal may be backed up using the SOVADMN DATABASE BACKUP utility as shown in the STKSAMP member SOVDBBKP.

```
DATABASE(dbhlq.sov.database)
      BACKUPDSN(dbhlq.sov.database.backup UNIT(sysallda))
```

```
JOURNAL(dbhlq.sov.journal)
      BACKJRNL(dbhlq.sov.journal.backup UNIT(sysallda))
```

LOGFILE Keyword

The LOGFILE keyword defines where to log the ExHPDM messages generated by the ExHPDM server. If the LOGFILE keyword is not specified, ExHPDM server output is written as a WTO with ROUTCODE 11.

The following indicates that the ExHPDM log messages are to be output to the SYSOUT class Y.

```
LOGFILE(SYSOUT(y))
```

PREFIX Keyword

The PREFIX keyword establishes a prefix for ExHPDM messages and commands. If this keyword is not specified, the default for the messages prefix is SOV, and the default command prefix is the ExHPDM subsystem name as defined in the step “Creating the ExHPDM Subsystem Entry” on page 25.

Do not specify anything for PREFIX. Accept the defaults for now. If necessary, these can be specified later.

SAF Keyword

The SAF keyword specifies the SAF CLASS name that ExHPDM uses when verifying the resource usage for the ExHPDM STREAM and CLASS by a client connection.

The default SAF CLASS is FACILITY. Accept this default for now. If necessary, this can be specified later.

TMS Keyword

The TMS keyword specifies to ExHPDM the tape management system that is being used. If ExHPDM is identified to the TMS as an External Data Manager (EDM) then the TMS keyword allows ExHPDM to return volumes that have become scratch directly to the TMS. Refer to *ExHPDM Operator and System Programmer Guide* “Chapter 2. Operation” “Using ExHPDM With Your Tape Management System” for details on specifying TMS.

If an ExHPDM supported TMS is installed (CA1, TLMS, ZARA, CONTROLT, RMM or TAPE2000) then change the value “none” to the TMS name, otherwise leave this specified as “none”. Leave the “SCRVOLRTN(disabled)” specification for now. When ExHPDM is set up as an External Data Manager (EDM) to the TMS, then remove this line as indicated in the sample comment.

```
TMS(none
  SCRVOLRTN(disabled) /* Remove this line when ExHDPM has been
                        defined as an EDM to the TMS. */
)
```

MONITOR Keyword

The MONITOR keyword specifies the thresholds and intervals for which warning messages are to be issued about the remaining capacity of the ExHPDM database and journal data sets. Specification of this keyword is recommended.

The following indicates that a message is to be issued when the database or journal reach the threshold of 80 percent full. The message is re-issued at 5-minute intervals.

```
MONITOR(DATABASE(THRESHOLD(80))
  JOURNAL(THRESHOLD(80))
)
```

SELECT Keyword

The SELECT keyword specifies to ExHPDM which client connections belong to which stream class definition. A client connection must be assigned a stream class in order to use ExHPDM. Write client connections are failed if a stream class is not assigned. Read client connections do not require a SELECT specification.

There are many possible selection keywords that may be used in a select rule. For example, DSN, JOB, STEP, PGM. Where a selection keyword is not specified, then that particular value is not used in the selection process. The following SELECT rule, rule1, allows all client connections to be accepted and to be assigned to the CLASS class1.

```
SELECT(rule1
      CLASS(class1)
)
```

CLASS Keyword

The CLASS keyword provides information about a client connection. This includes the expected performance, the management information and the stream definition. The CLASS is only used for write connections.

The following CLASS, class1, allows all client connections to use the STREAM stream1 and to be assigned the MANAGEMENT mgmt1. There are no expected performance levels specified in this sample class.

```
CLASS(class1
      STREAM(stream1)
      MANAGEMENT(mgmt1)
)
```

MANAGEMENT Keyword

The MANAGEMENT keyword specifies to ExHPDM how client data sets are going to be managed. The following MANAGEMENT definition, mgmt1, indicates that client data sets are expired (available for deletion) once they are no longer cataloged in the MVS catalog. Client data sets that have expired may be deleted from the ExHPDM database using the SOVADMN SCANEXPIRE utility as shown in the STKSAMP member SOVDBEXP.

```
MANAGEMENT(mgmt1 EXPIRY(WHENUNCATALOGED))
```

STREAM Keyword

The STREAM keyword specifies to ExHPDM how the client connections specified in the SELECT and CLASS keywords are streamed to a particular device. The following STREAM, stream1, uses the devices defined by the DEVICE device1 definition.

The number of simultaneous connections that are allowed per device is set by the CONNECTIONS value. The value 5 in the following example gives good performance for most tape devices.

The CONCURRENT values for WRITE and READ have been set to a large value in order for the number of tape devices that may be used to be specified by the DEVICE definition. This is required as the default values for CONCURRENT READ and WRITE is 10. Having the default value might prevent all tape devices in the DEVICE definition from being used.

Change “sfhlq” to the required stream file name high level qualifier. By default the stream file is ICF cataloged when a stream completes successfully.

```

STREAM(stream1
  DSN(sfhlq.stream1)
  DEVICE(device1)
  CONNECTIONS(5)
  CONCURRENT(WRITE(9999) READ(9999))
)

```

DEVICE Keyword

The DEVICE keyword allows a device definition to be defined for any number of stream definitions. The following DEVICE, device1, indicates the unit (esoteric or generic) that may be used by the ExHPDM stream. Change the esoteric “cart” to one that ExHPDM may use and set the DEVICELIMIT to the number of devices that ExHPDM may use.

```

DEVICE(device1
  UNIT(cart)
  DEVICELIMIT(16) DEFAULT
)

```

Starting the ExHPDM Server

The following points may require attention before starting ExHPDM; they are described in the *ExHPDM Operator and System Programmer Guide*,

- An understanding of the system security, authorization, and verification as they apply to ExHPDM,
- Knowledge of the ExHPDM operator commands, as necessary.

Start the ExHPDM server procedure, called SOVPROC, from the MVS console. Issue the MVS START SOVPROC operator command:

```
START SOVPROC
```

This starts the ExHPDM server address space. The following output is typical of the very first startup. Note how ExHPDM performs database and journal formatting.

```

S SOVPROC
IEF403I SOVPROC - STARTED - TIME=00.30.01
- MVSr  SOV03025I SSI startup parameters parsed successfully.
- MVSr  SOV03025I DSN:HLQ1.STKSAMP(SOVPRM00) parsed successfully.
- MVSr  SOV03001I ExHPDM 7.0.0 is starting.
- MVSr  SOV00002I (SOVCG300) SMF Timer Subtask Active.
- MVSr  SOV06557I SMF recording inactive.
- MVSr  SOV00002I (SOVCG100) SMF task attached.
- MVSr  SOV03069I Operator interface active. ExHPDM command recognition-string is SOV.
- MVSr  SOV03053I ExHPDM is waiting for work.
- MVSr  SOV09234I Journal DBHLQ.SOV.JOURNAL is being initialized.
        Please wait . . . .
- MVSr  SOV09235I Journal DBHLQ.SOV.JOURNAL initialization complete.
- MVSr  SOV09222W Database extended by 735 K bytes.

```

Once ExHPDM has initialized its database it is ready to accept work. Before running any client jobs issue the ExHPDM operator command DISPLAY OPTIONS to see what

parameter options have been specified and what defaults are being used. The following output is generated when the STKSAMP member SOVPRM00 is used.

SOV DISPLAY OPTIONS

SOV02103I ExHPDM command issued.

SOV06900I Parameter file is DSN:HLQ1.STKSAMP(SOVPRM00)

Parameter (O)riginal Parameter file value

(E)ffective value

(C)hange value ; in progress

```

-----
DATABASE  O  DBHLQ.SOV.DATABASE
BACKDSN   O  DBHLQ.SOV.DATABASE.BACKUP UNIT(SYSALLDA) VOLSER (not
              O  LIMIT (Not specified)
JOURNAL   O  DBHLQ.SOV.JOURNAL
BACKJRNL  O  DBHLQ.SOV.JOURNAL.BACKUP UNIT(SYSALLDA) VOLSER (not
              specified)
MONITOR   O  DATABASE THRESH(80%) WARN INTERVAL(5M )
              O  JOURNAL THRESH(80%) WARN INTERVAL(5M )
              E  DATABASE THRESH(80%) WARN INTERVAL(5M )
              E  JOURNAL THRESH(80%) WARN INTERVAL(5M )
PREFIX(MSG) O Not specified
              E  SOV
PREFIX(CMD) O Not specified
              E  SOV
SAF       O  Not specified
              E  FACILITY
LOGFILE   O  SYSOUT(Y)
              E  SYSOUT(Y)
TMS       O  NONE
              O  SCRVLRTN(DISABLED)
              E  NONE
              E  SCRVLRTN(DISABLED)
REQUEST   O  Not specified
              E  ADMIN   : MAXLIMIT(20) LOG(NO)
              E  CONNECT : MAXLIMIT(200) LOG(NO)
              E  OPERCMD : MAXLIMIT(20) LOG(NO)
              E  VALIDATE : MAXLIMIT(200) LOG(NO)
SMF       O Not Specified
              E Not Specified
ACTIVATE  0 Not Specified
              E Not Specified

```

SOV06905I Start up parameters.

Parameter (O)riginal start value

(E)ffective value

```

-----
PRM       O 00
              E 00
MEMBER    O Not specified
              E SOVPRM
QUIET     O Not specified
              E ON
VERBOSE   O Not specified
              E OFF
TRACE     O Not specified
              E OFF EID(0) FID(0)
SSNAME    O SOV
              E SOV

```

KEY O Not specified
E 5

Note: It is recommended when changing from one version of ExHPDM to another to specify the RENEW start parameter as in the following example.

```
S SOVPROC,PARM='PRM(00) RENEW'
```

Running Client Jobs

Once the ExHPDM server is active then client jobs may be run to verify the installation. The following jobs, contained in the STKSAMP library, may be run depending on whether DFSMSdss and/or FDR are installed. In either case, these samples show how to use parallel processing to stream client data to and from a single ExHPDM stream file.

The client jobs establish a connection with the started ExHPDM server through the DD SUBSYS JCL directive. DD SUBSYS refers to the subsystem name that was assigned to the ExHPDM server when it was started. If the ExHPDM server was started with a subsystem name other than SOV, then the DD SUBSYS specifications used in these jobs needs to be changed to reflect the chosen value. ExHPDM V7.0 has support for SMC V7.0 to set via policies, the dynamic setting of the DD SUBSYS specification. This new feature provides customers with the ability of running client jobs, without having to alter their existing backup/restore jobs to make use of ExHPDM. For further information refer to the *ExHPDM Operator and System Programmer Guide* and the *SMC 7.0 Configuration and Administration Guide*.

DFSMSdss Client Jobs

DFSMSdss may be used as a client to ExHPDM using the program name SOVDSSU. SOVDSSU was installed as part of the SMP/E apply processing into the hlq1.STKLOAD data set. SOVDSSU interfaces with the DFSMSdss program ADRDSSU as a DFSMSdss UIM (User Interface Module). All DFSMSdss directives that may be specified with ADRDSSU may also be specified with SOVDSSU. ExHPDM streams data when the DFSMSdss DUMP, RESTORE and COPYDUMP directives are used. All other DFSMSdss directives are processed, but do not use ExHPDM streaming.

DFSMSdss DUMP

The following sample JCL can be used to test DFSMSdss dump processing by running a batch job to use DFSMSdss to dump four volumes at the same time using the PARALLEL directive. Before submitting this job, change the jobcard, “dmphlq” and volume names as required and change “hlq1” to the high level qualifier(s) used when performing the SMP/E apply processing.

This sample job is contained in the STKSAMP member SOVSDM1.

```
//jobcard JOB 'accounting information'  
//*  
//DUMPFVOL EXEC PGM=SOVDSSU,REGION=4M  
//STEPLIB DD DISP=SHR,DSN=hlq1.STKLOAD  
//SYSPRINT DD SYSOUT=*  
//MNR120 DD DSN=dmphlq.SAMPLE.SOVDSSU.MNR120,
```

```

//      SUBSYS=SOV,DISP=(,CATLG,DELETE)
//MNR522 DD DSN=dmphlq.SAMPLE.SOV DSSU.MNR522,
//      SUBSYS=SOV,DISP=(,CATLG,DELETE)
//MNR110 DD DSN=dmphlq.SAMPLE.SOV DSSU.MNR110,
//      SUBSYS=SOV,DISP=(,CATLG,DELETE)
//MNR430 DD DSN=dmphlq.SAMPLE.SOV DSSU.MNR430,
//      SUBSYS=SOV,DISP=(,CATLG,DELETE)
//SYSIN DD *
PARALLEL
DUMP FULL INDYNAM(MNR120) OUTDDNAME(MNR120) WAIT(2,2)
DUMP FULL INDYNAM(MNR522) OUTDDNAME(MNR522) WAIT(2,2)
DUMP FULL INDYNAM(MNR430) OUTDDNAME(MNR430) WAIT(2,2)
DUMP FULL INDYNAM(MNR110) OUTDDNAME(MNR110) WAIT(2,2)
//

```

While this dump job is running, issue the ExHPDM operator command DISPLAY STREAM DETAIL to see how the clients are being streamed to a single tape file called a stream file. Notice how the stream file has an 8-character suffix value (FVLBDJB4). This suffix is assigned by ExHPDM to make the stream file name unique. The suffix value assigned by ExHPDM varies depending on when the stream file is created.

```

SOV DISPLAY STREAM DETAIL
SOV02103I ExHPDM command issued.
SOV06055I Stream : STREAM1 ID : 45 Device : 0B80 VOL : 542588
File : SFHLQ.STREAM1.FVLBDJB4
Write Flow Rate : 0 KB/sec Blocks : 1597
Instantaneous Flow Rate: 1792 KB/sec
Status : I/O in progress
Volumes : Current 1, NNCA 40, Max 50
Elapse Time (HH:MM:SS) : 00:01:06
Client Client Client Connection Class Blocks Elapse Time
ASID Name DD ID HH:MM:SS
-----
0043 SOVSDM1 MNR120 44 CLASS1 376 00:01:06
0043 SOVSDM1 MNR522 46 CLASS1 423 00:01:06
0043 SOVSDM1 MNR430 47 CLASS1 380 00:01:05
0043 SOVSDM1 MNR110 48 CLASS1 418 00:01:05
SOV06053I Total stream tasks : 1 Connections : 4
Selected stream tasks : 1 Connections : 4

```

As the sample only has four parallel dumps, only one stream is active. Each occurrence of the STREAM1 stream accepts five connections as specified in the sample SOVPRM00 startup file . If another similar job was run at the same time that also contained four dumps then one of the dumps would connect to the existing stream and the other three connections would cause another stream to be started.

Once the job is complete, verify that all of the dumps were successful. Additional information is output, by ExHPDM, to the jobs JESYSMSG data set to indicate how each of the client connections were processed.

DFSMSdss RESTORE

Use the following sample JCL to run a batch job using ExHPDM to restore to some spare (SPAREx) volumes the four volumes which were dumped in the previous JCL. Before submitting this job, change the jobcard, “dmphlq” and volume names as required and

change “hlq1” to the high level qualifier(s) used when performing the SMP/E apply processing.

This sample job is contained in the STKSAMP member SOVDSRS1.

```
//jobcard JOB 'accounting information'
//*
//RESTFVOL EXEC PGM=SOVDSSU,REGION=4M
//STEPLIB DD DISP=SHR,DSN=hlq1.STKLOAD
//SYSPRINT DD SYSOUT=*
//MNR120 DD DSN=dmphlq.SAMPLE.SOVDSSU.MNR120,
//      SUBSYS=SOV
//MNR522 DD DSN=dmphlq.SAMPLE.SOVDSSU.MNR522,
//      SUBSYS=SOV
//MNR110 DD DSN=dmphlq.SAMPLE.SOVDSSU.MNR110,
//      SUBSYS=SOV
//MNR430 DD DSN=dmphlq.SAMPLE.SOVDSSU.MNR430,
//      SUBSYS=SOV
//SYSIN DD *
PARALLEL
RESTORE INDD(MNR120) OUTDYNAM(SPARE1) COPYVOLID
RESTORE INDD(MNR522) OUTDYNAM(SPARE2) COPYVOLID
RESTORE INDD(MNR430) OUTDYNAM(SPARE3) COPYVOLID
RESTORE INDD(MNR110) OUTDYNAM(SPARE4) COPYVOLID
```

While the job is running issue the ExHPDM operator command DISPLAY STREAM DETAIL. This command shows that the restores are being streamed from the same stream file that was used in the DUMP processing.

Once the job has completed, verify that the volumes have been restored successfully. Additional information is output, by ExHPDM, to the jobs JESYSMSG data set to indicate how each of the client connections were processed.

When the above steps are completed, a basic version of ExHPDM set up is complete and verified with DFSMSdss. As you grow familiar with the product, more parameters can be specified in the startup parameter file to optimize ExHPDM into the environment to use it to its full potential.

FDR Client Jobs

Unlike DFSMSdss, FDR does not require any additional interface program to work with ExHPDM. All interfacing with ExHPDM is performed through the DD SUBSYS JCL directive. ExHPDM works with FDR, FDRDSF, FDRABR, FDRAPPL, FDRTCOPY, FDRTSEL and FDRCRYPT.

FDR DUMP

The following sample JCL can be used to test the ExHPDM installation using FDR by running a batch job with FDR to dump four volumes at the same time using the ATTACH directive. Before submitting this job, change the jobcard, “dmphlq” and volume names assigned to the DISKx DDs as required.

This sample job is contained in the STKSAMP member SOVFDDM1.

```

//jobcard JOB 'accounting information'
//*
//DUMPFVOL EXEC PGM=FDR,REGION=4M
//SYSPRINT DD SYSOUT=*
//DISK1 DD UNIT=SYSALLDA,VOL=SER=MNR120,DISP=OLD
//TAPE1 DD DSN=dmphlq,SAMPLE.FDR.MNR120,
//      SUBSYS=SOV,DISP=(,CATLG,DELETE)
//SYSPRIN1 DD SYSOUT=*
//DISK2 DD UNIT=SYSALLDA,VOL=SER=MNR522,DISP=OLD
//TAPE2 DD DSN=dmphlq,SAMPLE.FDR.MNR522,
//      SUBSYS=SOV,DISP=(,CATLG,DELETE)
//SYSPRIN2 DD SYSOUT=*
//DISK3 DD UNIT=SYSALLDA,VOL=SER=MNR110,DISP=OLD
//TAPE3 DD DSN=dmphlq,SAMPLE.FDR.MNR110,
//      SUBSYS=SOV,DISP=(,CATLG,DELETE)
//SYSPRIN3 DD SYSOUT=*
//DISK4 DD UNIT=SYSALLDA,VOL=SER=MNR430,DISP=OLD
//TAPE4 DD DSN=dmphlq,SAMPLE.FDR.MNR430,
//      SUBSYS=SOV,DISP=(,CATLG,DELETE)
//SYSPRIN4 DD SYSOUT=*
//SYSIN DD *
DUMP TYPE=FDR,ATTACH,MAXERR=1
//

```

While this dump job is running, issue the ExHPDM operator command DISPLAY STREAM DETAIL to see how the clients are being streamed to a single tape file called a stream file. Notice how the stream file has an 8-character suffix value (FVLF01P5). This is assigned by ExHPDM to make the stream file name unique. The suffix value assigned by ExHPDM varies depending on when the stream file is created.

```

SOV DISPLAY STREAM DETAIL
SOV02103I ExHPDM command issued.
SOV06055I Stream : STREAM1 ID : 62 Device : 0B80 VOL : 542592
File : SFHLQ.STREAM1.FVLF01P5
Write Flow Rate : 0 KB/sec Blocks : 3754
Instantaneous Flow Rate: 3840 KB/sec
Status : I/O in progress
Volumes : Current 1, NNCA 40, Max 50
Elapse Time (HH:MM:SS) : 00:02:02
Client Client Client Connection Class Blocks Elapse Time
ASID Name DD ID HH:MM:SS
-----
0041 SOVFDDM1 TAPE1 59 CLASS1 836 00:02:02
0041 SOVFDDM1 TAPE2 60 CLASS1 1007 00:02:02
0041 SOVFDDM1 TAPE3 62 CLASS1 1010 00:02:02
0041 SOVFDDM1 TAPE4 63 CLASS1 901 00:02:02
SOV06053I Total stream tasks : 1 Connections : 4
Selected stream tasks : 1 Connections : 4

```

As the sample only has four attached dumps, only one stream is active. Each occurrence of the STREAM1 stream accepts five connections as specified in the sample SOVPRM00 startup file. If another similar job was run at the same time that also contained four dumps, then one of the dumps would connect to the existing stream and the other three connections would cause another stream to be started.

Once the job is complete, then verify that the dumps were successful. Additional, information is output, by ExHPDM, to the jobs JESYSMSG data set to indicate how each of the client connections were processed.

FDR RESTORE

Use the following sample JCL to run a batch job using ExHPDM to restore to some spare (SPARE_x) volumes the four volumes which were dumped in the previous JCL. This job performs four FDR full volume restores using ExHPDM at the same time using the MAXTASKS directive. MAXTASKS should be set to the number of TAPE_x/DISK_x pairs specified in the JCL. Before submitting this job, change the jobcard, “dmphlq” and DISK_x volume names as required.

This sample job is contained in the STKSAMP member SOVDSRS1.

```
//jobcard JOB 'accounting information'
//*
//RESTFVOL EXEC PGM=FDR,REGION=4M
//SYSPRINT DD SYSOUT=*
//DISK1 DD UNIT=SYSALLDA,VOL=SER=SPARE1,DISP=OLD
//TAPE1 DD DSN=dmphlq.SAMPLE.FDR.MNR120,
// SUBSYS=SOV
//SYSPRIN1 DD SYSOUT=*
//DISK2 DD UNIT=SYSALLDA,VOL=SER=SPARE2,DISP=OLD
//TAPE2 DD DSN=dmphlq.SAMPLE.FDR.MNR522,
// SUBSYS=SOV
//SYSPRIN2 DD SYSOUT=*
//DISK3 DD UNIT=SYSALLDA,VOL=SER=SPARE3,DISP=OLD
//TAPE3 DD DSN=dmphlq.SAMPLE.FDR.MNR110,
// SUBSYS=SOV
//SYSPRIN3 DD SYSOUT=*
//DISK4 DD UNIT=SYSALLDA,VOL=SER=SPARE4,DISP=OLD
//TAPE4 DD DSN=dmphlq.SAMPLE.FDR.MNR430,
// SUBSYS=SOV
//SYSPRIN4 DD SYSOUT=*
//SYSIN DD *
RESTORE TYPE=FDR,MAXTASKS=4,MAXERR=1,CPYVOLID=YES
//
```

While then job is running, then issue the ExHPDM operator command DISPLAY STREAM DETAIL. This command shows that the restores are being streamed from the same stream file that was used in the DUMP processing.

Once the job has completed then verify that the volumes have been restored successfully. Additional information is output to the jobs JESYSMSG data set, by ExHPDM, to indicate how each of the client connections were processed.

When the above steps are completed, a basic version of ExHPDM set up is complete and verified with FDR. As you grow familiar with the product, more parameters can be specified in the startup parameter file to optimize ExHPDM into the environment to use it to its full potential.

Additional Information

Oracle Corporation (Oracle) offers several methods for you to obtain additional information.

Oracle's External Web Site

Oracle's external Web site provides marketing, product, event, corporate, and service information. The external Web site is accessible to anyone with a Web browser and an Internet connection. The URL for the Oracle external Web site is: <http://www.oracle.com/us/index.html>

The URL for Oracle's StorageTek storage information is:

<http://www.oracle.com/us/products/servers-storage/storage/index.html>

Oracle's StorageTek Documentation

The URL for Oracle's StorageTek documentation is:

<http://docs.sun.com/app/docs>

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The Oracle Global Partners site provides information about solutions available with Oracle's partners:

<http://www.oracle.com/partners/index.html>

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Oracle's Global Offices

You may contact any of Oracle's worldwide offices to discuss complete storage, service, and support solutions for your organization. You can find contact information at:
<http://www.oracle.com/corporate/contact/global.html>

Customer Support

For more information about Oracle support (including for StorageTek branded products) see:
<http://www.oracle.com/us/support/index.html>

Conventions for Reader Usability

Conventions are used to shorten and clarify explanations and examples within this book.

Typographic

The following typographical conventions are used in this book:

- ? **Bold** is used to introduce new or unfamiliar terminology.
- ? Letter Gothic is used to indicate command names, filenames, and literal output by the computer.
- ? Letter Gothic Bold is used to indicate literal input to the computer.
- ? *Letter Gothic Italic* is used to indicate that you must substitute the actual value for a command parameter. In the following example, you would substitute your name for the “username” parameter.
- ? Logon *username*
- ? A bar (|) is used to separate alternative parameter values. In the example shown below either username or systemname must be entered.
- ? Logon *username|systemname*
- ? Brackets [] are used to indicate that a command parameter is optional.
- ? Ellipses (...) are used to indicate that a command may be repeated multiple times.
- ? The use of mixed upper and lower case characters (for non–case sensitive commands) indicates that lower case letters may be omitted to form abbreviations. For example, you may simply enter **Q** when executing the **Quit** command.

Keys

Single keystrokes are represented by double brackets [[]] surrounding the key name. For example, press [[ESC]] indicates that you should press only the escape key.

Combined keystrokes use double brackets and the plus sign (+). The double brackets surround the key names and the plus sign is used to add the second keystroke. For example, press [[ALT]] + [[C]] indicates that you should press the alternate key and the C key simultaneously.

Enter Command

The instruction to “press the [[ENTER]] key” is omitted from most examples, definitions, and explanations in this book.

For example, if the instructions asked you to “enter” **Logon pat**, you would type in **Logon pat** and press [[ENTER]].

However, if the instructions asked you to “type” **Logon pat**, you would type in **Logon pat** and you would *not* press [[ENTER]].

Warnings, Cautions, and Notes - Software

The following are used in software documentation.

Caution – Information necessary to keep you from corrupting your data.

Tip – Information that can be used to shorten or simplify your task or they may simply be used as a reminder.

Note – Information that may be of special interest to you. Notes are also used to point out exceptions to rules or procedures.

Warnings, Cautions, and Notes - Hardware

The following are used in hardware documentation.

Note – A note provides additional information that is of special interest. A note might point out exceptions to rules or procedures. A note usually, but not always, follows the information to which it pertains.

Caution – A caution informs you of conditions that might result in damage to hardware, corruption of data, or corruption of application software. A caution always precedes the information to which it pertains.



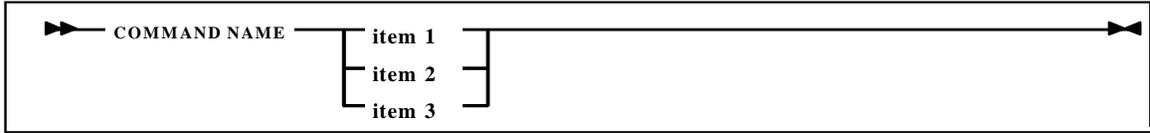
Warning – Possible Physical Injury. A warning alerts you to conditions that might result in long-term health problems, injury, or death. A warning always precedes the information to which it pertains.



Syntax

Syntax flow diagram conventions include the following:

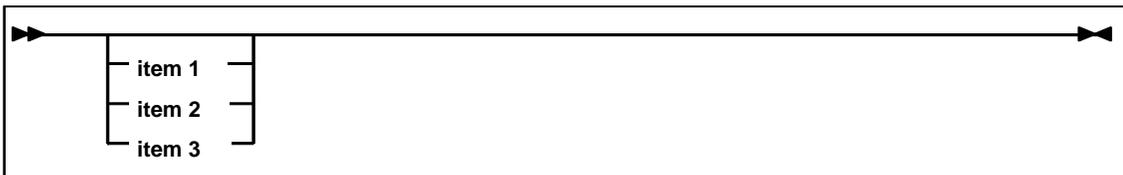
Flow Lines—Syntax diagrams consist of a horizontal baseline, horizontal and vertical branch lines and the command text. Diagrams are read left to right and top to bottom. Arrows show flow and direction.



Single Required Choice—Branch lines (without repeat arrows) indicate that a single choice must be made. If one of the items to choose from is on the baseline of the diagram, one item must be selected.



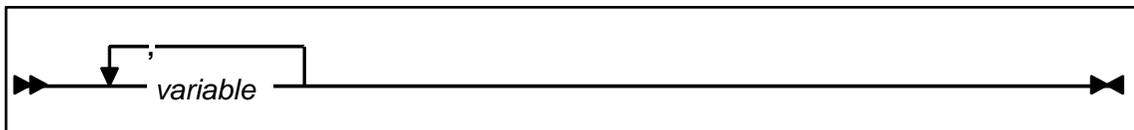
Single Optional Choice—If the first item is on the line below the baseline, one item may optionally be selected.



Defaults—Default values and parameters appear above the baseline.



Repeat Symbol—A repeat symbol indicates that more than one choice can be made or that a single choice can be made more than once. The repeat symbol shown in the following example indicates that a comma is required as the repeat separator.



Keywords—All command keywords are shown in all upper case or in mixed case. When commands are not case sensitive, mixed case implies that the lowercase letters may be omitted to form an abbreviation.

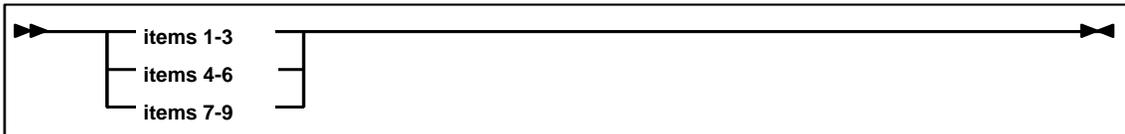
Variables—Italic type is used to indicate a variable.

Alternatives—A bar (|) is used to separate alternative parameter values.

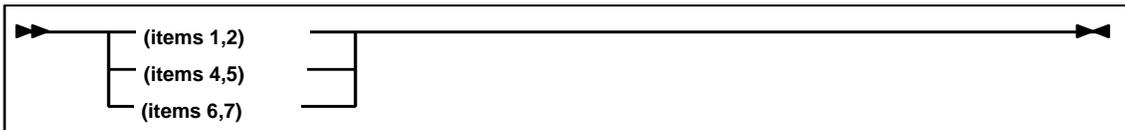
Optional—Brackets [] are used to indicate that a command parameter is optional.

Delimiters—If a comma (,), a semicolon (;), or other delimiter is shown with an element of the syntax diagram, it must be entered as part of the statement or command.

Ranges—An inclusive range is indicated by a pair of elements of the same length and data type, joined by a dash. The first element must be strictly less than the second element.



Lists—A list consists of one or more elements. If more than one element is specified, the elements must be separated by a comma or a blank and the entire line must be enclosed by parentheses.



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