File No. S370-37
Order No. GC34-2002-1

GC34-2014-0
Miss.

# OS/VS Display Exception Monitoring Facility System Information

**Systems**

IBM

File No. S370-37
Order No. GC34-2002-1

Systems

# OS/VS Display Exception Monitoring Facility System Information

SUID 5752-868 for OS/VS2 MVS
SUID 5741-624 for OS/VS1
ICR UY99958 for OS/VS2 SVS

SECOND EDITION (March, 1979)

This edition is a major revision of, and obsoletes, GC34-2002-0. It reflects minor technical and editorial changes. Changes or additions to the text and illustrations are indicated by a vertical line to the left of the change. Significant changes are summarized under the "Summary of Amendments" following the figure list.

This edition applies to the Display Exception Monitoring Facility (DEMF) for use with the following operating systems:

- OS/VS1 Release 6 and 6.7
- OS/VS2 SVS Release 1.7
- OS/VS2 MVS Release 3.7 and 3.8

and to all subsequent releases until otherwise indicated in new editions or Technical Newsletters. Support for DEMF does not extend to these operating systems running as virtual machines under VM/370. Changes are continually made to the information herein; before using this publication in connection with the operation of IBM systems, consult the latest IBM System/370 Bibliography, GC20-0001, for the editions that are applicable and current.

Publications are not stocked at the address given below; requests for IBM publications should be made to your IBM representative or to the IBM branch office serving your locality.

A form for reader's comments is provided at the back of this publication. If the form has been removed, comments may be addressed to IBM Corporation, Service Systems Publications, Dept. Z59, P. O. Box 390, Poughkeepsie, N. Y. U.S.A. 12602. IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation whatever. You may, of course, continue to use the information you supply.

# Preface

This manual provides information needed to plan for installation and use of the Display Exception Monitoring Facility (DEMF), a facility that allows the user to retrieve and examine communications error data in an interactive environment. The manual provides a general description of DEMF and the planning information needed for the installation of this product.

This manual is divided into the following chapters:

- Introduction — a general understanding of DEMF structure and function.
- Planning and Requirements — the DEMF requirements on the hardware, operating system, and application environments of the installation.
- Supplemental Information — ordering information, publications, and a module list for DEMF.

Detailed information for the DEMF user is provided in the OS/VS Display Exception Monitoring Facility User's Guide, GC34-2003.

# Contents

## Figure

## March 1979 Edition

- The data set and library section has been reorganized; two additional libraries are included.
- More detail is provided on preparing the application environment for DEMF installation.
- Ordering and distribution information on basic and related optional materials has been deleted.

# Chapter 1. Introduction

The Display Exception Monitoring Facility (DEMF) is a program that offers users of IBM 3270 Information Display Systems assistance in locating a hardware problem in a communications network. This location process progressively points to each most probably failing hardware component (for example, a line, a control unit, or a terminal).

Support for bisynchronous and start-stop protocols operating on either nonswitched or switched lines is provided in this problem determination facility.

User-oriented displays of permanent error counts for lines, control units, and terminals aid in determining where the problem is. Exception status conditions and their interpretations are provided at the terminal level to aid in determining the most probable cause of the error.

To aid in network problem determination, the DEMF user has access, via the terminal, to the error data accumulated by the logging function. This data is presented as:

- Error counts for remote binary synchronous and start-stop lines or local 3270 control units.
- Error counts for all 3270 control units for the line selected, and/or all line errors for the line selected.
- Error counts by terminal for the 3270 control unit selected.
- A status description, in chronological order, of specific line or terminal error occurrences.
- An easy-to-read explanation of the selected error incident for the terminal.
- A list of specific meanings for various combinations of 3270 sense and status conditions.

## DEMF Operating Environment

DEMF is logically composed of two major tasks: a logging function and a display function. The link between the two is a common data set (SYS1.DEMFLOG) in which the logging function records errors and from which the display function obtains the error data requested by the user.

The sources of error information for all displays are the communication error records created for SYS1.LOGREC.

### *Logging Function*

When activated by the system operator, the logging function runs as a system task and is passed communication errors from SVC 76. It runs under the OS/VS1, OS/VS2 SVS, and OS/VS2 MVS systems.

When the logging function gets control, it writes communication incident records to a data set used by the display function.

### *Display Function*

The display function is a problem program that runs under TCAM, CICS/VS, or IMS/VS. It is activated when the user enters the DEMF command at his terminal.

The user may request a DEMF display directly by command, or may respond to prompting to select the appropriate information. Combinations of these two methods are frequently used.

## Data Flow

The accumulation of errors begins when the system operator starts the DEMF logging function.

Errors occurring on communication devices are written to the SYS1.DEMFLOG data set. Then the DEMF display components, supported by the application environment, present a structured display of the errors accumulated to the DEMF user when requested.

The components are shown in Figure 1.

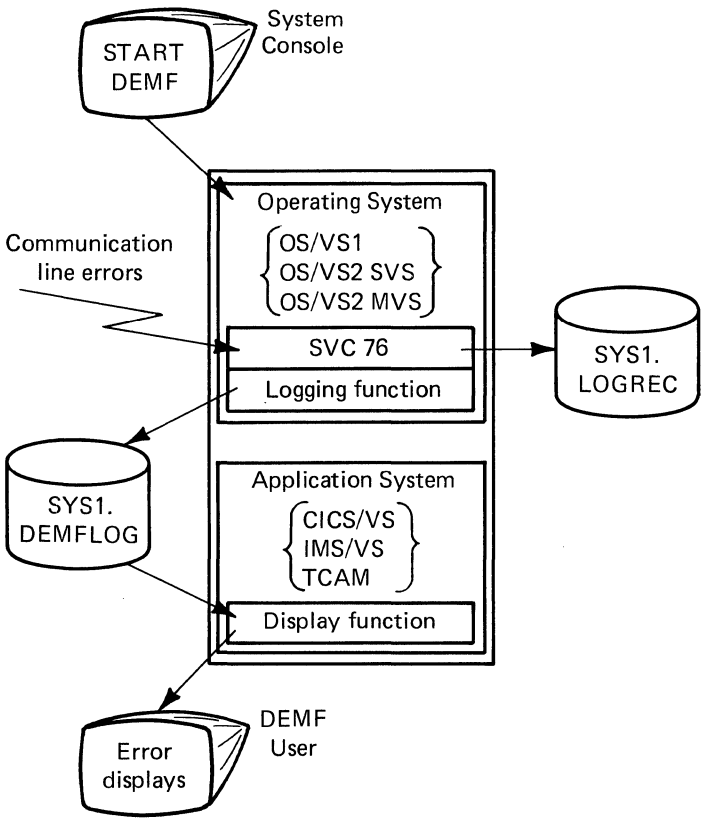


Figure 1. DEMF Data Flow

# Chapter 2. Planning for DEMF

This chapter identifies the effect of DEMF upon:

- Machine requirements
- Programming requirements
- Installation planning
- Storage estimates

## Machine Requirements

Keyboard entry and display are supported from any of the following devices:

- 3275 Model 1 or 2 display stations attached via a BSC line to a 270X or 370X in EP mode or to an Integrated Communications Adapter.
- 3276 Model 1, 2, 3, or 4 control unit display stations attached via a BSC line to a 270X or 370X in EP mode or an Integrated Communications Adapter, or connected locally to a host.
- 3277 Model 1 or 2 display stations attached to a 3271 Model 1 or 2 or a 3274 Model 1C control unit connected via a BSC line to a 270X or a 370X in EP mode or to an Integrated Communications Adapter.
- 3277 Model 1 or 2 display stations attached to a 3272 Model 1 or 2 control unit or a 3274 Model 1B control unit connected locally to the host.
- 3278 Model 1, 2, 3, or 4 display stations attached to a 3274 Model 1C control unit or to a 3276 Model 1, 2, 3, or 4 control unit display station connected via a BSC line to a 270X or 370X in EP mode or to an Integrated Communications Adapter.
- 3278 Model 1, 2, 3, or 4 display stations attached to a 3274 Model 1B control unit or to a 3276 Model 1, 2, 3, or 4 control unit display station connected locally to the host.

The 3276 and 3278 Models 3 and 4 operate like a 3277 Model 2; the Models 1 and 2 operate like a 3277 Model 1.

Error data collected for display may be one of the follcwing types:

- Remote status from the devices mentioned previously for failures detected within their attached products.
- Channel and unit status from failures occurring while attempting connection to the devices mentioned previously.
- Channel and unit status from failures occurring while attempting connection to other products using the BSC or start-stop line discipline (e.g., 2260, 1050, or 2741).

## Programming Requirements

For DEMF to function, consideration must be given to the level of the operating system and the level of the application environment, CICS/VS, IMS/VS, or TCAM.

### *Operating System Levels*

The DEMF display function uses information from the DEMF logging function which executes as a system task under the OS/VS1, OS/VS2 SVS, and OS/VS2 MVS operating systems. This logging function is dependent on modifications to the following components under each of the systems mentioned earlier:

- SVC 76 module IGC0007F for MVS; module IFBSTAT for VS1 and SVS.
- SYS1.LOGREC DCB
- EREP

The modification to the SYS1.LOGREC DCB requires that the nucleus be link-edited. In addition, the BDAM access method must be installed as part of the operating system. The release levels of the operating systems to which these modifications are to be installed and the APAR support release levels are as follows:

- OS/VS1 Release 6.0 and 6.7
- OS/VS2 SVS Release 1.7
- OS/VS2 MVS Release 3.7 and 3.8

Support for DEMF does not extend to these operating systems running as virtual machines under VM/370.

### *Data Sets and Libraries*

The following data sets and libraries are updated for DEMF:

- SYS1.NUCLEUS

  A new nucleus is created when the CSECT IFBDCB00 is replaced.

- SYS1.LINKLIB

  The logging function module BNGLOGER is added. The following TCAM display function modules are added:

  ```
  BNGTDISP
  BNGT3270
  BNGTLOCL
  BNGTRMOT
  BNGTMENU
  BNGTQEMF
  ```

  For OS/VS1, the System Task List is updated to add the entry name BNGLOGER using PTF UX11275.

- CICS.LOADLIB (for SVS only; SYS1.LINKLIB for MVS and VS1)

  The following CICS display function modules are added:

  ```
  BNGCDISP
  BNGC3270
  BNGCLOCL
  BNGCRMOT
  BNGCMENU
  ```

- IMSVS.PGMLIB

  The following IMS display function modules are added:

  ```
  BNGIDISP
  BNGILOCL
  BNGIMENU
  BNGIREAD
  BNGIRMOT
  BNGISIMS
  BNGI3270
  ```

- IMSVS.RESLIB

  The IMS display function module BNGIEXIT is added.

- SYS1.MACLIB

  The TCAM display function module BNGTDEMF (alias DEMF) is added.

- SYS1.TELCMLIB

  The TCAM display function module BNGTQEMA is added.

- SYS1.SVCLIB (OS/VS1 or OS/VS2 SVS) or SYS1.LPALIB (OS/VS2 MVS)

  Module IFBSTAT (OS/VS1 or OS/VS2 SVS) or module IFBSVC76 (OS/VS2 MVS) is replaced with an update for DEMF.

  For OS/VS2 SVS, the Program Property Table (Module IEFSD061, CSECT IEFSDPPT) in SYS1.LPALIB is changed to include the name BNGLOGER.

- SYS1.PROCLIB

  Procedure DEMF is added, allowing the operator to start the logging function system task.

  For TCAM applications, procedure DEMFTCAM is added.

- SYS1.DEMFLOG

  This new data set is created to record communication errors.

### *CICS/VS*

Display support by CICS/VS that allows for APAR support requires that CICS/VS Release 1.3 with BTAM be installed. CICS/TCAM runs under the DEMF/TCAM problem program.

CICS/TCAM supports only the use of TCAM symbolic names and does not recognize CICS symbolic names.

### *IMS/VS*

Display support by IMS/VS that allows for APAR support requires that IMS/VS Release 1.1.4 with BTAM be installed. IMS/TCAM runs under the DEMF/TCAM problem program.

IMS/TCAM supports only the use of TCAM symbolic names and does not recognize IMS symbolic names.

### *TCAM*

Display support by TCAM that allows for APAR support requires that TCAM 9 or TCAM 10 be installed for OS/VS2 MVS and that TCAM 10 be installed for OS/VS1 and OS/VS2 SVS. TCAM 9 for OS/VS2 MVS is Selectable Unit 2 (VS2.3.802) and TCAM 10 for OS/VS2 MVS is Selectable Unit 36 (VS2.3.836); TCAM 10 for OS/VS1 is Selectable Unit 2 (5741-602) and for OS/VS2 SVS is Component Release UY99915.

DEMF is supported through TCAM by the TCAM Application Program Message Handler. If the user's terminal has a TSO message handler, he must sign off and sign on using TCAM.

## Installation Planning

The following information is useful in preparing the application environment (CICS/VS, TCAM, or IMS/VS) for the installation of DEMF. Actual installation instructions appear in the program directory, provided with the distribution tape from PID.

### *Installing Under CICS/VS*

Before installing DEMF on the host CICS/VS system, ensure:

- That the host system has direct access for READ and WRITE (BDAM GET and PUT) generated in its File Control Program (FCP).
- That the host system has local and/or remote 3270 support generated in its Terminal Control Table (TCT).
- That the host system TCT correctly describes all terminal types and models, and that all 3270 DCBs (SDSCI) have ERROPT=T.
- That user modifications to the host system do not alter the length of any TCT line entry, terminal entry, or the address constants at the end of the TCT.
- That DFHSG macro does not specify the option, TCTUA=V1COMPAT.
- That the value of the OSCOR parameter is not marginal. If it is, it must be increased.

Before using the DEMF programs with CICS/VS, do the following:

- Add the SYS1.DEMFLOG data set entry to the File Control Table (FCT) using the following keyword parameters:

```
TYPE=DATASET,ACCMETH=BDAM,
DATASET=EMFILE,RELTYPE=BLK,
SERVREQ=(GET),
RECFORM=(FIXED,UNBLOCKED,F),
LRECL=4096,BLKSIZE=(4096,4096)
```

- Add the SYS1.DEMFLOG DD card (//name) to the CICS/VS procedure:

```
//EMFILE    DD    DSN=SYS1.DEMFLOG,DISP=SHR
```

- Add the BNGCDISP program name to the Program Control Table (PCT) using the following keyword parameters:

```
TRANSID=DEMF,PROGRAM=BNGCDISP,TWASIZE=300
```

- Add the program names to the Program Processing Table (PPT) using the following statements:

```
DFHPPT TYPE=ENTRY,PROGRAM=BNGCDISP
DFHPPT TYPE=ENTRY,PROGRAM=BNGC3270
DFHPPT TYPE=ENTRY,PROGRAM=BNGCMENU
DFHPPT TYPE=ENTRY,PROGRAM=BNGCLOCL
DFHPPT TYPE=ENTRY,PROGRAM=BNGCRMOT
```

The following sample JCL stream should be used as a guide for installing DEMF under CICS.

```
//CICSDEMF JOB 1,MSGLEVEL=1,MSGCLASS=A,CLASS=A
//STEP1 EXEC PGM=IEWL,
// PARM='XREF,LET,LIST',REGION=128K
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(2,2))
//SYSPRINT DD SYSOUT=A
//AOS29 DD DSN=SYS1.AOS29,DISP=OLD
//SYSLMOD DD DSN=SYS1.LINKLIB,DISP=SHR
//SYSLIN DD *
 INCLUDE AOS29(BNGCDISP)
 NAME BNGCDISP(R)
 INCLUDE AOS29(BNGCLOCL)
 NAME BNGCLOCL(R)
 INCLUDE AOS29(BNGCMENU)
 NAME BNGCMENU(R)
 INCLUDE AOS29(BNGCRMOT)
 NAME BNGCRMOT(R)
 INCLUDE AOS29(BNGC3270)
 NAME BNGC3270(R)
/*
```

Before installing DEMF on a host IMS/VS system, do the following:

- Define the module BNGICTRL to IMS using the following statements in a PSB generation:

  ```
  PSBGEN PSBNAME=BNGICTRL,LANG=ASSEM
  END
  ```

  These statements make up object module member BNGIPCBX in SYS1.AOS29, the DEMF distribution library. If the installation is using these statements in the PSB generation proc, ignore member BNGIPCBX.

- Define the DEMF problem program to IMS using the following statement in an ACB generation:

  ```
  BUILD  PSB=BNGICTRL
  ```

- Define the IMS and MFS control blocks for the DEMF problem program through the MFSUTL procedure using the DEMF screen source modules. The MFS source members (screen module names listed below) must be copied from SYS1.AMACLIB to the user's installation MFS source library. This is necessary because the person responsible for MFS maintenance in an IMS installation expects all message formats to be in the MFS source library.

  Ensure that the screen format names, shown in the table as internal aliases, are not duplicated in the installation.

| Module Name | Internal Alias | MID | MOD |
|---|---|---|---|
| BNGISALL | BNGIAL | BNGIIALL | BNGIOALL |
| BNGISBIT | BNGIBT | BNGIIBIT | BNGIOBIT |
| BNGISERR | BNGIER | BNGIIERR | BNGIOERR |
| BNGISLC1 | BNGIL1 | BNGIILC1 | BNGIOLC1 |
| BNGISLC2 | BNGIL2 | BNGIILC2 | BNGIOLC2 |
| BNGISMN1 | BNGIM1 | BNGIIMN1 | BNGIOMN1 |
| BNGISMN2 | BNGIM2 | BNGIIMN2 | BNGIOMN2 |
| BNGIS327 | BNGI32 | BNGII327 | BNGIO327 |

  During IMS system generation, the RECLNG parameter on the MSGQUEUE macro must define the SIZE2 operand (long message queue record length) as 1972 bytes or greater. (If the SIZE2 operand is less than 1972 bytes, DEMF screens are truncated by the difference between 1972 bytes and the SIZE2 operand, and data in the truncated portion is lost to the terminal user.) The SIZE3 operand on the BUFFERS parameter must be equal to or greater than the SIZE2 operand. For further information on the MSGQUEUE macro, see the IMS/VS Version 1 Installation Guide, SH20-9081.

  Note: When using IMS Release 1.1.5's new support for screen sizes in Stage 1, modifications are necessary. That is, if the SIZE and TYPE options with symbolic parameters are specified on the TERMINAL macro, the IMS message format screens for DEMF must be changed. For further detail refer to IMS/VS Version 1 Message Format Service User's Guide (SH20-9053-4).

- Define and associate the problem program, transaction, and transaction user-exit by means of an IMS generation, using the following APPLCTN and TRANSACT macro statements:

```
APPLCTN   PSB=BNGICTRL
TRANSACT  CODE=DEMF,MSGTYPE=(SNGLSEG,RESPONSE),
      INQUIRY=(YES,NORECOV),EDIT=(UC,BNGIEXIT)
```

  Operation Note: INQUIRY=NORECOV specifies that the DEMF transaction will not be rescheduled if DEMF abnormally terminates.

  The above, which is input to IMS Stage 1, results in the generation of a link-edit step that includes BNGIEXIT from DDNAME USERLIB (specified in the USERLIB keyword of the IMSGEN macro) into a DFSIBLKx load module that is linked into the IMS nucleus in a later step.

  Copy BNGIEXIT from SYS1.AOS29 to the data set defined by the //USERLIB DD statement, so that Stage 2 of the IMS generation link-edits BNGIEXIT as described above.

- Modify the EXEC statement in the message processing region (MPR) procedure with the following change:

```
//          EXEC   PGM=BNGISIMS
```

  and add the following DD statement to the MPR procedure:

```
//EMFILE    DD     DSN=SYS1.DEMFLOG,DISP=SHR
```

  BNGISIMS opens and closes SYS1.DEMFLOG, the DEMF BDAM data set. DEMF does not use an IMS data base. BNGISIMS links to DFSRRC00 after opening SYS1.DEMFLOG and sets up the registers for DFSRRC00 to make it appear as if OS/VS is linking to DFSRRC00 directly.

  If BNGISIMS is used in a procedure for an MPR that is non-swappable, add the name BNGISIMS to the program properties table; otherwise the region will be swappable.

- Ensure that the class assigned to the DEMF transaction routes the DEMF message to the message processing region (MPR) that was started by DEMF's modified MPR procedure. Otherwise, for any DEMF transaction entered the following error message will occur:

```
BNG009A  SYS1.DEMFLOG FILE NOT OPENED
```

The following sample JCL stream should be used as a guide for installing DEMF under IMS.

```
//IMSDEMF JOB  1,MSGLEVEL=1,MSGCLASS=A,CLASS=A
//*****************************************************************
//* THE USER SHOULD CHANGE DATA SET NAMES TO CORRESPOND TO
//* HIS IMS NAMING CONVENTIONS.
//*****************************************************************
//LINKICTR  EXEC  PGM=IEWL,PARM='NCAL,LET,XREF,LIST'
//SYSUT1  DD UNIT=SYSDA,SPACE=(CYL,(5,5))
//SYSPRINT DD *
//AOS29  DD SYS1.AOS29,DISP=SHR
//RESLIB DD DSN=IMSVS.RESLIB,DISP=SHR
//SYSLMOD DD DSN=IMSVS.PGMLIB,DISP=SHR
//SYSLIN DD *
 INCLUDE RESLIB(ASMTDLI)
 INCLUDE AOS29(BNGIDISP)
 INCLUDE AOS29(BNGILOCL)
 INCLUDE AOS29(BNGIMENU)
 INCLUDE AOS29(BNGIREAD)
 INCLUDE AOS29(BNGIRMOT)
 INCLUDE AOS29(ENGI3270)
 ENTRY BNGIDISP
 NAME BNGICTRL(R)
//LINKISIM  EXEC  PGM=IEWL,PARM='NCAL,LET,XREF,LIST,REUS'
//SYSUT1  DD UNIT=SYSDA,SPACE=(CYL,(5,5))
//SYSPRINT DD *
//AOS29  DD DSN=SYS1.AOS29,DISP=SHR
//RESLIB DD DSN=IMSVS.RESLIB,DISP=SHR
//SYSLMOD DD DSN=IMSVS.PGMLIB,DISP=SHR
//SYSLIN DD *
 INCLUDE AOS29(BNGISIMS)
 ENTRY BNGINTRY
 ALIAS BNGIDCBA
 NAME BNGISIMS(R)
 /*
```

NOTE: In the LINKISIM step, REUS must be specified in the link-edit parameter for MVS and SVS; RENT must be specified for VS1.

Before installing the DEMF functions with TCAM, do the following:

- Modify the installation's TCAM/MCP generation for TSO to include the DEMF modifications outlined below.

  -or-

  If DEMF is to run as a standalone problem program under TCAM, refer to the TCAM Programmer's Guide (GC30-2041) and use the DEMF modifications to the TCAM/MCP for TSO outlined below as a guide to generating the problem program.

- Perform the MCP generation.

- Add the following DD statements to the TCAM procedure:

```
//BNGTINE  DD   QNAME=BNGTIN    (QNAME as defined in TCAM MCP)
//BNGTOTE  DD   QNAME=BNGTQ     (QNAME as defined in TCAM MCP)
```

- Add to SYS1.PROCLIB - Sample procedure DEMF/TCAM problem program:

```
./  ADD NAME=DEMFTCAM
//DEMF     EXEC PGM=BNGTQEMF,TIME=1440
//EMFILE   DD   DSN=SYS1.DEMFLOG,DISP=SHR
//BNGTOTE DD   QNAME=BNGTQ     (QNAME as defined in MCP)
//BNGTINE DD   QNAME=BNGTIN    (QNAME as defined in MCP)
```

- The following is a sample list of MACRO changes to be made to an existing MCP, including TSO's MCP, to add DEMF to TCAM so that the MCP will generate a mixed environment:

  - INTRO MACRO

    The INTRO macro should specify a mixed environment:

```
INTRO ENVIRON=MIXED,MSUNITS=100
```

  - OPTION  MACRO

    Two options are added to the existing ones. The MODEL option is to handle 3270 Mod 1 or 2. The TYPE option is required by the DEMF message handler as local and remote 3270s are handled differently.

```
MODEL    OPTION CL1  (model option 1 or 2)
TYPE     OPTION CL1  (type option L or R)
```

  - TPROCESS MACRO

    The TPROCESS operands are added for the DEMF message queues. The names on the labels should correspond to the QNAME on the DD statements specified on the DEMF problem program procedure in SYS1.PROCLIB.

    BNGTIN is the IN queue name, BNGTQ is the OUT queue name from the problem program perspective.

```
BNGTIN   TPROCESS PCB=BNGTPCB,QUEUES=MO
BNGTQ    TPROCESS PCB=BNGTPCB
TERMNAME TTABLE LAST=BNGTQ,MAXLEN=8
```

- TERMINAL MACRO

  Three examples are shown, one for a local 3270 and the others for remote 3270s. Note the change to the QUEUES operand for mixed environment. The second OPDATA operand is coded 1 for 3275, 3276, 3277, or 3278 Model 1 and is coded 2 for Model 2. The third OPDATA operand is coded L for local and R for remote and corresponds to the OPTION macro specification.

```
T1033   TERMINAL QBY=T,DCB=DCB2,RLN=1,TERM=327L,QUEUES=MOT,
                 UTERM=NO,SCRSIZE=(24,80),
                 BUFSIZE=2100,
                 OPDATA=(0,2,L),
                 FEATURE=(NOBREAK,NOATTN)

T1063   TERMINAL QBY=T,DCB=DCB3,RLN=1,TERM=327R,QUEUES=MOT,
                 UTERM=NO,SCRSIZE=(24,80),
                 BUFSIZE=2100,
                 OPDATA=(0,1,R),
                 ADDR=606040402D,FEATURE=(NOBREAK,NOATTN)

T1064   TERMINAL QBY=T,DCB=DCB4,RLN=1,TERM=327S,QUEUES=MOT,
                 UTERM=NO,SCRSIZE=(24,80),
                 BUFSIZE=2100,
                 OPDATA=(0,2,R),
                 ADDR=606040403D,FEATURE=(NOBREAK,NOATTN)
```

- PCB MACRO

  A PCB macro statement is required for the DEMF problem program with these parameters:

```
BNGTPCB  PCB BUFSIZE=502,MH=BNGTMH,BUFIN=4
```

- DCB MACRO

  Specify MH=MH3270 in the local 3270 DCB.
  For VS1, specify MH=MH3270R in the remote 3270 DCB.

- TSO STARTMH MACRO

  The TSO STARTMH macro specifies an alternate message handler, ALTMH=MH3270, which is the alternate 3270 message handler.

```
    TSOMH   STARTMH   TSOMH=YES,STOP=YES,CONV=YES,
                      LC=IN,ALTMH=MH3270
```

  NOTE: If your system is using DSPRINT and your TSOMH STARTMH macro has the parameter ALTMH=DSPRINT, it will be necessary to alter the DSPRINT MH to permit DEMF to run.

- Add to the INHDR subgroup the DEMF macro call for terminals authorized to request DEMF.

- Create a DEMF message handler.

  - MVS and SVS

    The following code specifies the DEMF message handler and the 3270 alternate message handler. It is coded to handle both local and remote 3270s. Note the specification of the TSO message handler in the ALTMH operand of the MH3270 STARTMH macro.

    The INMSG macro at label INMSG1 checks for local 3270. The next INMSG macro checks for remote 3270. The OUTHDR macro is similarly treated.

```
**** DEMF MESSAGE HANDLER ************************************
BNGTMH   STARTMH
         INHDR
         FORWARD DEST=PUT
         INEND
         OUTHDR
         OUTEND
**** 3270 ALTERNATE MESSAGE HANDLER ****************************
MH3270   STARTMH  LC=IN,CONV=YES,STOP=YES,ALTMH=TSOMH
         INHDR
         CODE
         LOGON
         MSGLIMIT  1
         SETSCAN   0
         LTR       15,15
         BNH       INMSG1
*****************************************************************
* THIS MACRO -- DEMF MUST BE AVAILABLE TO THE ASSEMBLER WHEN
*               ASSEMBLING THE MCP MODIFIED FOR DEMF.
*****************************************************************
         DEMF
         B         TABLE1(15)
TABLE1   B         INMSG1     RC=0  REQUEST HONORED
         B         TERRSET    RC=4 NO TCAM BUFFER AVAILABLE
         B         TERRSET    RC=8 NOT DEMF REQUEST OR INELIG TERM
         B         TERRSET    RESERVED
         B         TERRSET    RESERVED
TERRSET  TERRSET
INMSG1   INMSG     PATH=(TYPE,X'02')
         MSGGEN    X'0000080000',
                X'C31140401D41C4C5D4C64013404040'
         INMSG     PATH=(TYPE,X'08')
         MSGGEN    X'0000080000',
                X'0227F5C31140401D41C4C5D4C6401303'
         INEND
         OUTHDR    PATH=(TYPE,X'02')
         SCREEN    WRE
         OUTHDR    PATH=(TYPE,X'08')
         SETSCAN   0
         MSGEDIT   ((I,X'27F5'))
         MSGFORM   BLOCK=2200
         OUTMSG
         OUTEND
```

- VS1

  The following code specifies the DEMF message handler and the remote 3270 message handler for VS1.

```
**** DEMF MESSAGE HANDLER ***************************************
BNGTMH   STARTMH
         INHDR
         FORWARD DEST=PUT
         INEND
         OUTHDR
         OUTEND
***** REMOTE 3270 MESSAGE HANDLER

MH3270R  STARTMH LC=OUT,CONV=YES,STOP=YES
         INHDR
         MSGLIMIT    1
         CODE
         SETSCAN   0
         LTR  15,15
         BNH  INMSG1
         EJECT
DEMFMACR DEMF
         B    TABLE1(15)
TABLE1   B    INMSG1
         B    TERRSET
         B    TERRSET
         B    TERRSET
         B    TERRSET
TERRSET  TERRSET
INMSG1   INMSG
   MSGGEN  X'0000080000',X'0227F5C3114040D5D6E340C4C5D4C6400337'
         INEND
         OUTHDR
         SETSCAN  0
         MSGEDIT  ((I,X'27F5'))
         MSGFORM  BLOCK=2200
         OUTMSG
         OUTEND
         END
```

  NOTE: When assembling the MCP, the DEMF macro must be available in the data set pointed to by the SYSLIB DD card.

- Assemble and link-edit both the updated message control program (MCP) generation input and the newly created DEMF message handler.

The following sample JCL stream should be used as a guide for installing DEMF under TCAM.

```
//BNGLOGR JOB 1,MSGLEVEL=1,MSGCLASS=A,CLASS=A
//STEP2 EXEC PGM=IEWL,
// PARM='XREF,LIST,REUS,AC=1'
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(2,2))
//SYSPRINT DD SYSOUT=A
//AOS29 DD DSN=SYS1.AOS29,DISP=OLD
//SYSLMOD DD DSN=SYS1.LINKLIB,DISP=SHR
//SYSLIN DD *
 INCLUDE AOS29(BNGLOGR1)
 ENTRY BNGLOGER
 NAME BNGLOGER(R)
/*
//TCAMDEMF JOB 1,MSGLEVEL=1,MSGCLASS=A,CLASS=A
//STEP3 EXEC PGM=IEWL,
// PARM='XREF,LIST,LET,AC=1'
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(2,2))
//SYSPRINT DD SYSOUT=A
//AOS29 DD DSN=SYS1.AOS29,DISP=OLD
//SYSLMOD DD DSN=SYS1.LINKLIB,DISP=SHR
//SYSLIN DD *
 INCLUDE AOS29(BNGTDISP)
 ENTRY BNGTDISP
 NAME BNGTDISP(R)
 INCLUDE AOS29(BNGT3270)
 ENTRY BNGT3270
 NAME BNGT3270(R)
 INCLUDE AOS29(BNGTLOCL)
 ENTRY BNGTLOCL
 NAME BNGTLOCL(R)
 INCLUDE AOS29(BNGTRMOT)
 ENTRY BNGTRMOT
 NAME BNGTRMOT(R)
 INCLUDE AOS29(BNGTMENU)
 ENTRY BNGTMENU
 NAME BNGTMENU(R)
 INCLUDE AOS29(BNGTQEMF)
 ENTRY BNGTQEMF
 NAME BNGTQEMF(R)
/*
//TLCMDEMF JOB 1,MSGLEVEL=1,MSGCLASS=A,CLASS=A
//STEP4 EXEC PGM=IEWL,
// PARM='XREF,LIST,LET,AC=1'
//SYSUT1 DD UNIT=SYSDA,SPACE=(CYL,(2,2))
//SYSPRINT DD SYSOUT=A
//AOS29 DD DSN=SYS1.AOS29,DISP=OLD
//SYSLMOD DD DSN=SYS1.TELCMLIB,DISP=SHR
//SYSLIN DD *
 INCLUDE AOS29(BNGTQEMA)
 ENTRY BNGTQEMA
 NAME BNGTQEMA(R)
/*
```

The following are additional sample JCL streams that may be used as guides in preparing for DEMF installation.

## Sample JCL to Allocate and Initialize SYS1.DEMFLOG

```
//BLDLOG     JOB   ,CLASS=A
//GENERATE   EXEC  PGM=IEBDG
//*****************************************************************
//* TO CHANGE THE NUMBER OF BLOCKS ALLOCATED TO A QUANTITY OTHER
//* THAN THE DECIMAL VALUE OF 200 USED IN THIS EXAMPLE, CHANGE '200'
//* TO YOUR QUANTITY IN THREE PLACES:
//*    1. SPACE PARM ON EMFILE DD CARD
//*    2. ON FD INPUT
//*    3. ON CREATE INPUT
//*
//* VOLUME SERIAL xxxxxx IS DISK PACK WHERE SYS1.DEMFLOG RESIDES.
//*****************************************************************
//EMFILE     DD    DSN=SYS1.DEMFLOG,UNIT=SYSDA,DISP=(,CATLG),
//                 SPACE=(4096,(200)),VOL=SER=xxxxxx,
//                 DCB=(LRECL=4096,BLKSIZE=4096,RECFM=FB)
//SYSPRINT   DD    SYSOUT=A
//SYSIN      DD    *
   DSD      OUTPUT=(EMFILE)
   FD       NAME=A,LENGTH=4,STARTLOC=5,PICTURE=4,B'0200'
   CREATE   QUANTITY=200,NAME=A
   END
/*
```

NOTE: To reinitialize the data set, the EMFILE DD statement should be changed as follows:

```
//EMFILE     DD    DSN=SYS1.DEMFLOG,DISP=SHR
```

## Sample JCL to Update System Task for VS1

```
//ZAP1     JOB    ,MSGLEVEL=(1,1)
//*************************************************************
//*  CHANGE SYSTEM TASK LIST ENTRY NAME TO BNGLOGER
//*  (THIS EXAMPLE REPLACES IHLGTF AT DISPLACEMENT 68)
//*************************************************************
//IEEVRCTL EXEC   PGM=HMASPZAP
//SYSPRINT DD     SYSOUT=A
//SYSLIB   DD     DSN=SYS1.LINKLIB,DISP=SHR
//SYSIN    DD     *
  NAME IEEVRCTL IEEVLNKT
  VER 68 C9C8D3C7E3C64040          IHLGTF
  REP 68 C2D5C7D3D6C7C5D9          BNGLOGER
/*
//IEFIRC   EXEC   PGM=HMASPZAP
//SYSPRINT DD     SYSOUT=A
//SYSLIB   DD     DSN=SYS1.LINKLIB,DISP=SHR
//SYSIN    DD     *
  NAME IEFIRC IEEVLNKT
  VER 68 C9C8D3C7E3C64040          IHLGTF
  REP 68 C2D5C7D3D6C7C5D9          BNGLOGER
/*
```

NOTE: For VS1 users, this modification is not needed if PTF UX11275 is applied to your system.

Sample Procedure to Add DEMF to SYS1.PROCLIB

```
./ ADD NAME=DEMF
//LOGGER     EXEC  PGM=BNGLOGER,TIME=1440
//DEMFLOG    DD    DSN=SYS1.DEMFLOG,DISP=SHR
//SYSUDUMP   DD    SYSOUT=A
./ ENDUP
```

## Storage Estimates

Note the following size changes to dynamically assigned storage and auxiliary storage.

### *Dynamic Storage*

The size of the logger module in all three operating systems is approximately 12K.

For the IMS/VS environment, the display function occupies 47K of the message region and 2K of the control region. For the CICS/VS environment, the display function occupies 12K of storage. For the TCAM environment, the display function occupies 25K of storage.

### *Disk Storage*

Disk storage requirements for DEMF are divided between space required for logging output (SYS1.DEMFLOG) and executing programs (program libraries).

#### Allocating the SYS1.DEMFLOG Data Set

Use the following formula to calculate the size of the SYS1.DEMFLOG data set:

$$BLK = 1 + ( L * (Le/48))$$

where:

BLK = number of data blocks to be allocated
L = number of communication lines for this configuration
Le = total daily errors for worst line

Note: Round off, to the next highest integer, the value of the quotient (Le/48).

For example, if you have 12 communication lines in your configuration and if the total number of daily errors on the worst line in your configuration is 24, the number of data blocks you will need is:

```
BLK = 1 + ( 12 * (24/48))
    = 1 + ( 12 * (1/2))
    = 1 + ( 12 * (1))  -- Rounded
    = 1 + (12)
    = 13 blocks of direct access storage
                for SYS1.DEMFLOG
```

## Sizing the Program Library

The 3330 direct access space requirements are as follows:

| | |
|---|---|
| IMSVS.PGMLIB | 1 cylinder |
| IMSVS.RESLIB | 2 tracks |
| CICS.LOADLIB | 9 tracks |
| SYS1.TELCMLIB | 11 tracks |
| SYS1.MACLIB | 1 tracks |
| SYS1.LINKLIB (for BNGLOGER) | 8 tracks |

# Chapter 3. Supplemental Information

This chapter contains information for the system planner about ordering, publications support, and module identification for DEMF.

## Ordering and Distribution

To order DEMF, contact your IBM representative or your local IBM branch office.

## Supporting Publications

The publication that fully describes DEMF is OS/VS Display Exception Monitoring Facility User's Guide, GC34-2003. This publication contains a separately page-numbered appendix containing DEMF messages and codes explanations. The appendix may be removed and included in the operator's message library.

In addition, updates to the following publications contain information pertaining to DEMF:

OS/VS2 System Programming Library: SYS1.LOGREC Error Recording, GC28-0677

OS/VS2 SYS1.LOGREC Error Recording Logic, SY28-0678

OS/VS1 SYS1.LOGREC Error Recording, GC28-0668

OS/VS1 SYS1.LOGREC Error Recording Logic, SY28-0669

A description of the general functions performed by DEMF is contained in the System Control Programming Specification for OS/VS DEMF, GC34-2001.

## Change to OS/VS2 SVS SYS1.LOGREC Publication

The following change should be made to OS/VS SYS1.LOGREC Error Recording, GQ28-0638-1 (GC28-0638-1), for OS/VS2 SVS Release 1.7.

On Page 24, Figure 10, Miscellaneous Data Record (MDR) Format, in byte 2 of the SWITCHES field at offset 2, change the switch setting descriptions as follows:

```
....    ..11    IBM 3270 in EP mode.
....    .1.1    IBM 3705 in EP mode.
```

and add the following new switch settings:

```
...1    ..11    IBM 3270 in NCP mode.*
...1    .1.1    IBM 3705 in NCP mode.*
```

In addition, add the following note at the end of the figure:

* These device types describe records with added data that are supported by TCAM 10 for use with the Display Exception Monitoring Facility (DEMF).

## Module List

The following CSECTs or problem program modules are new for DEMF. Storage estimates for the DEMF logger and display functions are contained in Chapter 2. For the IMS/VS screen formats, the Mod 1 and Mod 2 labels refer to the 3270 display model being used.

Module ID

BNGLOGER (OS/VS1)
BNGLOGER (CS/VS2 SVS)
BNGLOGER (OS/VS2 MVS)

BNGCDISP (CICS/VS)
BNGC3270 (CICS/VS)
BNGCLOCL (CICS/VS)
BNGCRMOT (CICS/VS)
BNGCMENU (CICS/VS)

BNGTDISP (TCAM)
BNGT3270 (TCAM)
BNGTLOCL (TCAM)
BNGTRMOT (TCAM)
BNGTMENU (TCAM)
BNGTQEMA (TCAM)
BNGTQEMF (TCAM)
BNGTDEMF (TCAM)

BNGIDISP (IMS/VS)
BNGIEXIT (IMS/VS)
BNGILOCL (IMS/VS)
BNGIMENU (IMS/VS)
BNGIREAD (IMS/VS)
BNGIRMOT (IMS/VS)
BNGISIMS (IMS/VS)
BNGI3270 (IMS/VS)
BNGISALL (IMS/VS Screen Format Mod 1)
BNGISALL (IMS/VS Screen Format Mod 2)
BNGISBIT (IMS/VS Screen Format Mod 1)
BNGISBIT (IMS/VS Screen Format Mod 2)
BNGISERR (IMS/VS Screen Format Mod 1)
BNGISERR (IMS/VS Screen Format Mod 2)
BNGISLC1 (IMS/VS Screen Format Mod 1)
BNGISLC1 (IMS/VS Screen Format Mod 2)
BNGISLC2 (IMS/VS Screen Format Mod 1)
BNGISLC2 (IMS/VS Screen Format Mod 2)
BNGISMN1 (IMS/VS Screen Format Mod 1)
BNGISMN1 (IMS/VS Screen Format Mod 2)
BNGISMN2 (IMS/VS Screen Format Mod 1)
BNGISMN2 (IMS/VS Screen Format Mod 2)
BNGIS327 (IMS/VS Screen Format Mod 1)
BNGIS327 (IMS/VS Screen Format Mod 2)

OS/VS Display Exception
Monitoring Facility
System Information

Order No. GC34-2002-1

**READER'S COMMENT FORM**

This manual is part of a library that serves as a reference source for systems analysts, programmers, and operators of IBM systems. This form may be used to communicate your views about this publication. It will be sent to the author's department for whatever review and action, if any, is deemed appropriate. Comments may be written in your own language; use of English is not required.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation whatever. You may, of course, continue to use the information you supply.

Note: ***Copies of IBM publications are not stocked at the location to which this form is addressed. Please direct any requests for copies of publications, or for assistance in using your IBM system, to your IBM representative or to the IBM branch office serving your locality.***

Possible topics for comments are:

Clarity Accuracy Completeness Organization Coding Retrieval Legibility

If you wish a reply, give your name and mailing address:

_____

_____

_____

Note: Staples can cause problems with automated mail sorting equipment. Please use pressure sensitive or other gummed tape to seal this form.

**Cut or Fold Along Line**

What is your occupation? _____

Number of latest Technical Newsletter (if any) concerning this publication: _____

Thank you for your cooperation. No postage stamp necessary if mailed in the U.S.A. (Elsewhere, an IBM office or representative will be happy to forward your comments.)

**Reader's Comment Form**

Cut or Fold Along Line

Fold and tape | Please Do Not Staple | Fold and tape

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

# BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 40 ARMONK, N.Y.

POSTAGE WILL BE PAID BY ADDRESSEE:

International Business Machines Corporation
Department Z59, Building 931
PO Box 390
Poughkeepsie, New York 12602

Fold and tape | Please Do Not Staple | Fold and tape

IBM®

OS/VS Display Exception Monitoring Facility: System Information (File No. S370-37)

Printed in U.S.A.

GC34-2002-1

OS/VS Display Exception Monitoring Facility: System Information (File No. S370-37) Printed in U.S.A. GC34-2002-1


GC34-2002-1