

E90

IMS Performance Monitor

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IMS Performance Monitor

What is it?

- ✓ *Real-time performance monitoring and management*
- ✓ *Historical monitoring*
- ✓ *System Exceptions*
- ✓ *User defined Threshold Exceptions*
- ✓ *IMS Command Interface*
- ✓ *IMS Sysplex data sharing and shared queues*
- ✓ *Familiar ISPF UI*
- ✓ *Support IMS DB/TM, DBCTL, and DCCTL for IMS V6, V7, V8, (V9)*

Performance Tools from
IBM

Benefits

- ✓ *Powerful monitor*
- ✓ *Dashboard*
- ✓ *Long lock support*

Agenda

- **Monitoring Facilities**
- **Components**
- **Configuration**
- **User Interface**
- **Status and Future**

Real time monitoring

- Current snapshot of performance statistics
- Statistics extracted from live IMS system
- Multiple IMS system support
- Auto-refresh mode
- System and Threshold exception alerts
- IMS classic command interface
 - ▶ RACF/SAF secured



Historical Monitoring

- Access to recent performance data
 - ▶ Two flavors
 - Point-in-time "snapshot" of statistics
 - Delta values between two points-in-time
 - ▶ Stored in wrap-around pool of datasets
 - User specified number and size
 - Reused after all other datasets full
 - ▶ Time interval based collection
 - User specified intervals
 - Varying intervals for performance data types

"While you were at lunch" or "yesterday at about 3:35 pm" troubleshooting



System Exceptions

- PM defined IMS system anomalies
 - ▶ Shared Queue events
 - Structure rebuild
 - Structure status change
 - Structure overflow
 - ▶ Data Sharing long-lock notification
 - ▶ Logged with history data for correlation
 - ▶ Interested PM users are notified
 - ▶ Sample user exit to customize exceptions processing
 - ▶ More in the future based on requirements

Threshold Exceptions

- User defined system/application anomalies
 - ▶ Defined with threshold editor dialog
 - ▶ Public or Private
 - ▶ Warning or Critical
 - ▶ Logged in threshold exceptions files
 - ▶ Interested PM users are notified
 - ▶ Sample user exit to customize exceptions processing

Examples

- Message Queue use > 80%
- Overall transaction velocity < 60 %
- Transaction PAYROLL transit time > 1 sec.



Threshold Exceptions Examples

- Shared Queue structure utilization
- Message Queue dataset utilization
- CPU time used by a TCB (runaway application)
- Transaction Times, by Trancode, max, averages
- Transaction Velocity
- OSAM Buffer Pool Hit Ratio
- VSAM Buffer Pool Hit Ratios
- Scheduling failures due to pgm conflict, intent conflict ...
- Receive Any Buffer usage
- Fixed Buffer Pool, Current Use, High Water Mark
- Variable Buffer Pool, Current Use, High Water Mark
- Input/Output Queues, Program Execution, Transit Times
- Destination Queue Times, by SMB/CNT, max, average
- Destination Queue Depths
- Program Scheduling, by PSB
- Message Count, Execution time, DB Call Count

IMS PM Components



TSO/ISPF Client

As many as
you like
Resides on
any MVS
system within
Sysplex

User Interface Server

- One or more per IMSPLEX
- Resides on any MVS system within Sysplex
- Start or terminate at any time

Data Collector

- One per IMS system
- Resides on same MVS system as IMS
- Started anytime before or after IMS comes up
- Terminates with IMS system

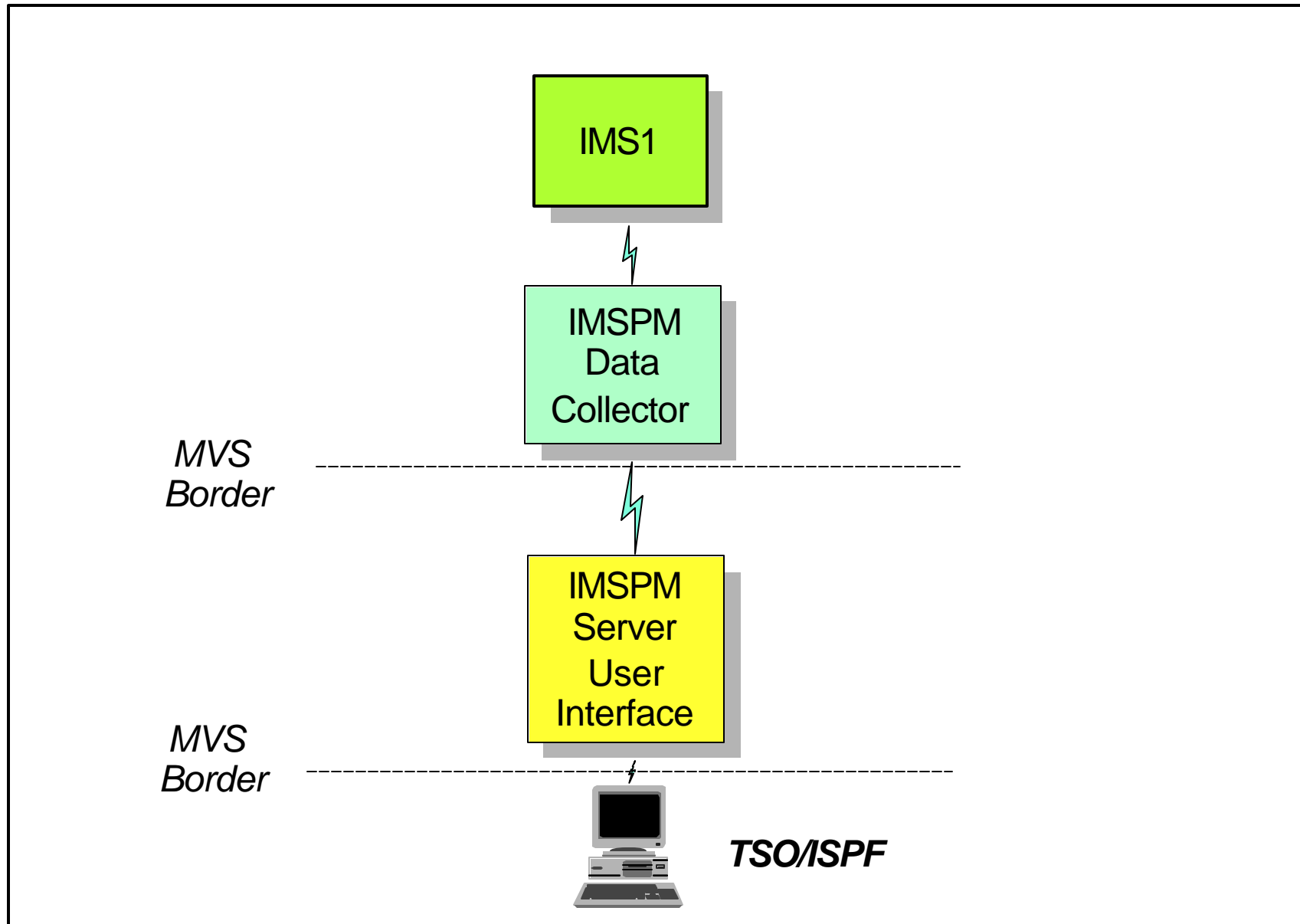
IMS Control Region, DBCTL, DCCTL

- Presence via physical logger user exit (DFSFLGX0)
- Seamless interface to customer DFSFLGX0 exit
- Execution/Isolation under IMS CTX task
 - Dynamic Re-initialization

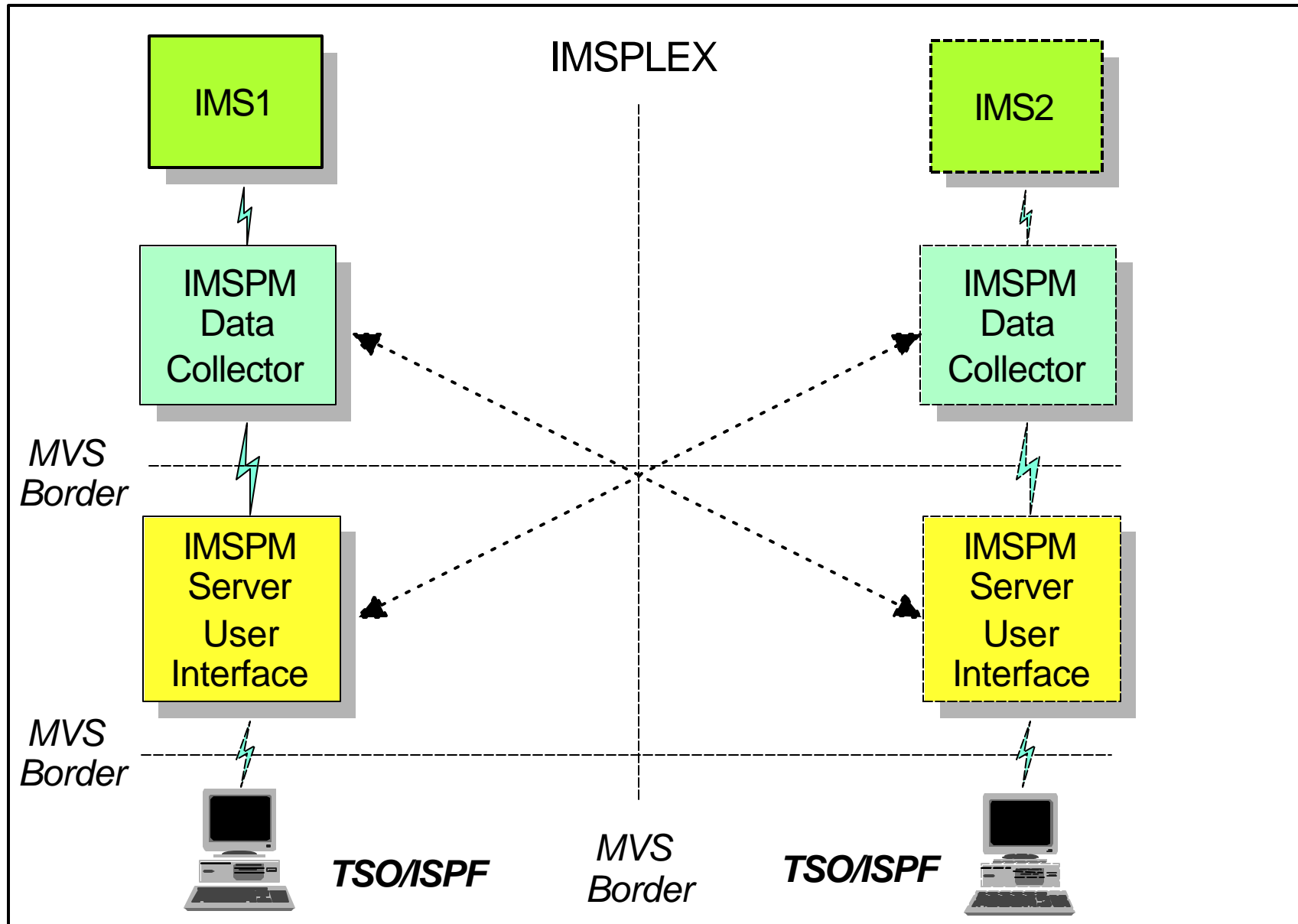
IMS PM Components

- Monitoring Group
 - ▶ Collection of IMS systems, Data Collectors, and User Interface Servers
 - ▶ Customer defined via inclusion in XCF group
 - ▶ Redundancy possible for User Interface Server

IMS PM Configuration



IMS PM IMSPLEX Configuration



IMS PM ISPF Dialog

- User Interface to PM
 - ▶ Access to statistics in real-time or history
 - ▶ Access to systems exceptions information
 - ▶ Access to threshold exceptions information
 - ▶ Creation and editing of threshold definitions
 - ▶ Pull-down menus for efficient navigation
 - ▶ Ability to switch view of target IMS system
 - ▶ Logon anywhere in the Sysplex
 - ▶ Split-screen mode support
 - ▶ Auto-refresh capability
 - ▶ Column sort capability
 - ▶ Online help

Statistics

- General System and Buffer Pool Utilization
- Transaction Transit Time
- Input and Output Queue Times
- Detailed Tran/Schedule Statistics (DL/I call counts, CPU, etc.)
- CQS Coupling Facility Statistics
- Queue Depths for Trans, Lterms, etc.
- Active Dependent Regions

More Statistics

- Message Queue Pool
- Format Buffer Pool
- OSAM & VSAM Buffer Pools
- Variable Resource Pools
- Scheduling
- Logger
- Program Isolation
- Latch
- Dynamic SAP
- DFSCBT00 Storage
- Receive-any buffer usage
- Fixed Resource Pool
- Dispatcher
- IRLM
- RACF TCB

Main Menu

IBM IMS Performance Monitor

COMMAND ===> _____

SCROLL ===> _____

Select one of the following

- 1. Display IMS systems
- 2. View IMS activity
- 3. Execute IMS commands
- 4. Threshold exceptions management
- 5. Display threshold exceptions notifications log

View IMS Activity

```
View IMS activity
COMMAND ===> _____ SCROLL ===> _____

IMS system: IMSA

Select one of the following

- 1. System startup parameters
  2. Communications/Queueing statistics
  3. Destination queue times
  4. Destination queue depths
  5. Scheduling statistics
  6. IMS dependent region activity
  7. Database processing statistics
  8. System buffer pool statistics
  9. System resource statistics
 10. Program scheduling statistics
 11. Transaction transit times
 12. Dashboard
```


Message Queue Pool

```
Message Queue Pool Statistics
COMMAND ==> _____ SCROLL ==> _____
IMS system: IMSA Date: 05/06/02
Number of buffers: 52 Buffer size: 2048 Time: 14:20:00

Requests to QMGR
Total . . . . . : 0
Locate. . . . . : 14232
Record release. . . . . : 4307
Locate and alter. . . . . : 33151
Purge the Q pool. . . . . : 0
Address to DRRN translations. . . . . : 5725
Reposition at last buffer . . . . . : 2858
ENQ one or more messages. . . . . : 1446
DEQ one or more messages. . . . . : 1446
Cancel input or output. . . . . : 2

I/Os
Read requests . . . . . : 0
Write requests(Total). . . . . : 0
Writes done by PURGE . . . . . : 0

Waits
PURGE completion . . . . . : 0
no buffer available. . . . . : 0
other DECB to read this buffer . . . . . : 0
other DECB to write this buffer. . . . . : 0
conflicting ENQ/DEQ buffer request : 0
```

Destination Queue Depths

```
Destination Queue Depths
COMMAND ===> _____ SCROLL ===> _____
IMS system: IMSA                               Date: 05/06/02
                                                Time: 14:20:00

Destination                                     Type      -----Counts----- SQ/SIDR  Destination
                                                On-QUEUE ENQ  DEQUEUE System  most severe
                                                status

TRANS5                                         TRANSACT    2    15    13  IMSB  PSTOPPED
OTMA1                                         OTMA        12   456   444
L1T2                                         LTERM       0    356   356
MSC1                                         MSNAME      0     0     0
LU62                                         LU6.2       0     0     0
```

Scheduling Statistics - part 1 of 2

```
Scheduling statistics
COMMAND ===> _____ SCROLL ===> _____
IMS system: IMSA                               Date: 05/06/02
                                                Time: 14:20:00

SMBs examined . . . . .: 54

Not scheduled due to:
  Program conflicts. . . . .: 0
  Intent conflicts . . . . .: 0
  Miscellaneous reasons. . . . .: 0

Active Regions
  BMPs and MPPs. . . . .: 12
  BMPs . . . . .: 6
  MPPs . . . . .: 6
```

Scheduling Statistics - part 2 of 2

```
Scheduling statistics
COMMAND ===> _____ SCROLL ===> _____
IMS system: IMSA                               Date: 05/06/02
                                               Time: 14:20:00

PSB pool get statistics
Requests for space . . . . .                25
Times space not immediately available in CSA . . . . . 5
PSBs freed to make room in CSA . . . . .      4
Times get space failed for CSA PSB pool. . . . .    4
Times space not immediately available in DLI PSB pool. . . . . 5
PSBs freed to make room in DLI PSB pool. . . . .    4
Times Get PSB pool space failed for DLI PSB pool . . . . . 4
Times space not immediately available in CSA and DLI pools . . . . . 8
Cumulative time in STCK units
  Spent getting PSB pool space, when no free PSB needed . . . . . 123,789
  Spent getting PSB pool space, when free PSB needed. . . . . 123,456

PSB pool free statistics
Requests to free PSB pool space. . . . .        2
Cumulative time in STCK units
  Spent freeing PSB pool space. . . . .        123,567

PSB work pool get statistics
Requests for space . . . . .                25
Times get space failed . . . . .              4
Cumulative time in STCK units
  Spent getting PSB work pool space . . . . . 345,789
```

IMS Dependent Region Activity

```

                                IMS Dependent Region Activity
COMMAND ===> _____ SCROLL ===> _____

IMS system: IMSA                               Date: 05/06/02
                                               Time: 14:20:00

Enter / in table row to view details

  Rgn id  Type  Jobname  Stepname  Trancode  Program  Status          Limit cnt
/ _      1  BMP    IMSMPPA  STEP1    TPN1    DFSCPIC  WAIT-BLKMOVER    123
_        4  MPP    IMSMPPB  STEP1    TPN2    DFSCPIA           3456

```

Dependent Region Activity - detail

```

                                IMS Dependent Region Activity
COMMAND ==> _____ SCROLL ==> _____
IMS system: IMSA                               Date: 05/06/02
                                               Time: 14:20:00

PSBname: DFSCPIC  TRANCODE: TPN3      Accumulated CPU-time: 4.567

Accumulated CPU-time. . . . . : 4.567
Userid . . . . . : VNDR400
Userid indicator . . . . . : I
Originating Input Lterm . . . . . : LTERMXXX
LU6.2 network identifier. . . . . : LU62NET
Date/time when message received . . . . . : 02:15:03/05:26:23.6

Queue manager buffer counts
Total. . . . . : 3490
Short buffer . . . . . : 3456
Long buffer . . . . . : 34

Messages dequeued . . . . . : 34
Accumulated message DEQ count for region.: 567

Subqueue 6 times
For this message . . . . . : 123,456
Accumulated . . . . . : 1,345,678

```

Dependent Region Activity - detail

```

                                IMS Dependent Region Activity
COMMAND ===> _____ SCROLL ===> _____
IMS system: IMSA                               Date: 05/06/02
                                                Time: 14:20:00

    PSBname: DFSCPIC  TRANCODE: TPN3      Accumulated CPU-time: 4.567

Total Message calls.  .:      552      Total Database calls  .:      100

GU. . . . .:      50      GU. . . . .:      24
GN. . . . .:       2      GN. . . . .:       2
ISRT. . . . .:    345      GNP. . . . .:       0
CHKP. . . . .:     64      GHU. . . . .:     24
CHNG. . . . .:     32      GHN. . . . .:       1
PURG. . . . .:       0      GHNP. . . . .:       1
ROLL. . . . .:     32      ISRT. . . . .:     24
ROLB. . . . .:     26      DLET. . . . .:     24
AUTH. . . . .:       1      REPL. . . . .:       0
CMD. . . . .:       0
GCMD. . . . .:       0
SETO. . . . .:       0
APSB. . . . .:       0
DPSB. . . . .:       0
GMSG. . . . .:       0
ICMD. . . . .:       0
RCMD. . . . .:       0
XRST. . . . .:       0
SETS. . . . .:       0
SETU. . . . .:       0
INIT. . . . .:       0
INQY. . . . .:       0
LOG. . . . .:       0
DB DEQ. . . . .:       0

```

Threshold Notification Log

```
Menu Utilities Compilers Help
-----
BROWSE      VNDR400.IMSPM.EVENTS                Line 00000000 Col 001 080
Command ==> _____ Scroll ==> PAGE
***** Top of Data *****
RECANY      Current( 94 %) OP(>) Warning( 36 %) Problem( 87 %)
            Timestamp(yy/mm/dd:hh:mm:ss) PUBLIC

QBLKS      Current( 95 %) OP(>) Warning( 50 %) Problem( 87 %)
            Timestamp(yy/mm/dd:hh:mm:ss) PUBLIC

SHMSG      Current( 95 %) OP(>) Warning( 50 %) Problem( 87 %)
            Timestamp(yy/mm/dd:hh:mm:ss) PUBLIC

LGMSG      Current( 95 %) OP(>) Warning( 50 %) Problem( 87 %)
            Timestamp(yy/mm/dd:hh:mm:ss) PUBLIC

CQSPNINU   Current( 76 %) OP(>) Warning( 12 %) Problem( 75 %)
            Timestamp(yy/mm/dd:hh:mm:ss) PUBLIC

MAXQTIME   Current(123,456) OP(>) Warning( 12,345) Problem( 88,888)
            Timestamp(yy/mm/dd:hh:mm:ss) PUBLIC

ENQRATE    Current( 12) OP(>) Warning( 20) Problem( 30)
            Timestamp(yy/mm/dd:hh:mm:ss) PUBLIC
***** Bottom of Data *****
```


Drop Down Menus

```

Menu  ViewIMSactivity Mode Edit Option Help
-----
COMMA  2_ 1. System startup parameters
      2. Communications/Queueing statistics
      3. Destination queue times
IMS s   4. Destination queue depths
      5. Scheduling statistics
      6. IMS dependent region activity
Que     7. Database processing statistics
----- 8. System buffer pool statistics
Messa  9. System resource statistics
      10. Program scheduling statistics
TRA    11. Transaction transit times
LTR    12. Dashboard

QBLK
SHMSG INUSE:      8 %
LGMSG INUSE:      8 %      Throughput xxx.xx / sec

Dep-Regions      Logging
-----
      MPRS          4      OLDS:
      BMPS          2      LOGGING: SINGLE
      SCHD.FAILURES 6 %    CURRENT: DFSOLP00
                        FULL:      25 %
                        AUTOARCH:  3
                        FULL OLDS:  1
                        LAST:      YES
                        WADS:
                        LOGGING: SINGLE

Online change
-----
ACTIVE-LIBS
MODBLK: MODBLKSA
ACBLIB: IMSACBA
FORMAT: FORMATA

IN PROGRESS: NO

DL/I Calls      PI/IRLM      Buffer pools
-----
      BMP per schedule      indications      Utilization threshold
      MSG:      1234
      DL/I:      34      DEADLOCK: NO
MPP per transaction      LOCK:      YES
      MSG:      12
      DL/I:      456
      DMB:      58 %
      PSBW:     88 %
  
```

Status

- Beta started 7/03
- General Availability 12/03
- IMS Version 9 support
- Release 2
- Customer Requirements
- More Trouble Shooting functions
- More integrated view of IMS systems and applications