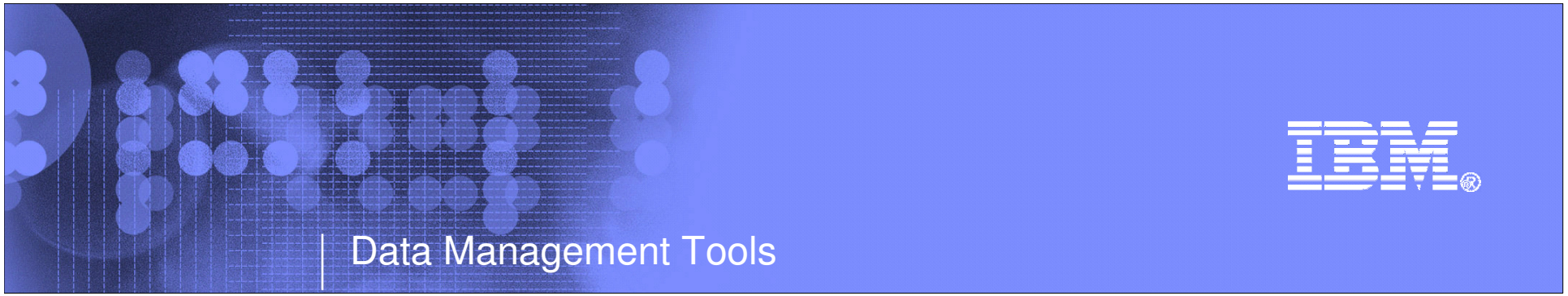

IBM IMS Tools

IMS Version Upgrade

Janet LeBlanc
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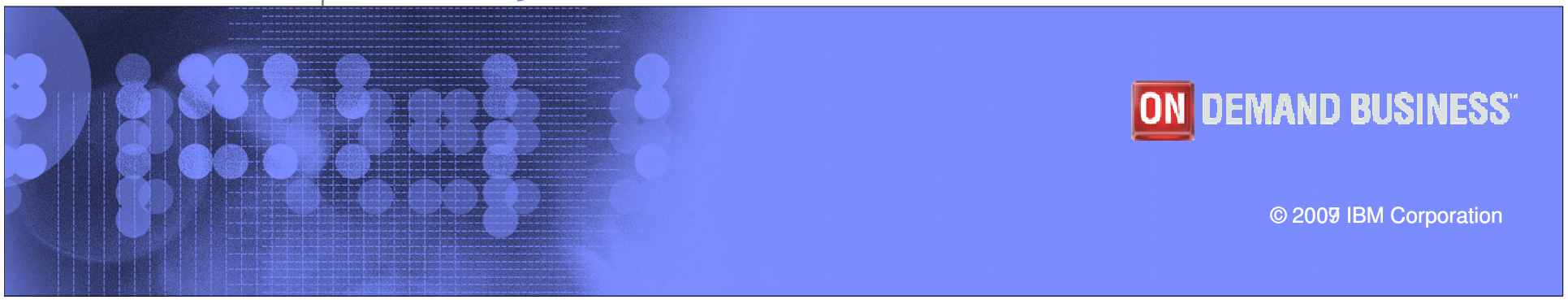


IMS Tools Portfolio

Applications Management

IMS Batch Terminal Simulator

Data Governance

IMS Audit Management Expert
IBM Data Encryption for IMS and DB2 Databases

Performance Management

IMS Connect Extensions
IMS Buffer Pool Analyzer
IMS Performance Analyzer
IMS Problem Investigator
Tivoli OMEGAMON XE for IMS on z/OS

Backup and Recovery

- IMS Recovery Expert
- Database Recovery Facility
- HP Change Accumulation
- HP Image Copy
- DEDB Fast Recovery

Administration

Database
- IMS HALDB Toolkit
- IMS HD Compression- Extended
- IMS Library Integrity Utilities
- IMS Sequential Randomizer Generator
- IMS Tools Knowledge Base

System
- IMS Parameter Manager
- IMS HP Sysgen
- IMS Sysplex Manager

Utilities Management

- IMS Database Control Suite

Full Function
- IMS Online Reorganization Facility
- IMS Parallel Reorganization
- IMS High Performance Unload
- IMS High Performance Load
- IMS Index Builder
- IMS High Performance Prefix Resolution
- IMS High Performance Pointer Checker

Fast Path
- IMS High Performance Fast Path Utilities

Operations Management

IMS Connect Extensions
IMS Command Control Facility
IMS ETO Support
IMS HP Sysgen
IMS Sysplex Manager
IMS Queue Control Facility
IMS Program Restart Facility
IMS Batch Backout Manager
IMS Network Compression Facility
IMS Workload Router

Version Upgrade Acceleration

- **IMS Parameter Manager**
- **IMS Queue Control Facility**
- **IMS Performance Analyzer**
- **IMS Problem Investigator**

IMS Parameter Manager

Introducing IMS Parameter Manager

Easy-to-use IMS administration tool for controlling the specification and maintenance of IMS PROCLIB parameter members.

Simplifies parameter management and provides increased levels of parameter control for more than 23 IMS PROCLIB member types, encompassing hundreds of parameter options.

Features:

- **Parameter syntax and value checking**
- **Expert assistance in the specification of parameters, including contextual presentation, online help and validation**
- **View your active parameter members by IMS system or plex**
- **Automatic backup of changed members**
- **Keeps a history of changed members for audit purposes**
- **Migration of parameters from one IMS release to the next**

What's new in release 2

Semantic search

- Uses a glossary of IMS terms to match and display only those parameters that have relevance and in context with your search arguments

IMS PLEX support

- View all IMS systems in the PLEX in a single view
- Search for parameters across all systems and display their values

Usability enhancements

- Locate a parameter you cannot find
- Syntax check a parameter member in ISPF edit

CQS member support

IMS Parameter Manager - Benefits

Business challenges facing IMS installations today….

Who will benefit?

- **IMS customers with limited detailed knowledge of IMS parameters:**
  - For inexperienced IMS administrators, easy, online help with is not available
- **IMS System Administrators work on many projects**
  - PRM is a ***productivity aid***

Benefits – Reduce Risk

- **Manage risk of modifying startup parameters.**
  - Automatic backups and version control,
  - Automatic syntax checking and system validation.
    - Automatically or optionally create backup members in the PROCLIB when current members are updated.
    - Automatically save member histories in the repository.
    - Retrieve members that have been accidentally deleted from the PROCLIB or have become unusable, or revert to a previous modification level of the member.
    - A validation process ensures that for each IMS system, the parameter settings are valid for the IMS version and control region type (DB/DC, DBCTL, DCCTL).
    - A rules-driven process for editing and verifying parameters

Benefits – Reduce Complexity

- **Alternative views help you locate and maintain parameters.**
  - You can view only current members by IMS system, or
  - all members in a PROCLIB, or
  - a list of members filtered by a mask you specify.
- ***Assist mode* panels display parameters in a way that is recognizable and easy-to-understand,**
- **Edit members with real-time error checking.**
- **Comprehensive online help, Context sensitive help for each parameter includes differences between IMS version and control region type**
- **More easily manage PROCLIB data sets.**
  - members can be deleted or created, and
  - members can be copied to other PROCLIB datasets.
  - You can also change PROCLIB and IMS system associations using the IMS system definition facility.
- **A semantic-based parameter search**

Benefits – Ease migration

- **Reduce the cost and time of migrating to new IMS releases.**
  - Migrate current members in an entire IMS system from one IMS release to another.
  - Migrate members individually from one IMS release to another.
  - Migration automatically supplies the new parameters associated with the new IMS version.
  - Version-sensitive parameter validation smooths migration and increases confidence.

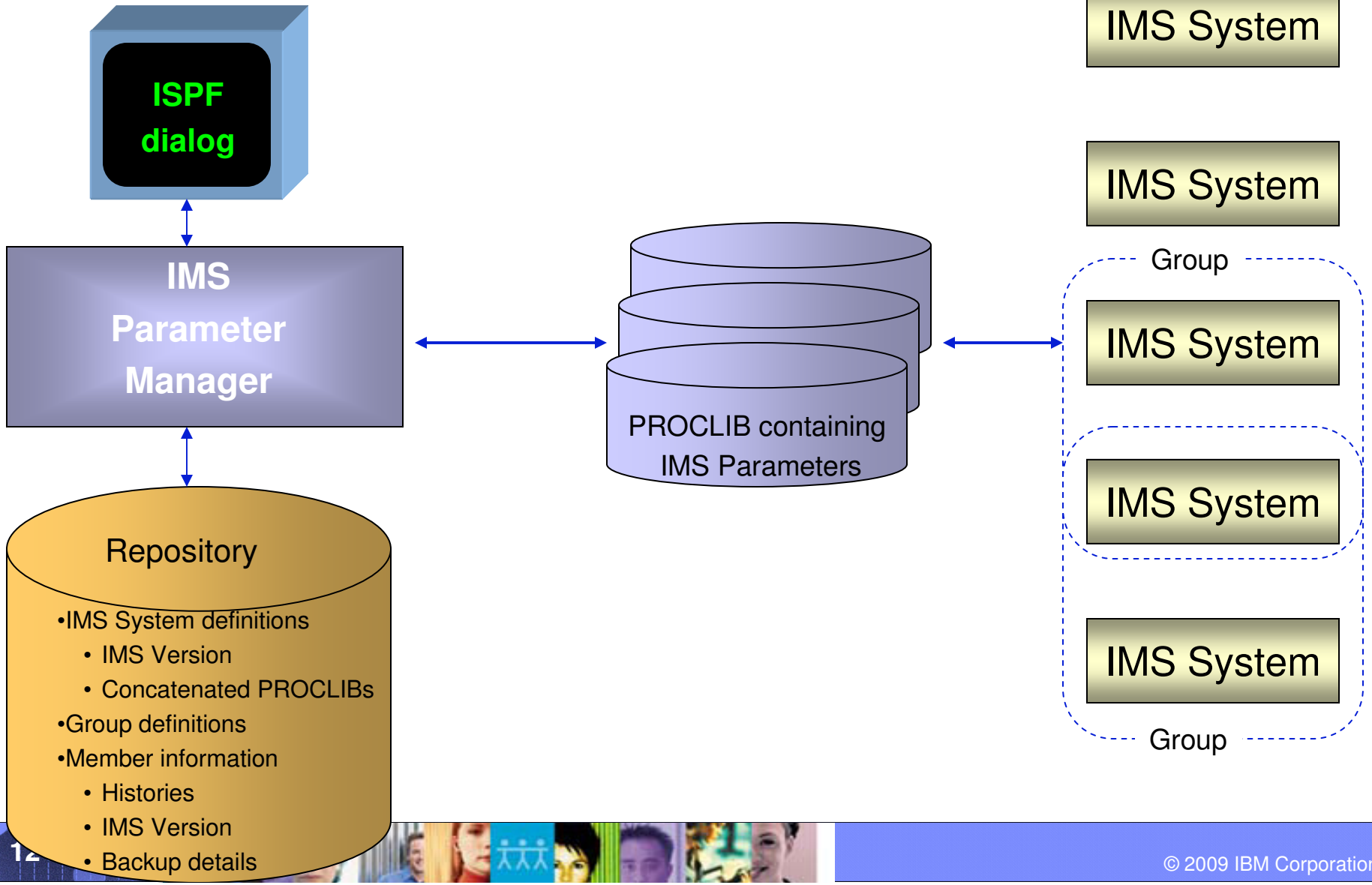
New changes with V1.2

- **Group view**
- **Search**
- **Locate parameter**
- **What's new in IMS release**
- **CQS support**
- **Delete member history**
- **IMS V10 support**

- **Edit mode enhancement**
  - More informative error messages
  - Parameter help
  - New – CHECK, ERRORS, MODEL commands
  - ASSIST mode
  - Member List view reduced panels

IMS Parameter Manager Components

NEW



IMS Parameter Manager Components - VIEWS

PRM uses different views to look at and manage IMS parameters

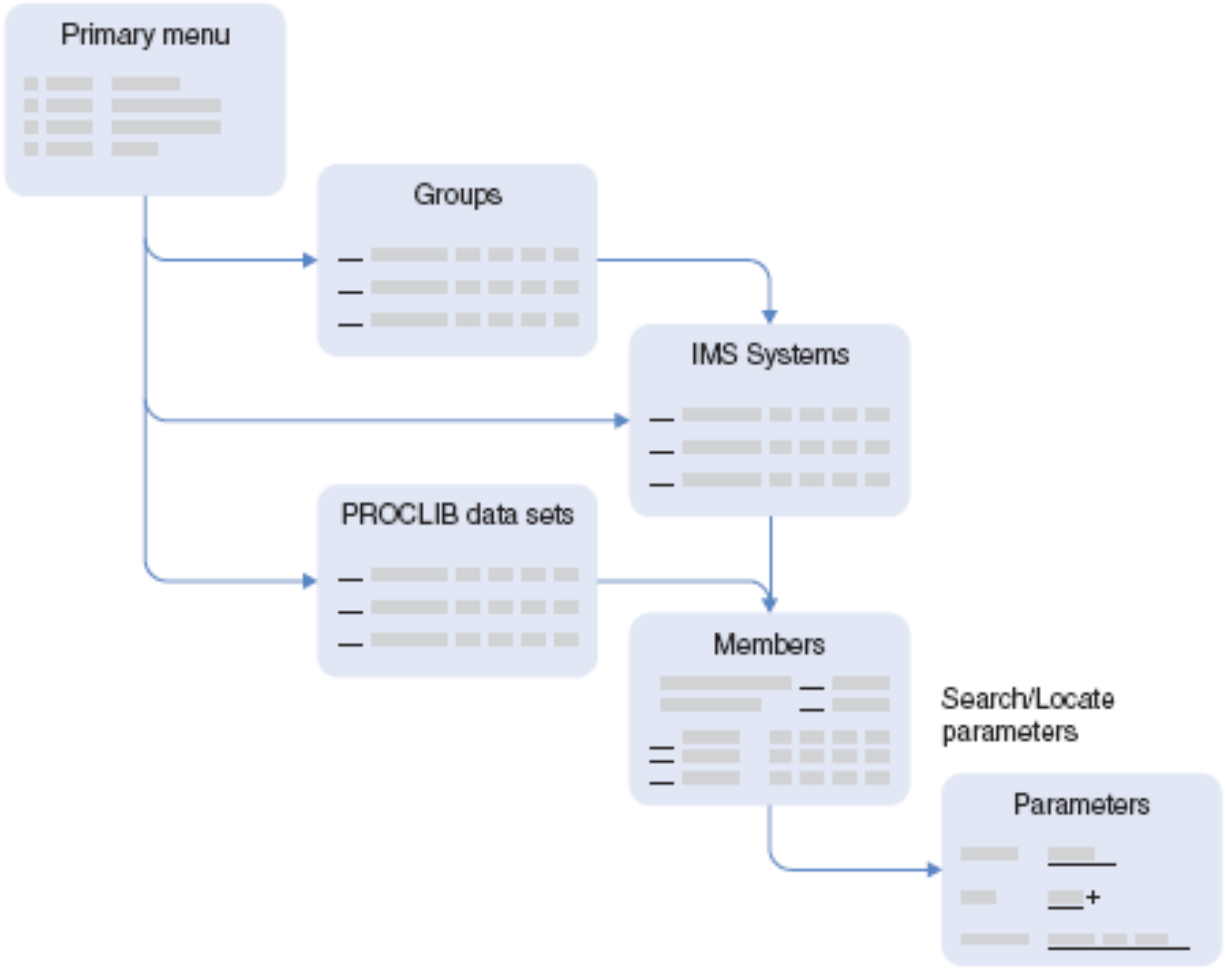
IMS Systems View

- View **active** (currently in use) parameter members
- **Non-active** (not in use) are suppressed
- Use this view to maintain IMS system definitions and PROCLIB concatenations

PROCLIB dataset view

- The way it's always been done – from here you can view all the members from PROCLIB or using a filter, you can access just the parameters you would like to see

IMS Parameter Manager Concepts - VIEWS



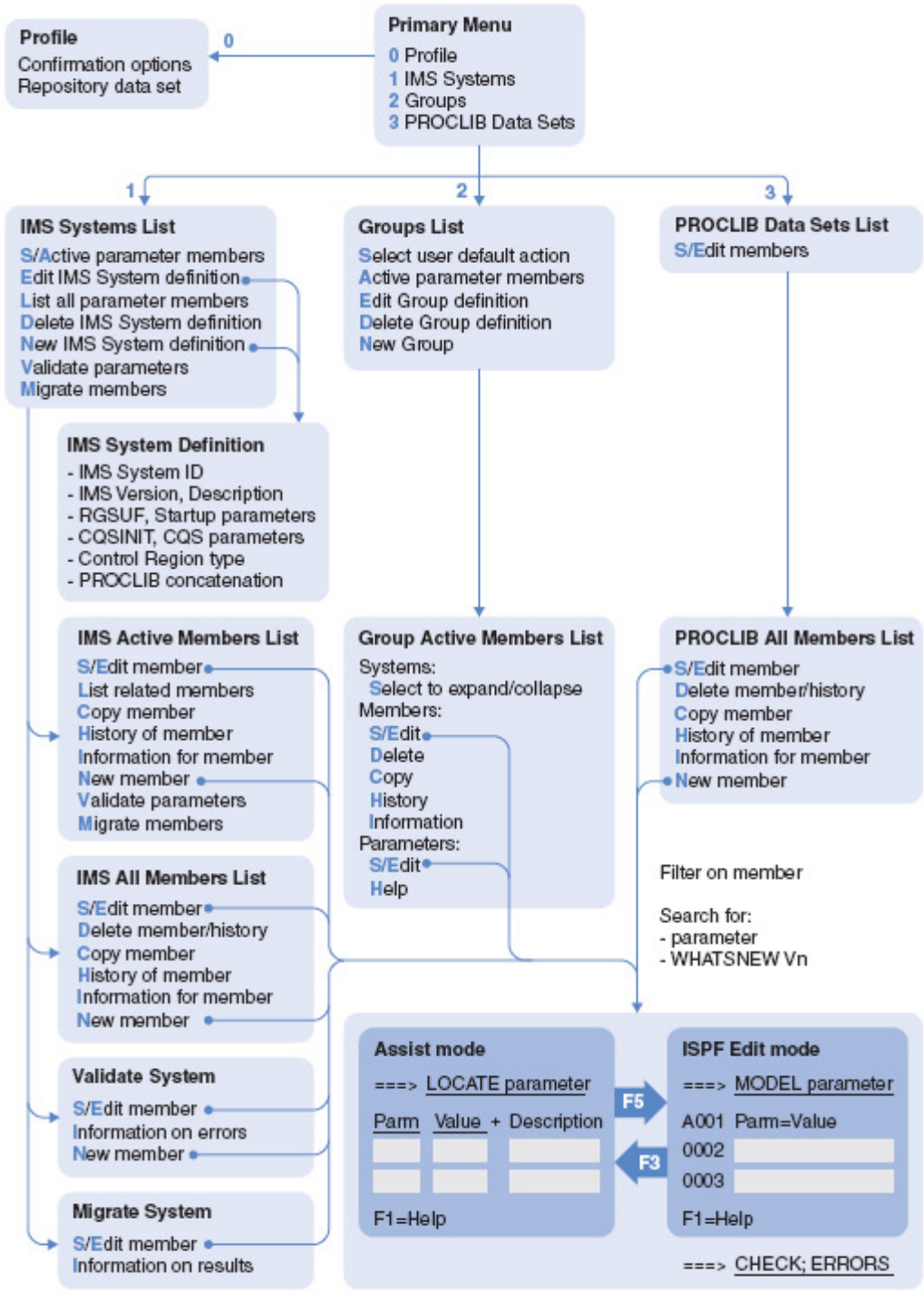
IMS Parameter Manager Concepts - SETUP

Before you can begin using PRM you need to create your IMS environment via some setup steps:

1. **Create a PROFILE**
   1. Create a VSAM Repository
   2. Specify the PROCLIBs that your IMS use and the concatenation thereof
      - *Once you have defined your PROCLIBs and saved your repository, you cannot add additional PROCLIBS from this Option (*OPTION 0*)*
2. **Create / Define your IMS systems**

3. **Define a group of systems**

Panel Flow


Profile
Confirmation options
Repository data set
0
Primary Menu
0 Profile
1 IMS Systems
2 Groups
3 PROCLIB Data Sets
1
2
3
IMS Systems List
S/Active parameter members
Edit IMS System definition
List all parameter members
Delete IMS System definition
New IMS System definition
Validate parameters
Migrate members
Groups List
Select user default action
Active parameter members
Edit Group definition
Delete Group definition
New Group
PROCLIB Data Sets List
S/Edit members
IMS System Definition
- IMS System ID
- IMS Version, Description
- RGSUF, Startup parameters
- CQSINIT, CQS parameters
- Control Region type
- PROCLIB concatenation
IMS Active Members List
S/Edit member
List related members
Copy member
History of member
Information for member
New member
Validate parameters
Migrate members
Group Active Members List
Systems:
Select to expand/collapse
Members:
S/Edit
Delete
Copy
History
Information
Parameters:
S/Edit
Help
PROCLIB All Members List
S/Edit member
Delete member/history
Copy member
History of member
Information for member
New member
IMS All Members List
S/Edit member
Delete member/history
Copy member
History of member
Information for member
New member
Filter on member
Search for:
- parameter
- WHATSNEW Vn
Validate System
S/Edit member
Information on errors
New member
Assist mode
===> LOCATE parameter
Parm Value + Description
F1=Help
F5
F3
ISPF Edit mode
===> MODEL parameter
A001 Parm=Value
0002
0003
F1=Help
Migrate System
S/Edit member
Information on results
===> CHECK; ERRORS

Group View

- **Define a group of systems**

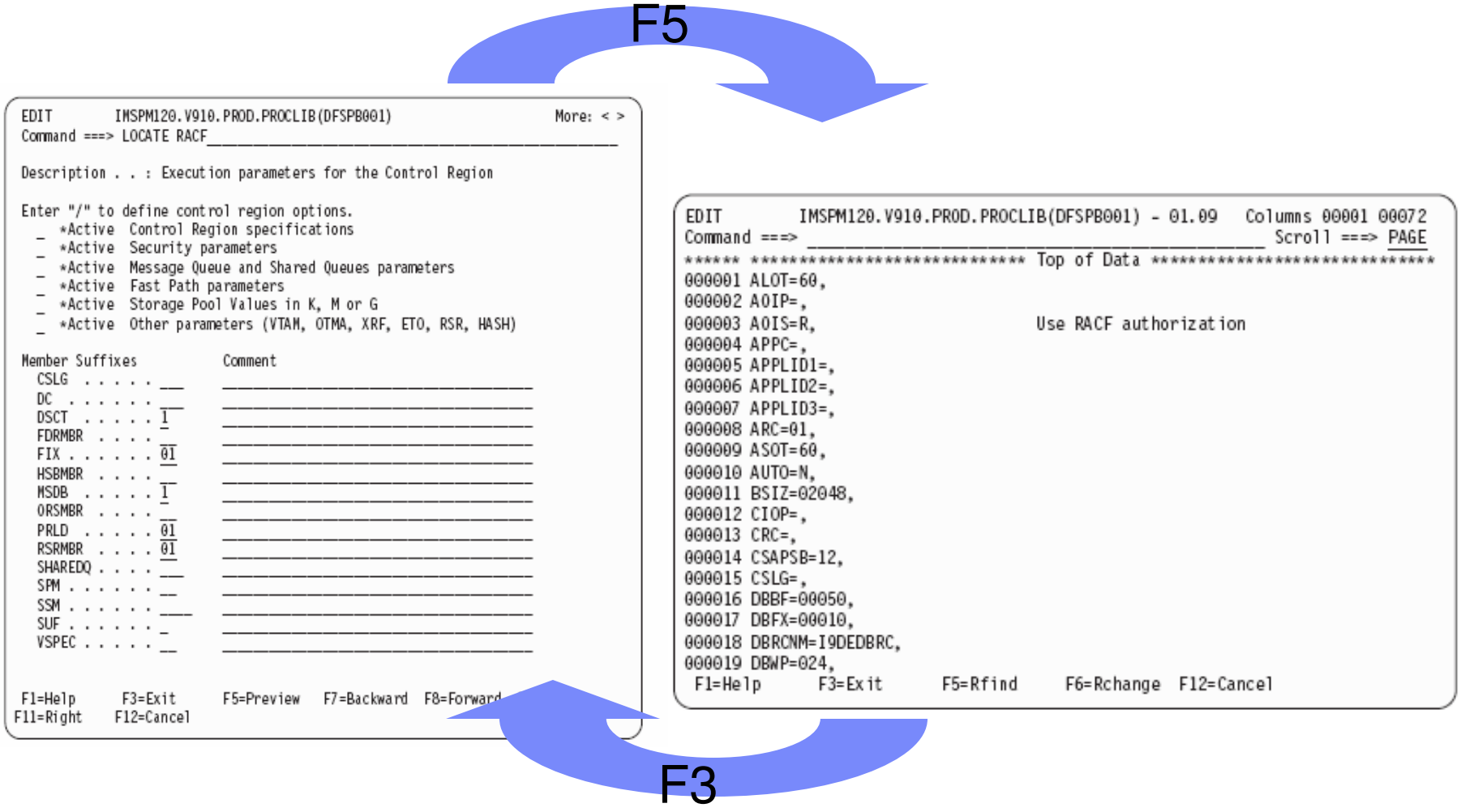
```
                                Group Definition                  Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> CSR_

Group ID  . . : TOURPLEX
Description . . Guided tour group___________

/     IMSID +  VRM +  Description
___   PROD     910_   System parms for Production
___   TEST     910_   System parms for Test
****************************** Bottom of data ******************************
```


View the active members for each system in the plex

```
File  Help
--------------------------------------------------------------------------------
                        Group Active Member List                    Row 1 of 23
Command ===>                                                 Scroll ===> CSR

Group . . . . . : PLEX1
Description . . : IMS Plex number 1

Search . . _____________________________________________  /  Show parameters

   / System       Prompt     Description
+  _ GABD                    GAB testing number 2
-  _ GABE                    GAB testing number 2
      _ DFSCGxxx             Common Services Layer parameters
      _ DFSDC000             Data Communications options
      _ DFSDRF02             DREF (Disabled Reference) storage requirement
      _ DFSFDRxx             Fast Database Recovery options used by FDR
      _ DFSFIX02             Define Fixed Pages in the IMS Control Region
      _ DFSHSB00             Extended Recovery Facility (XRF) options
      _ DFSMPLxx             High-Use Program Module Residency
      _ DBFMSDBx             Main Storage Database load options
      _ DFSORSxx             Online Recovery (OSR) options
      _ DFSPBZZZ             Execution parameters for the Control Region
      _ DFSRSRG2             Remote Site Recovery (RSR) options
      _ DFSSPMxx             DFSPOOL storage manager pools
      _ DFSSQBK2             Shared message queues, CQS address space
      _ DFSVSM00             VSAM and other IMS initialization options
      _ DFSYDT0              OTMA descriptors
      _ DFS62DT0             LU 6.2 device descriptors
      _ GABEssmx             External subsystem PROCLIB member
      _ CQSIPGAB             Dependent Region Preinitialization Routines
      _ CQSSLxxx             Shared message queues, CQS address space
      _ CQSSGAAB  *Missing   Shared message queues, CQS address space
+  _ GABX
      **End**
```

Use your mouse to expand or collapse a system

2 Edit modes – Assist and ISPF



ISPF Edit mode: Search keyword

```
                        Group Active Member List                  Row 1 of 36
Command ===> _____________________________________________ Scroll ===> PAGE

Group . . . . : TOURPLEX
Description . : Guided tour group

Search . . _____________________________________  _  Show parameters

  / System     Prompt   Description
- _ PROD                 System parms for Production
    _ DFSCG999           Common Services Layer parameters
    _ DFSDC001
    _ DFSDRF01
    _ DFSFDR01
    _ DFSFIX01
    _ DFSHSB08
    _ DFSMPL01
    _ DBFMSDBT
    _ DFSORS01
    _ DFSPB111
    _ DFSRSR01
    _ DFSSPM99
    _ DFSSQ001
    _ DFSVSM99
    _ DFSYDT1
    _ DFS62DT1
    _ PROD0001
- S TEST
    _ DFSCG999
    _ DFSDC001
    _ DFSDRF01
    _ DFSFDR01
    _ DFSFIX01
    _ DFSHSB08
    _ DFSMPL01
    _ DBFMSDBT
    _ DFSORS01
    _ DFSPB222
    _ DFSRSR01           Remote Site Recovery (RSR) options
    _ DFSSPM99           DFSPOOL storage manager pools
```

```
                        Group Active Member List                  Row 1 of 7
Command ===> _____________________________________________ Scroll ===> PAGE

Group . . . . : TOURPLEX
Description . : Guided tour group

Search . . BUFFERS_____________________________  _  Show parameters

  / System     Prompt   Description
- _ PROD                 System parms for Production
    S DFSPB111           Execution parameters for the Control Region
    _ DFSRSR01           Remote Site Recovery (RSR) options
    _ DFSVSM99           VSAM and other IMS initialization options
- _ TEST                 System parms for Test
    _ DFSPB222           Execution parameters for the Control Region
    _ DFSRSR01           Remote Site Recovery (RSR) options
```

Show parameter

```
                        Group Active Member List
Command ===> ____________________________________________ Scroll ===> PAGE

Group . . . . : TOURPLEX
Description . : Guided tour group

Search . . BUFFERS_____________________________  /  Show parameters

  / System     Prompt   Description
- _ PROD                 System parms for Production
    _ DFSPB111           Execution parameters for the Control Region
      _ QBUF=9999,
      S QBUFMAX=9999,
      _ QBUFSZ=30632,
      H DBFX=12345,
      _ DBBF=65535,
      _ RECA=500,
      _ DBFP=1,
    _ DFSRSR01           Remote Site Recovery (RSR) options
      _ LBUFMAX(900),              /* THIS IS A USEFUL COMMENT
    _ DFSVSM99           VSAM and other IMS initialization options
      _ OPTIONS,BGWRT=(YES,99)
- _ TEST                 System parms for Test
    _ DFSPB222           Execution parameters for the Control Region
```


Locate parameter

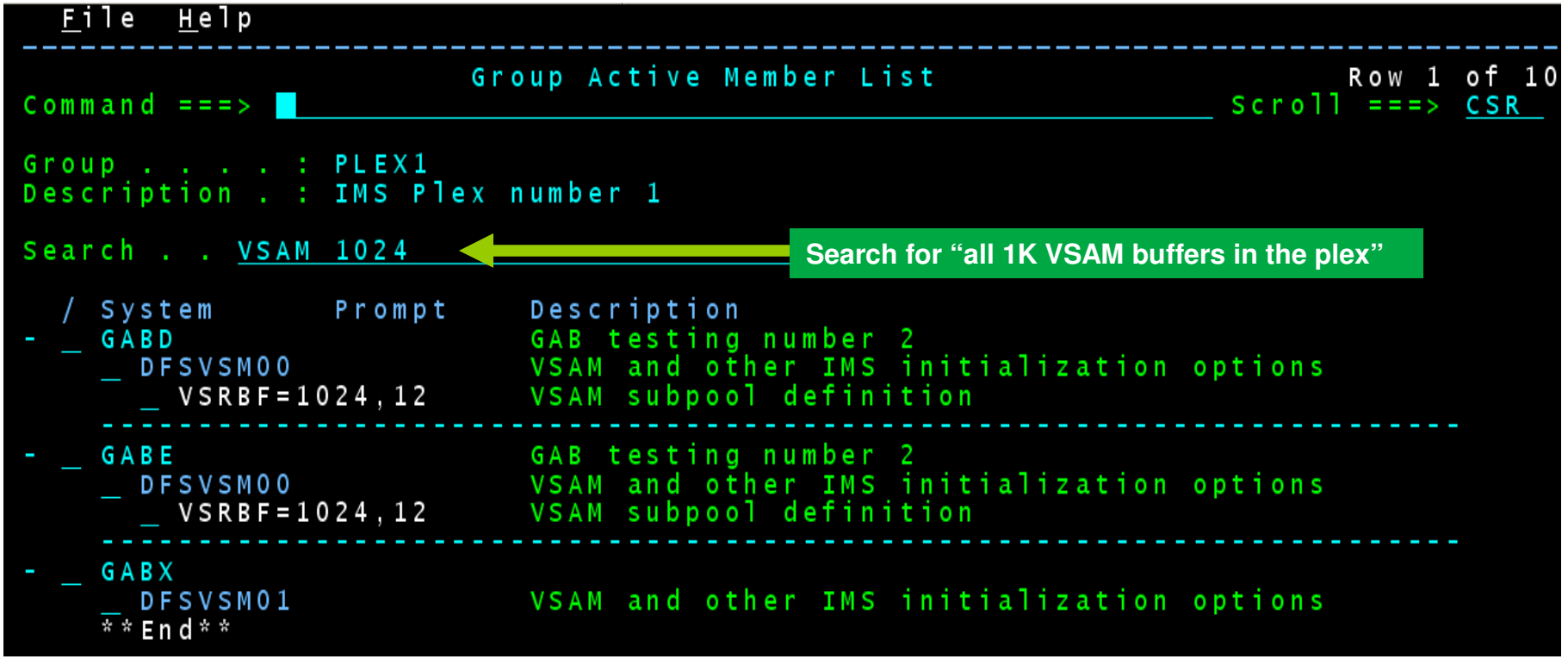
```
EDIT       USER.IMSPM.PROCLIB(DFSPB111)                          More: < >
Command ===> LOCATE FP_____________________________________________________

Description . . : Execution parameters for the Control Region

Enter "/" to define control region options.
  _           Control Region specifications
  _           Security parameters
  _           Message Queue and Sh
  _           Fast Path parameters
  _ *Active   Storage Pool Values
  _           Other parameters (VT

Member Suffixes                Comment
  CSLG  . . . . . 001          _______
  DC  . . . . . . 001          _______
  DSCT  . . . . . _            _______
  FDRMBR  . . . . __           _______
  FIX . . . . . . 03           _______
  HSBMBR  . . . . __           _______
  MSDB  . . . . . _            _______
  ORSMBR  . . . . __           _______
  PRLD  . . . . . __           _______
  RSRMBR  . . . . __           _______
  SHAREDQ . . . . ___          _______
  SPM . . . . . __             _______
  SSM . . . . . . SSID         _______
  SUF . . . . . . 2            _______
  VSPEC . . . . . __           _______
```

```
     Parameter        Description
.    BSIZ             Database buffer size
.    DBBF             Maximum number of buffers in ECSA
.    DBFP             Page free time interval for unneeded buffers
.    DBFX             Number of additional buffers to pagefix
.    DMHVF            Megs to page fix for VSO ERE dataspace.
.    EMHB             EMHB pool upper limit
.    EMHL             EMH buffer size
.    EPCB             EPCB pool size.
.    FDRMBR           FDR PROCLIB member suffix (DFSFDRxx)
. *  FP               Enable Fast Path support
.    FPDSSIZE         Fast Path data space size
.    FPOPN            Control region preopen for DEDB areas
.    FPRLM            Auto restart DEDB areas during IRLM reconnect
S    FPWP             Fastpath work pool upper limit.
.    LGNR             Maximum number of DEDB buffer alterations
.    MSDB             MSDB PROCLIB member suffix (DBFMSDBx)
.    OTHR             Number of DEDB output threads
.    UHASH            User hash module name (fastpath)
.    VAUT             VTAM authorized path option
```

Sample Search and Locate Parameters

- VTAM **All parameters related to VTAM.**
- IOBF 1024
  - The 1K OSAM subpool definition.
- FP DATABASE
  - All Fast Path database related parameters.
- WHATSNEW V10
  - All new and changed parameters in IMS V10, useful when migrating to a new release.
- WHATSNEW RACF
  - All new and changed parameters related to RACF for all releases of IMS.
- APPC **All parameters related to APPC.**
- APPC=
  - The actual APPC parameter (in the PB member). The equals sign searches for an exact parameter match.

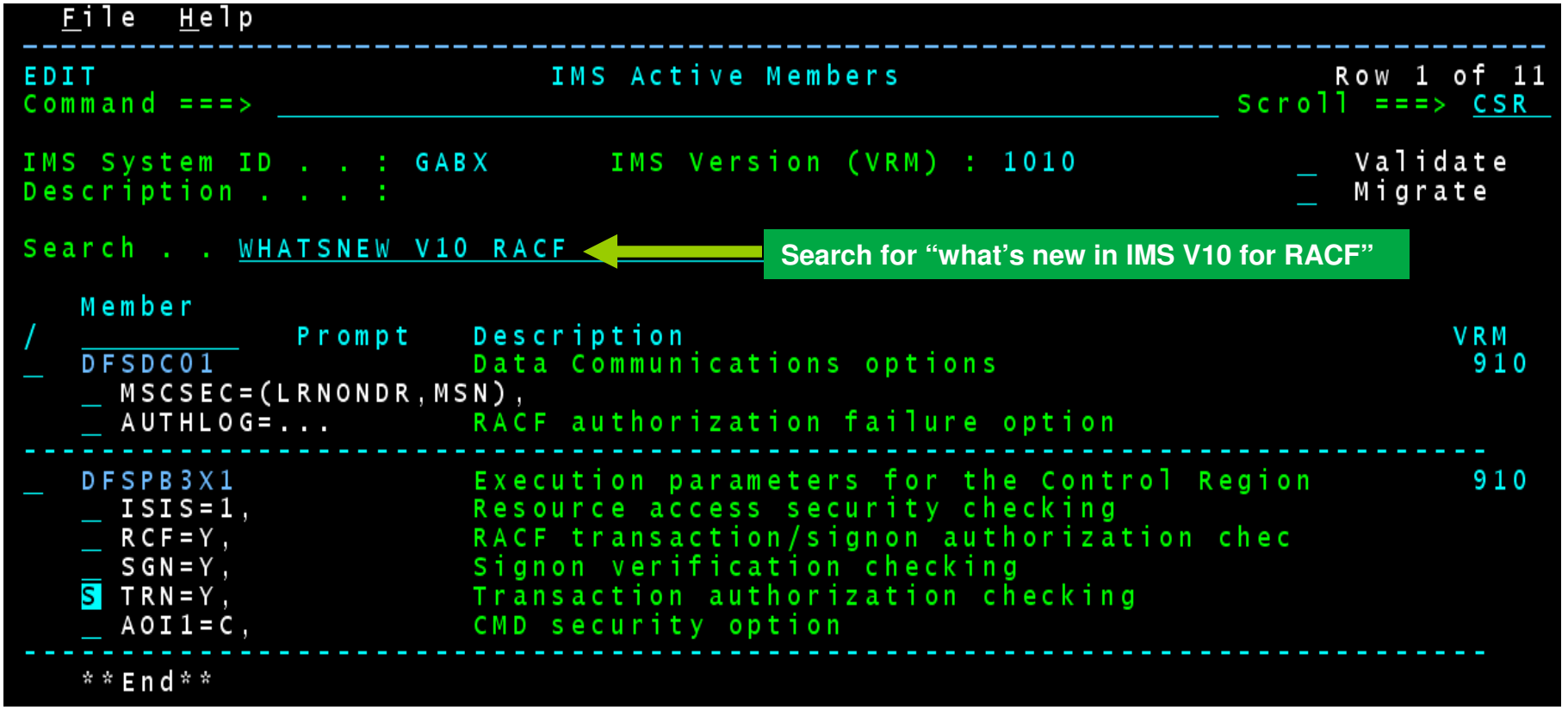
Find all 1K VSAM buffer definitions in the plex



Systems GABD and GABE have 12 VSAM 1K buffers, but system GABX has none

Select the member to define the buffers

What's new in IMS V10 for RACF?



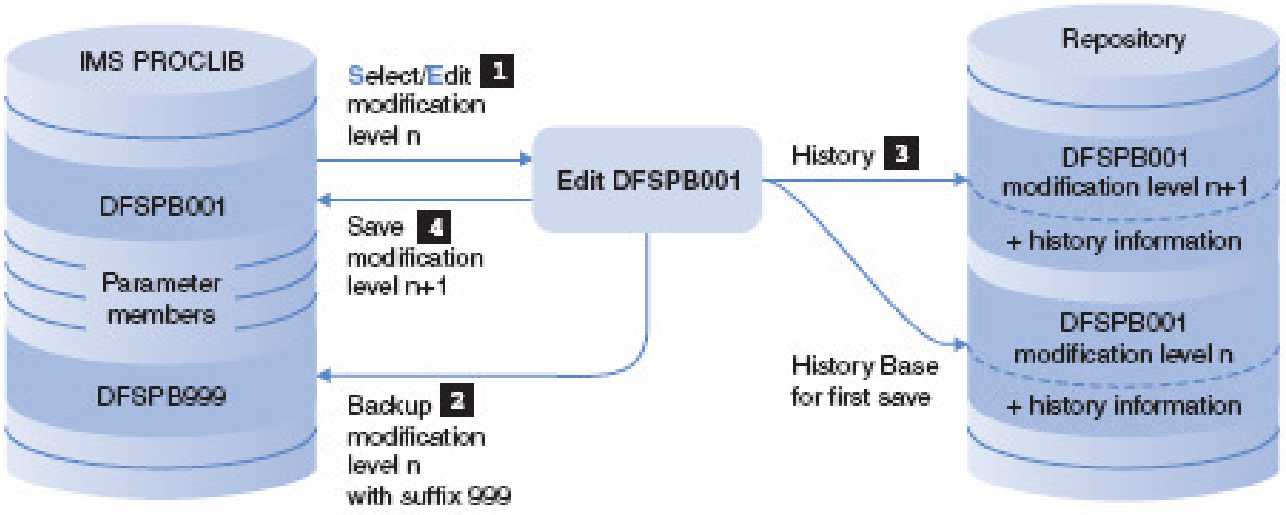
Select a parameter to learn about it and set its value

CQS Support

```
EDIT                          IMS System Definition          Row 1 to 3 of 3
Command ===> ____________________________________________________________

IMS System ID . . . : ____      IMS Version (VRM) . . . : ____  +
Description . . . . . ____________________________

RGSUF . . . . . ___  (PB member suffix)
Startup Parameters   ____________________________________________
                     ____________________________________________

CQSINIT . . . . . ___  (CQS member suffix)
CQS Parameters  . . . ____________________________________________

Control Region Type
1  1. DB/DC   2. DBCTL   3. DCCTL

PROCLIB Concatenation
/   Data Set Name
_  ____________________________________________
_  ____________________________________________
_  ____________________________________________
```


IMS Parameter Manager - HISTORY

- **PRM retains a version history of all changed members**
- **You can view the history by using an H command in front of each member.**

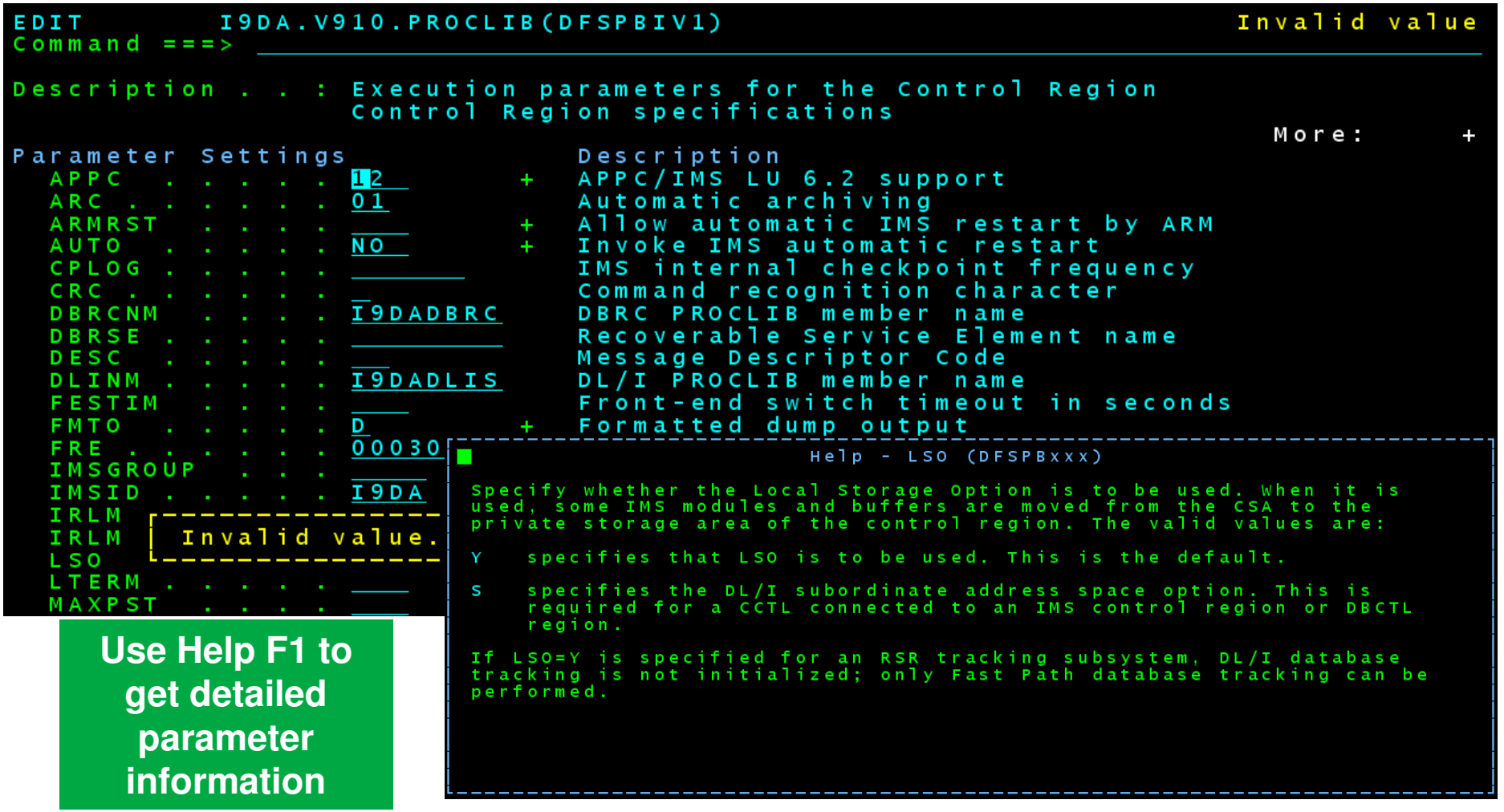


Delete Member History

- **You can delete a PROCLIB member and/or its history using line action** D **on any of the member selection lists**

```
PROCLIB data set name:
GPL120.WGAB.PROCLIB

Member name:
DFSDC001

/  Delete member from PROCLIB data set
/  Delete member history from repository

_  Set member delete confirmation off

Press ENTER to confirm delete.
Press CANCEL or EXIT to cancel delete.
```


Formatted parameter screens with context assist and parameter validation



Use Help F1 to get detailed parameter information

Switch to standard ISPF edit and check the syntax

```
EDIT        I9DA.V910.PROCLIB(DFSPBIV1) - 01.00            Columns 00001 00072
Command ===> CHECK                                          Scroll ===> CSR
****** ******************************** Top of Data ********************************
==MSG> Warning: Member has syntax errors.
==MSG> Error correction primary commands:
==MSG>     CHECK  - Re-check the syntax
==MSG>     ERRORS - Display selection list of errors
==MSG>     MODEL  - Insert model parameter
==MSG> Error correction function keys:
==MSG>     F1  Help - Parameter-sensitive help
==MSG>     F3  End  - Return to Assist mode
000001 RES=Y,
000002 FRE=00030,
000003 QBUF=0005,
000004 PST=5,
000005 SAV=005,
000006 EXVR=Y,
000007 SRCH=0,
000008 FBP=00048,
000009 PSB=0048,
000010 DMB=048,
==MSG> Value too long:1024
.EAAAA MAXPST=1024,
000012 CIOP=,
000013 WKAP=048,
000014 PSBW=024,
```

Commands:

CHECK – Check for syntax errors and hightlight

MODEL – Insert a parameter

Help – Position on parameter and press F1 to get help

CHECK

```
EDIT        IMSPM120.V910.PROD.PROCLIB(DFSPB001) - 01.09   Columns 00001 00072
Command ===> CHECK                                          Scroll ===> PAGE
****** ***************************** Top of Data ********************************
==MSG> Warning: Member has syntax errors.
==MSG> Error correction primary commands:
==MSG>    CHECK  - Re-check the syntax
==MSG>    ERRORS - Display selection list of errors
==MSG>    MODEL  - Insert model parameter
==MSG> Error correction function keys:
==MSG>    F1  Help - Parameter-sensitive help
==MSG>    F3  End  - Return to Assist mode
==MSG> Value too long:mistake1
.EAAAB ALOT=mistake1
000002 AOIP=,
000003 AOIS=R,                          Use RACF authorization
000004 APPC=,
000005 APPLID1=,
000006 APPLID2=,
000007 APPLID3=,
000008 ARC=01,
000009 ASOT=60,
000010 AUTO=N,
000011 BSIZ=02048,
000012 CIOP=,
000013 CRC=,
000014 CSAPSB=12,
==MSG> Value too long:mistake2
.EAAAA CSLG=mistake2
==MSG> Unknown parameter:'DBBFmistake3'
.EAAAC DBBFmistake3
000017 DBFX=00010,
000018 DBRCNM=I9DEDBRC,
000019 DBWP=024,
 F1=Help      F3=Exit      F5=Rfind     F6=Rchange   F12=Cancel
```

ERRORS

- **To display a selection list of errors, enter the ERRORS command**

```
                      Select a Label                  Row 1 to 3 of 3
Command ===> ___________________________________     Scroll ===> PAGE

Select a label to locate the line in error.

    Label   Line      Data
.   .EAAAB  00000001  ALOT=mistake1
S   .EAAAA  00000015  CSLG=mistake2
.   .EAAAC  00000016  DBBFmistake3
************************** Bottom of data ***************************
```

MODEL

```
EDIT       IMSPM120.V910.PROD.PROCLIB(DFSPB001) - 01.09   Columns 00001 00072
Command ===> MODEL                                          Scroll ===> PAGE
****** ***************************** Top of Data ******************************
.EAAAA CSLG=mistake2
B AAAC DBBFmistake3
000017 DBFX=00010,
000018 DBRCNM=I9DEDBRC,
000019 DBWP=024,
000020 DLINM=I9DEDLIS,
000021 DLIPSB=40,
000022 DLQT=60,
000023 DMB=048,
000024 DSCT=1,
000025 EMHB=,
000026 EMHL=256,
000027 EPCB=0012,
000028 ETO=Y,
000029 EXVR=Y,
000030 FBP=00048,
000031 FESTIM=,
000032 FIX=01,
000033 FMTO=D,
000034 FPWP=,
000035 FRE=00030,
 1=Help      F3=Exit      F5=Rfind      F6=Rchange
```

1. **To display a model template for a parameter, enter the MODEL command with an A or B**

2. **Then select the parameter you wish to use**

```
                          Select a parameter              Row 1 to 15 of 138
Command ===> ____________________________________________________________

     Parameter       Description
.    ALOT            Auto logoff time in minutes
.    AOIP            AOI pool upper limit
.    AOIS            Automated Operator Interface command security
.    AOI1            CMD security option
.    APPC            APPC/IMS LU 6.2 support
.    APPCSE          APPC RACF security.
.    APPLID1         VTAM applid of active IMS system
.    APPLID2         VTAM applid of XRF alternate system
.    APPLID3         VTAM applid of RSR tracking system.
.    ARC             Automatic archiving
.    ARMRST          Allow automatic IMS restart by ARM.
.    ASOT            Auto signoff time in minutes
.    AUTO            Invoke IMS automatic restart
.    BSIZ            Database buffer size
. *  CHTS            Number of conversation hash table slots
.    CIOP            CIOP pool upper limit
.    CMDMCS          MCS/EMCS command option
.    CPLOG           IMS internal checkpoint frequency
.    CRC             Command recognition character
.    CSAPSB          MVS common area pool size
.    CSLG            CSL global member suffix (DFSCGxxx)
S    DBBF            Maximum number of buffers in ECSA
.    DBFP            Page free time interval for unneeded buffers
.    DBFX            Number of additional buffers to pagefix
. *  DBRCGRP         DBRC RECON-sharing group ID
```

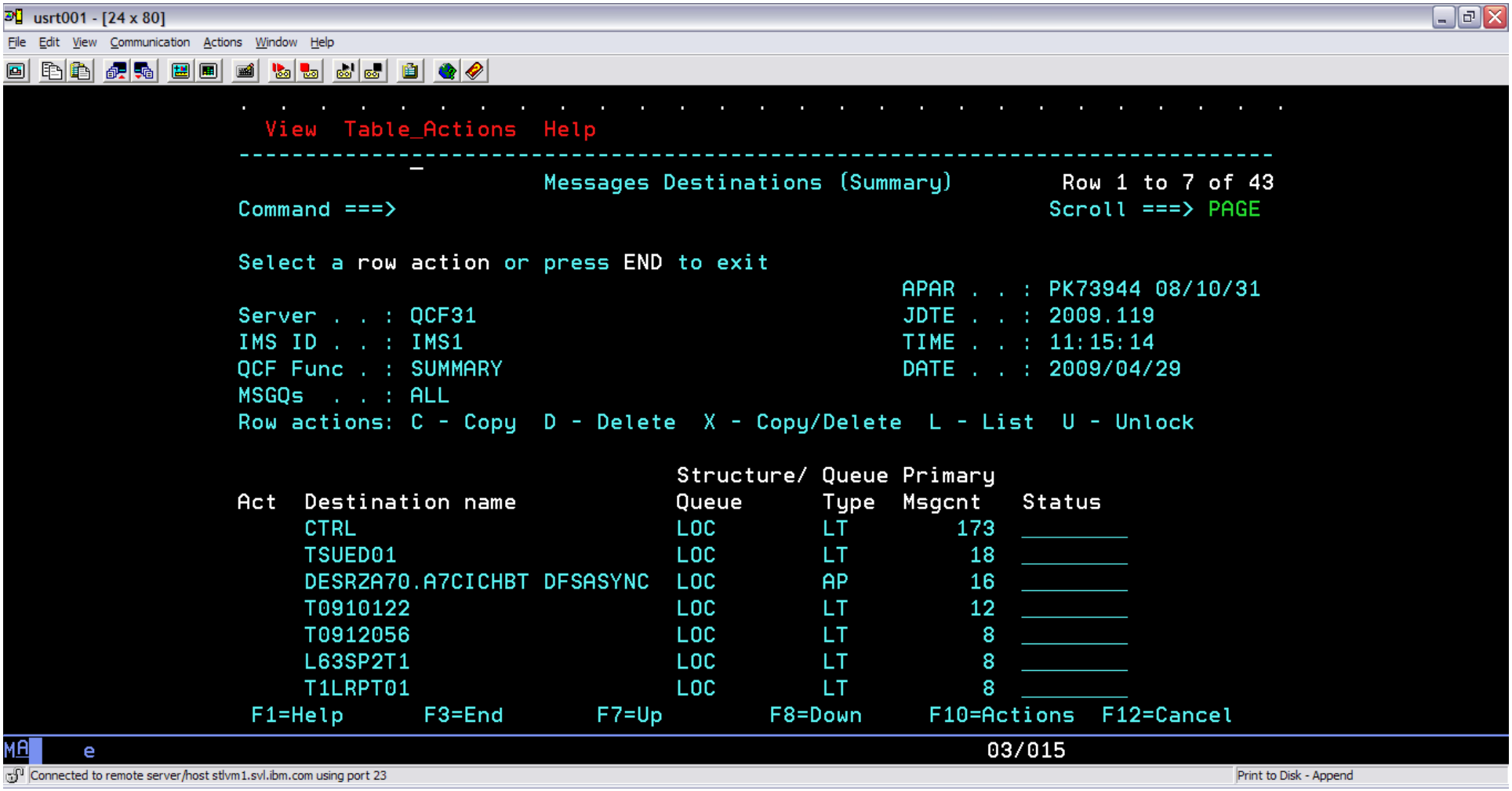
Data Management Tools

IMS Queue Control Facility

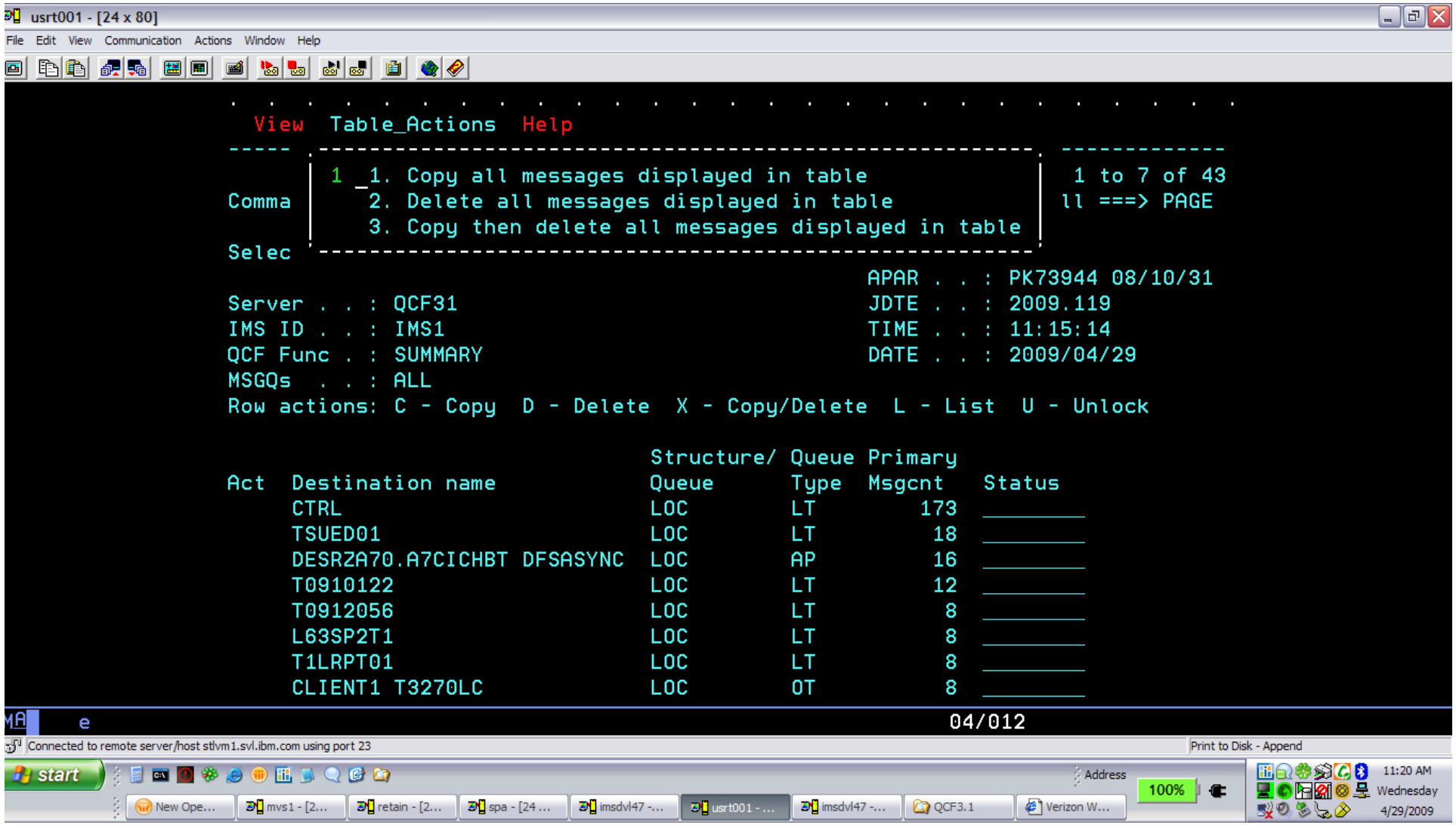
IMS Queue Control Facility

- QCF is our premier tool for managing IMS queues.
- In order to test new versions of IMS, the LOAD function can be used
- When you run LOAD as a migration aid, the LOAD function requeues messages across supported IMS releases (IMS Version 8.1 or later).
- You can load messages that are created on one supported release of IMS into another supported release of IMS if the following requirement is met. The source and destination resources (such as LTERMs, transactions, MSC names) that are involved must be defined on both IMS systems.

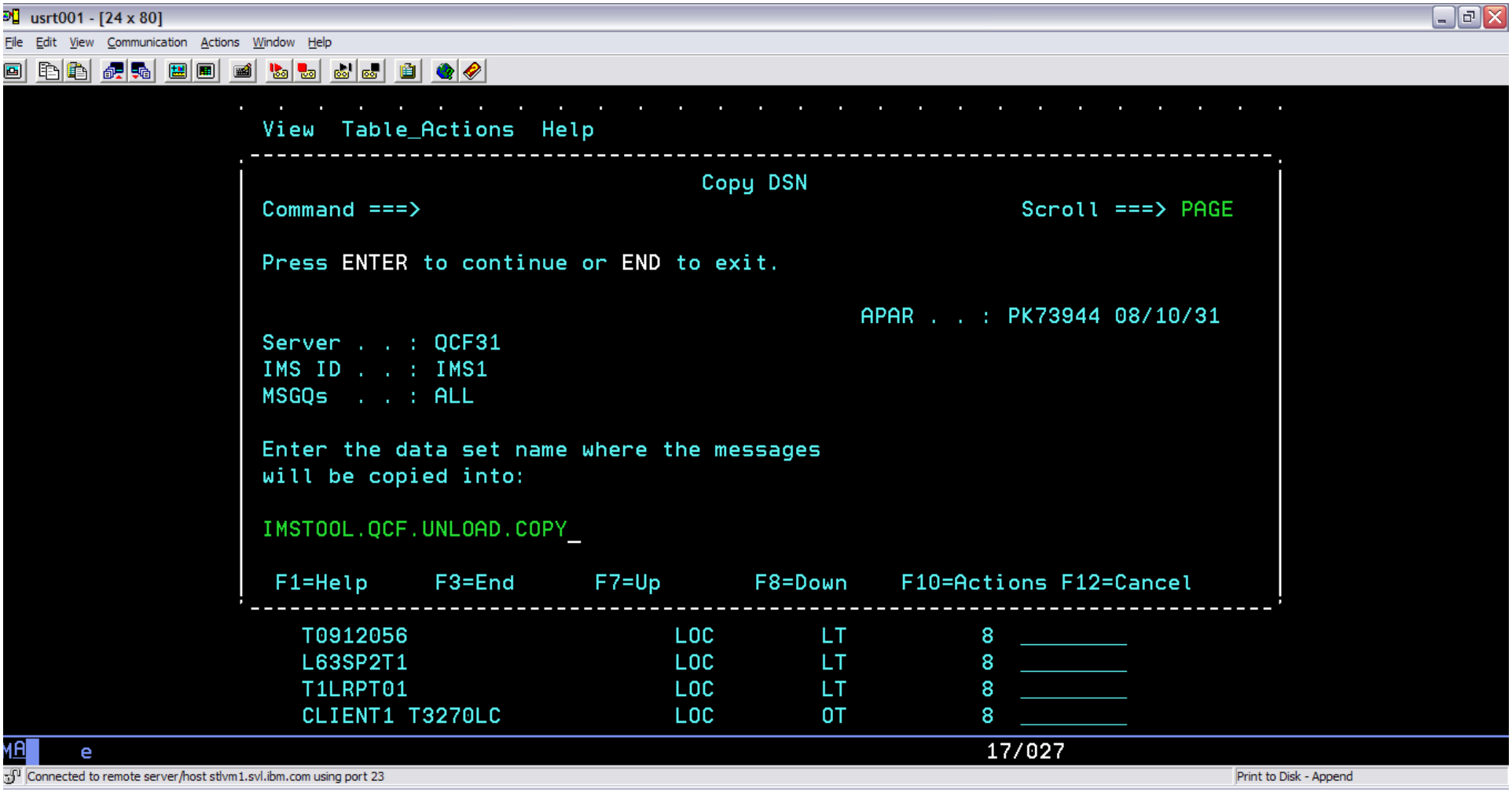
Messages on the queues



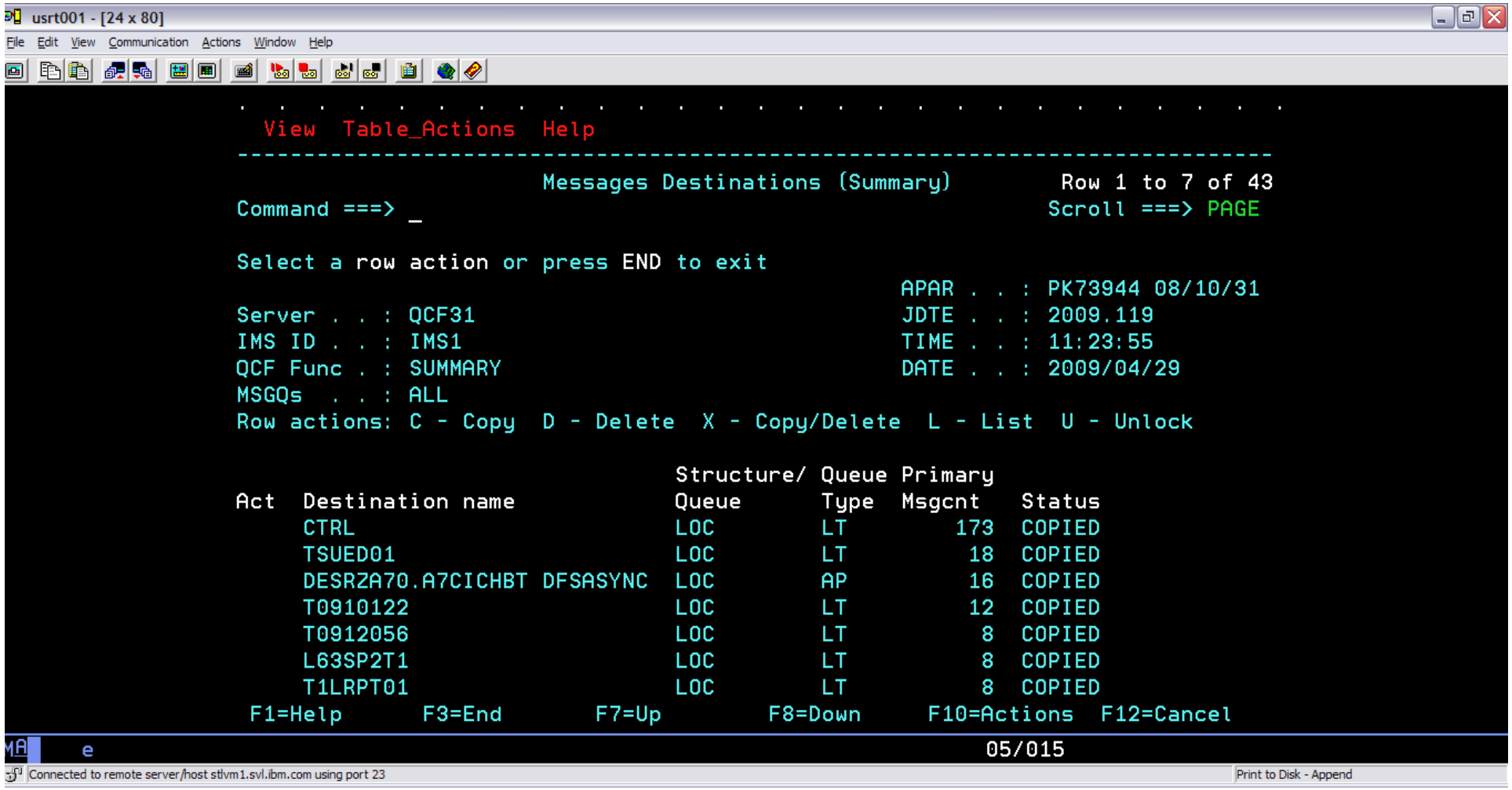
Select copy all messages



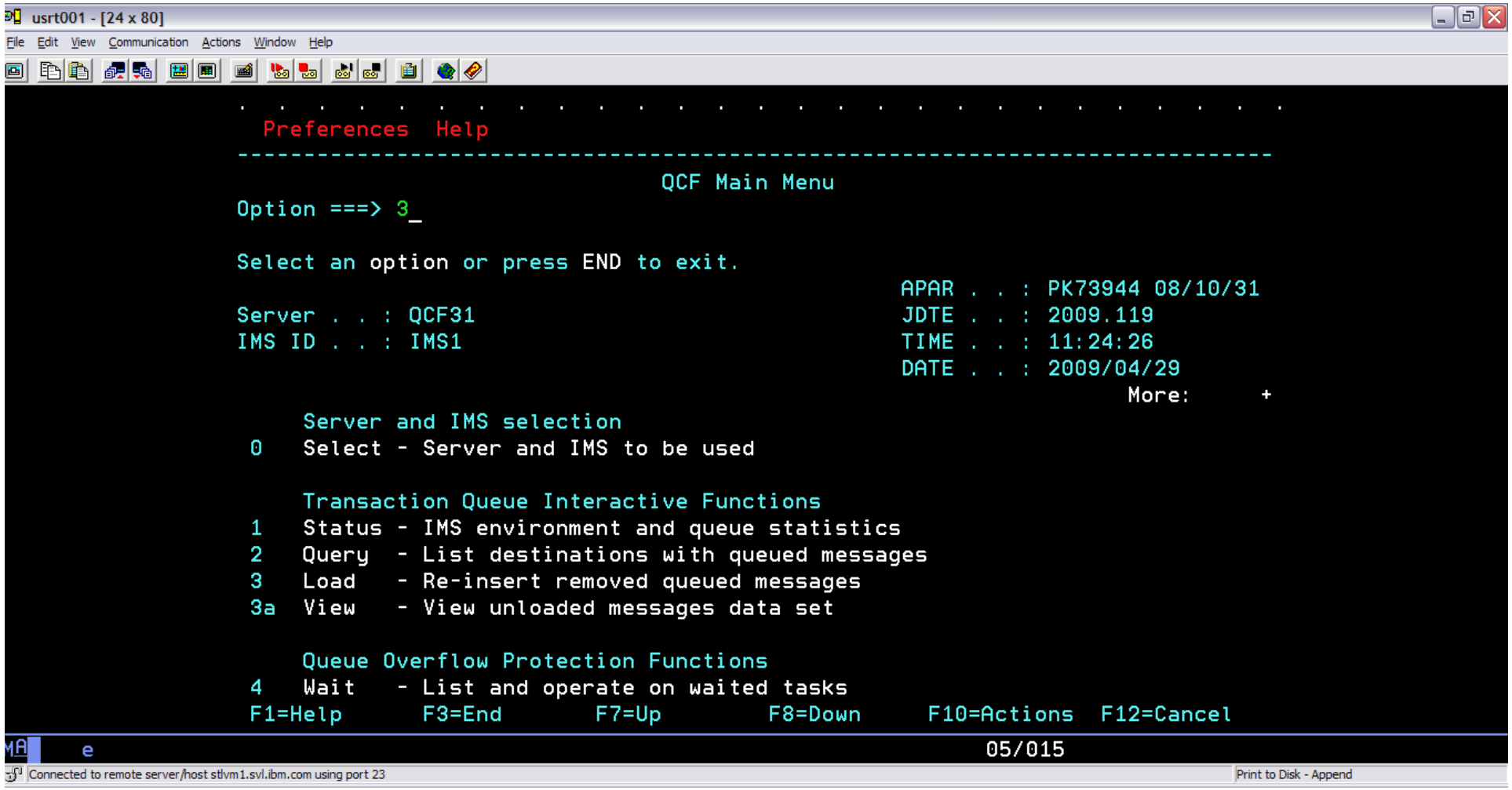
Enter data set name to save messages



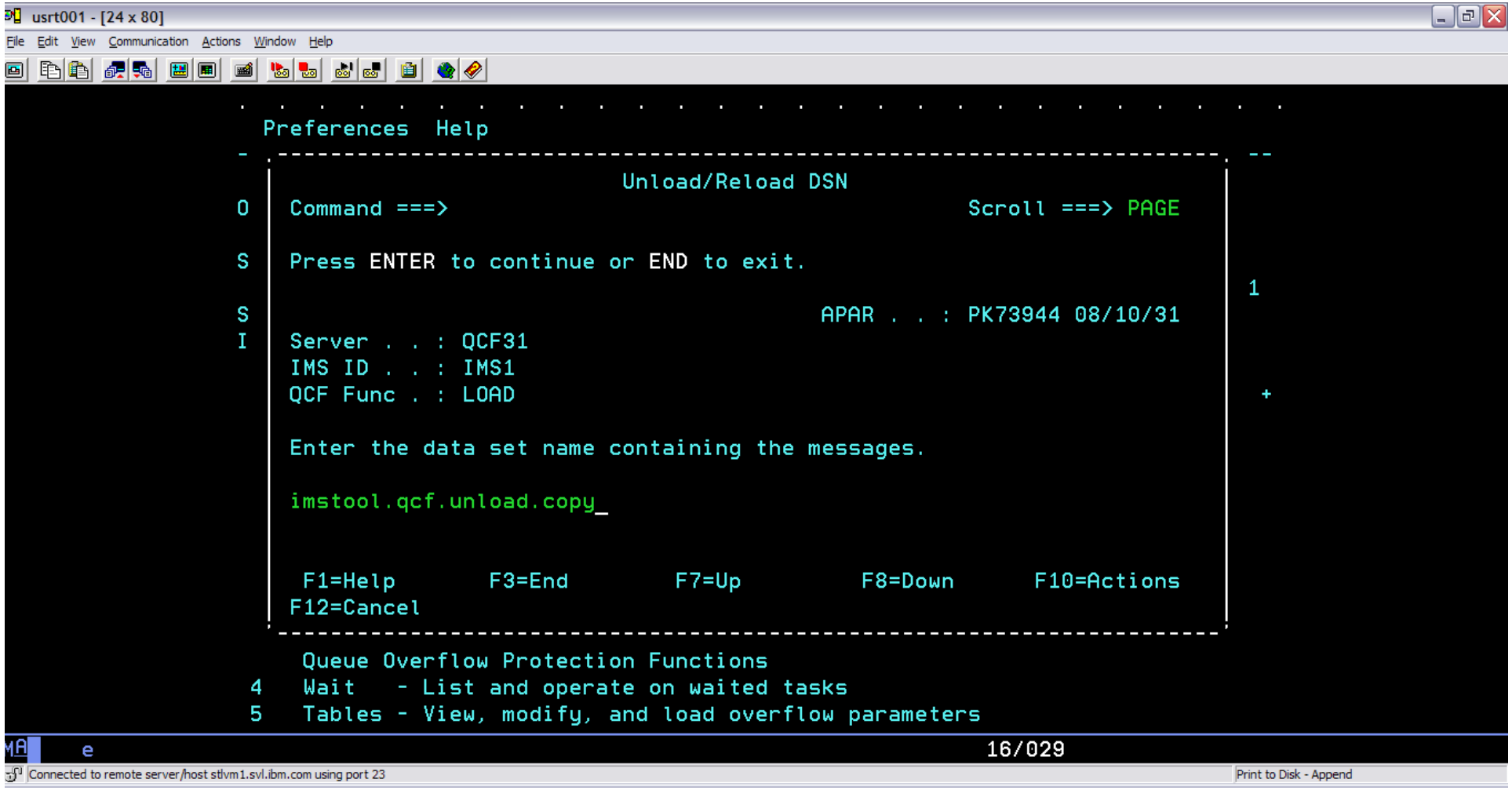
Messages copied to data set

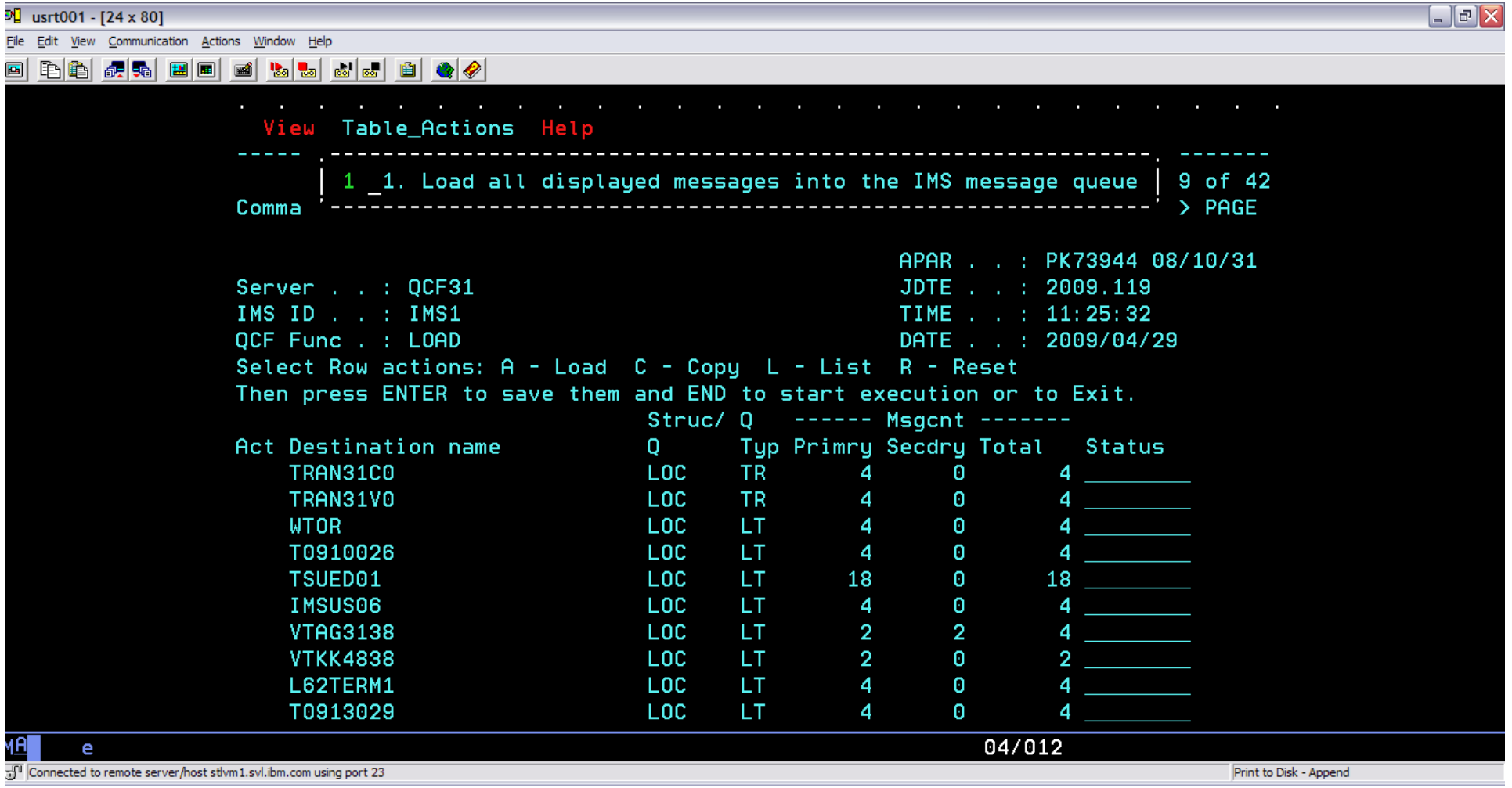


Select option 3 from main menu - LOAD

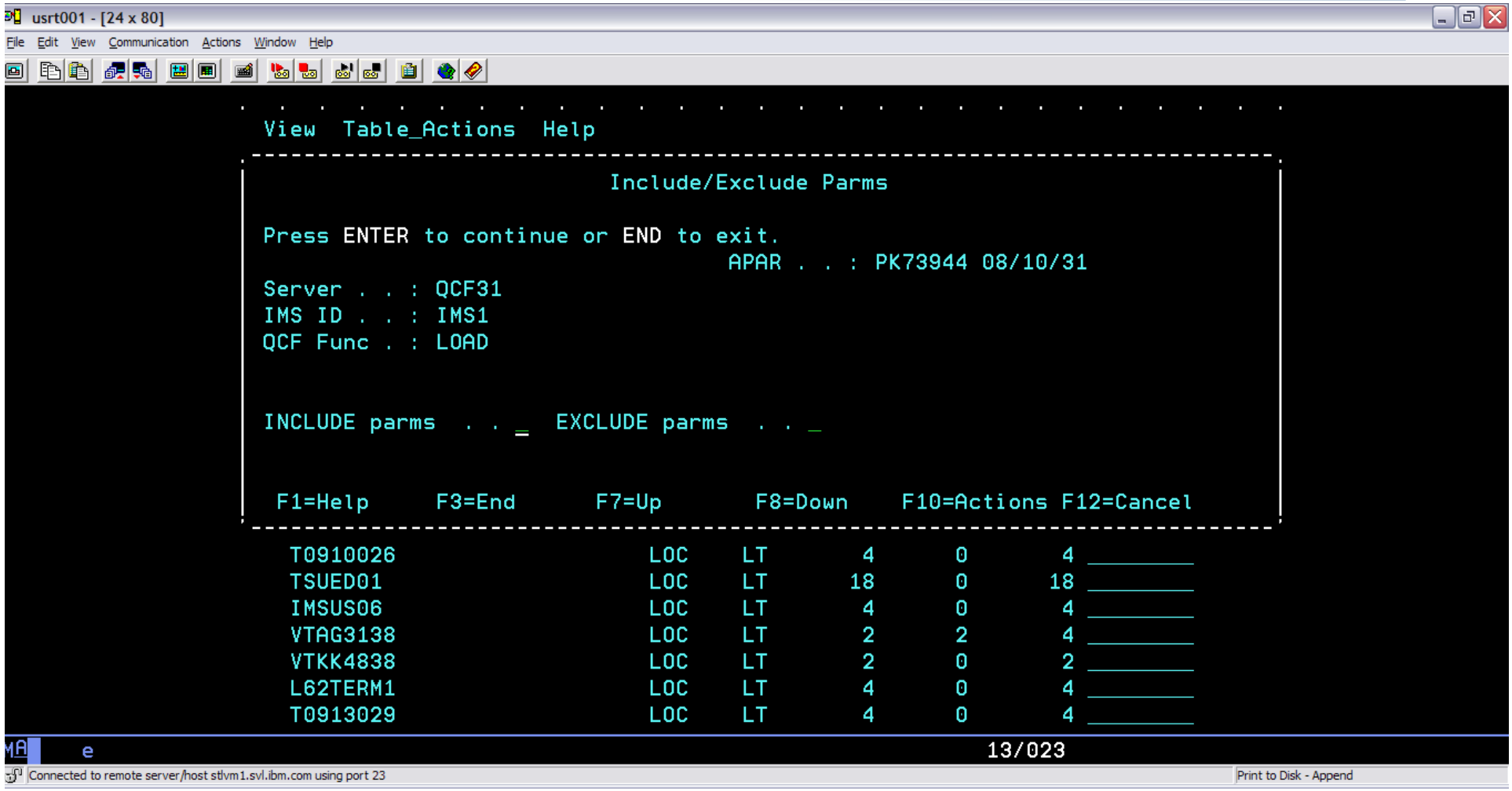


Enter data set containing the messages

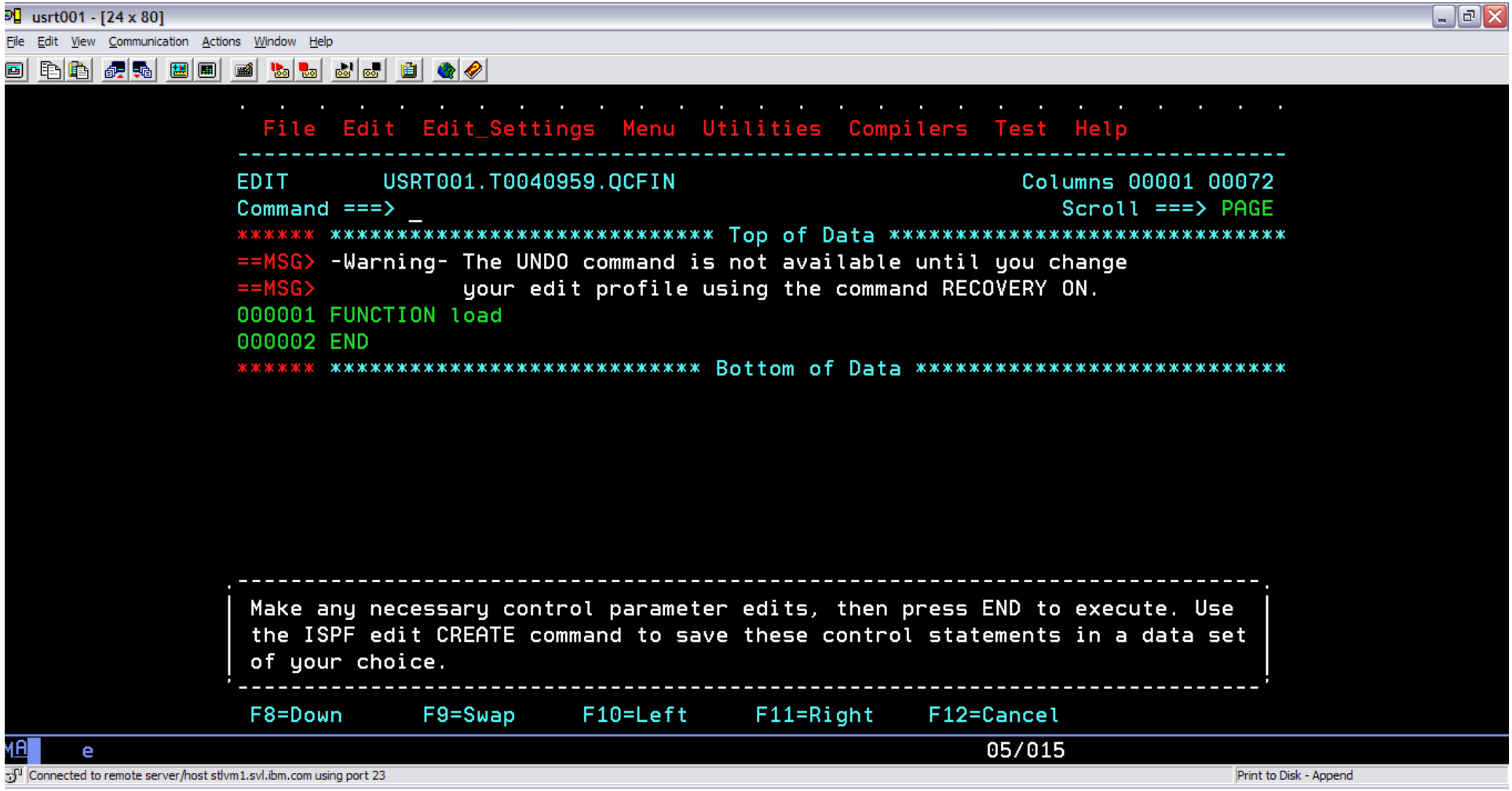




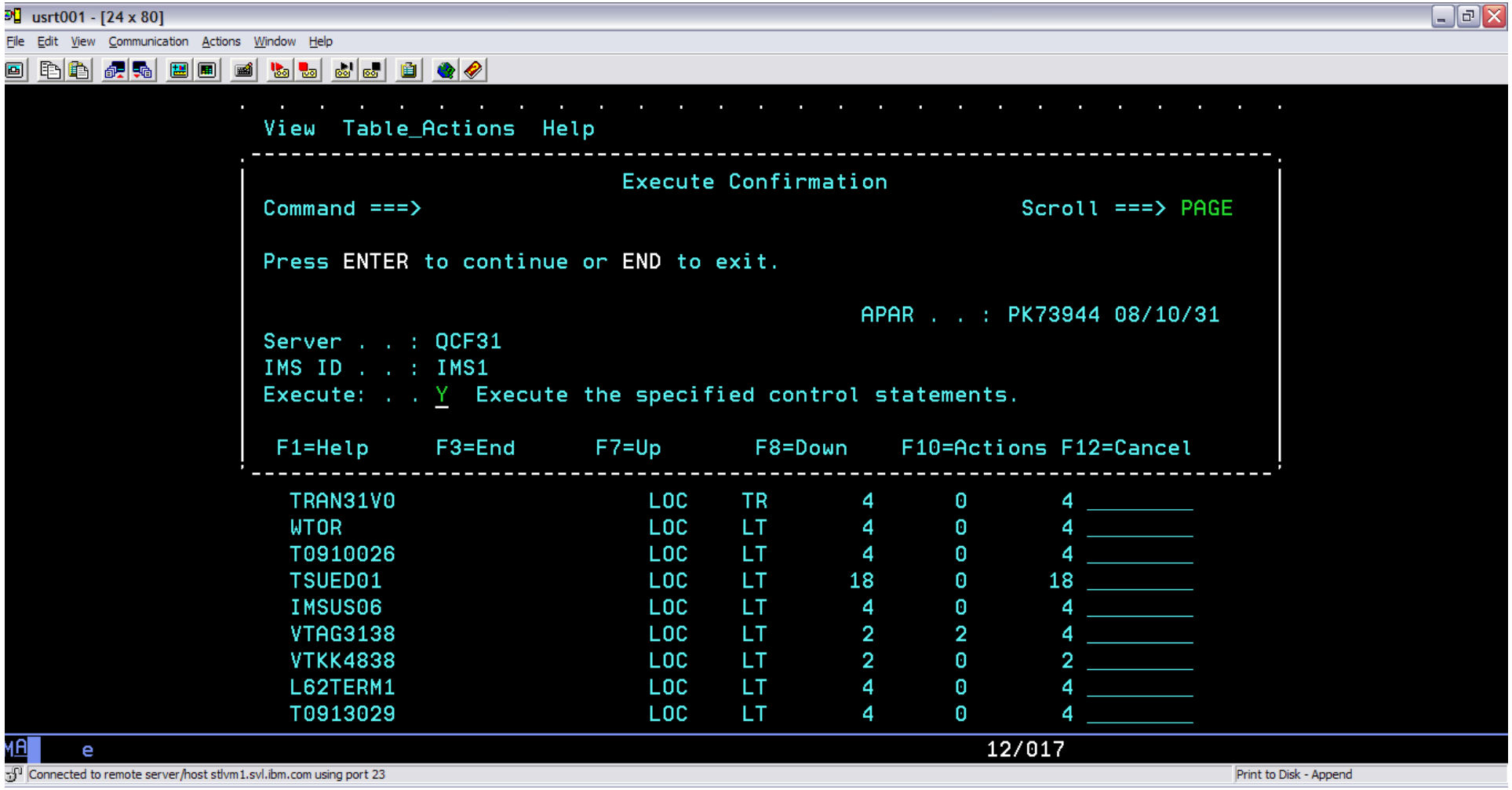
Can enter INCLUDE/EXCLUDE parameters
(to select messages)



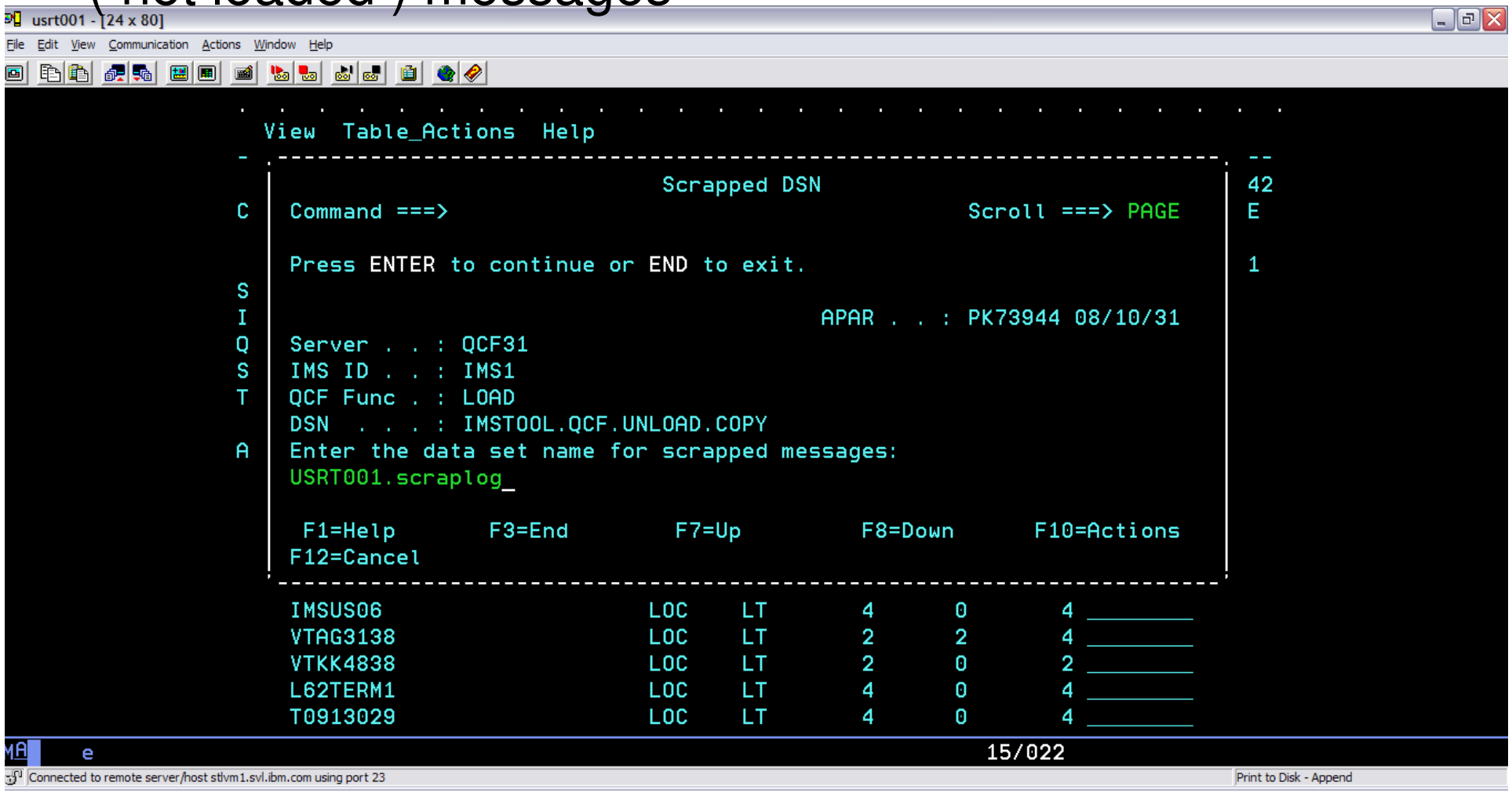
Edit control statements
(if more selection parameters are needed)



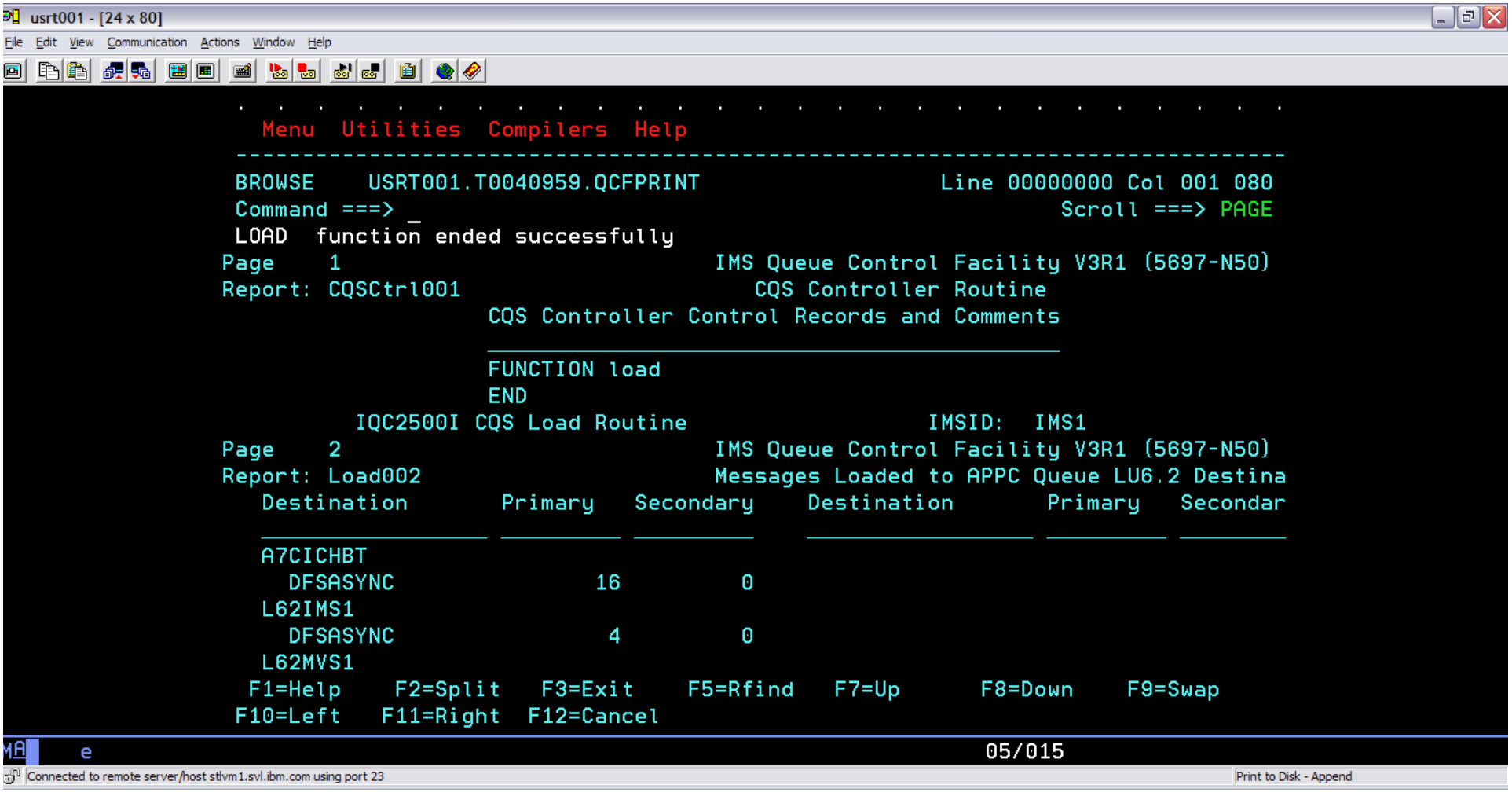
Confirmation panel



Enter data set name to preserve scrapped (not loaded) messages



Load report



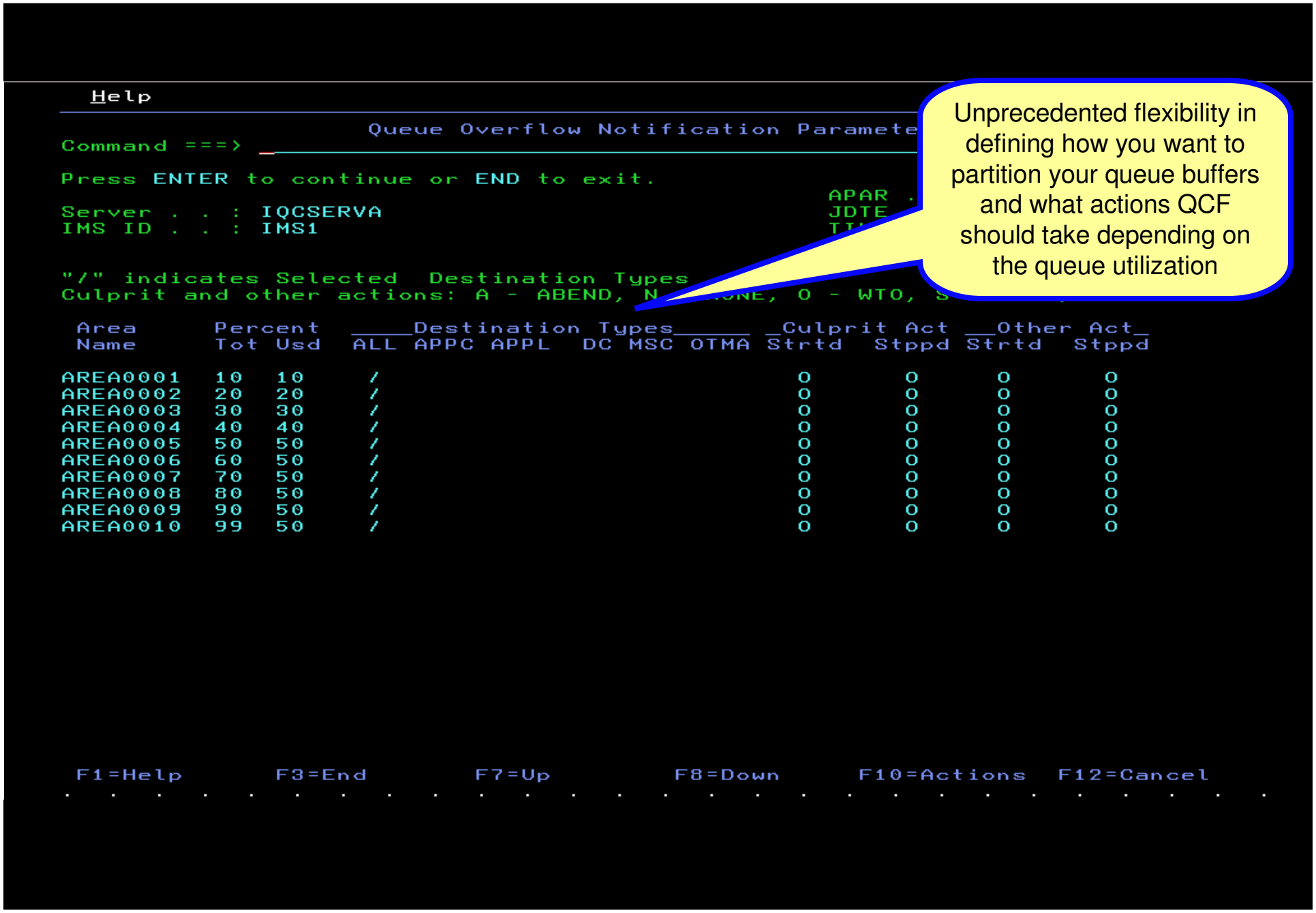
IMS Queue Control Facility

- **With a new Queue Space Utilization Notification mechanism you can now define up to ten areas of the total queue space to monitor for small or large messages**
- **Automatically detect an IMS cold start and initiate the requeue of the messages that were in the queue before the cold start**
- **Automatically detect an IMS warm start and initiate the requeue of the messages or offloads the messages that were in the dead letter queue before warm start**
- **Automatically offload any messages that were on the queue during message overflow**
- **Select messages based on a data string for faster problem determination**
- **A new filter for the dead letter queue**
- **Contains multiple new console commands to display the top number of destinations that are using the message queues;**
  - display the destinations using the message queues over last number minutes; and initiate the requeue or offload of the messages that were in the queue

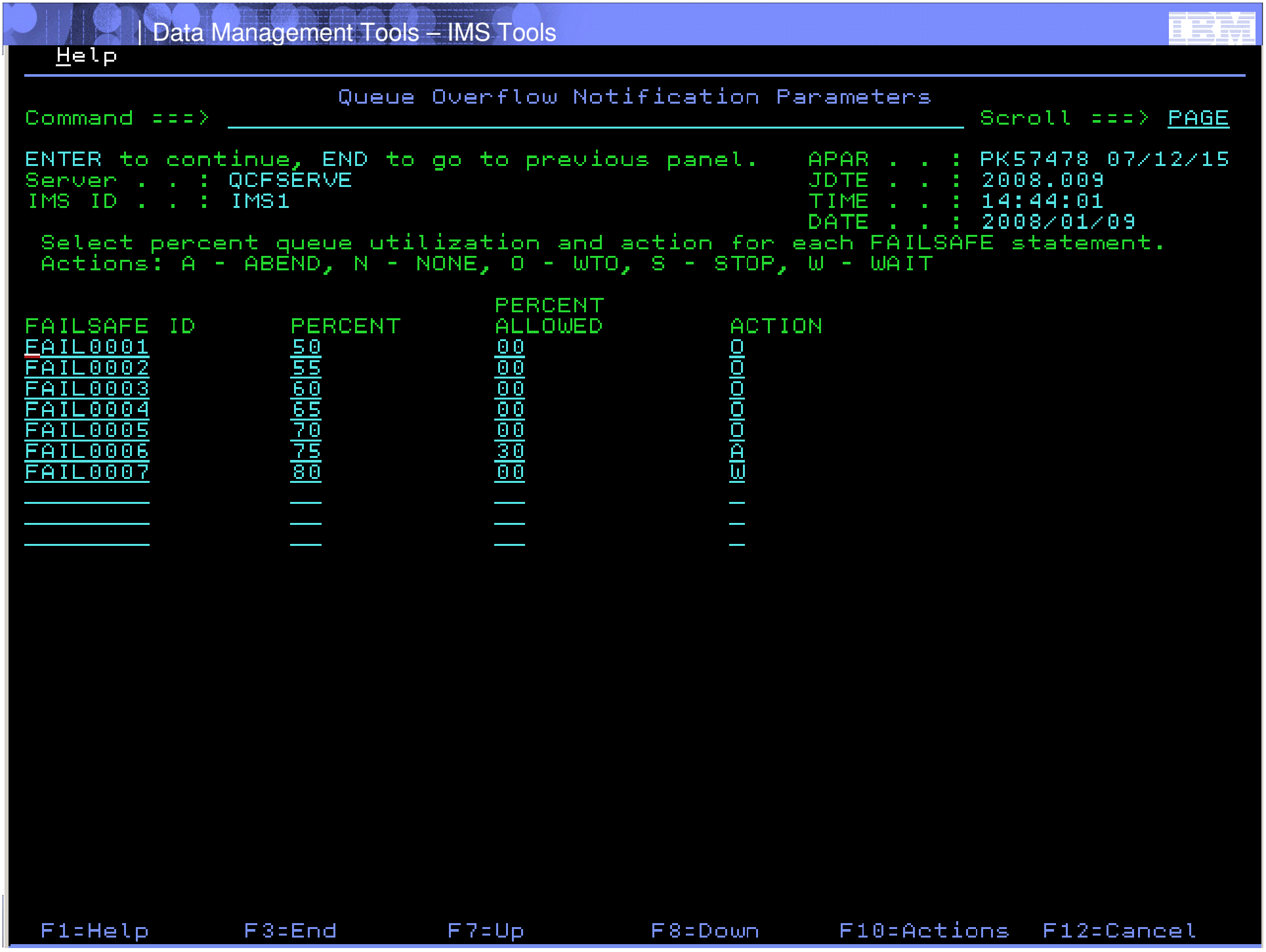
Queue Space Usage Notification (QSUN)

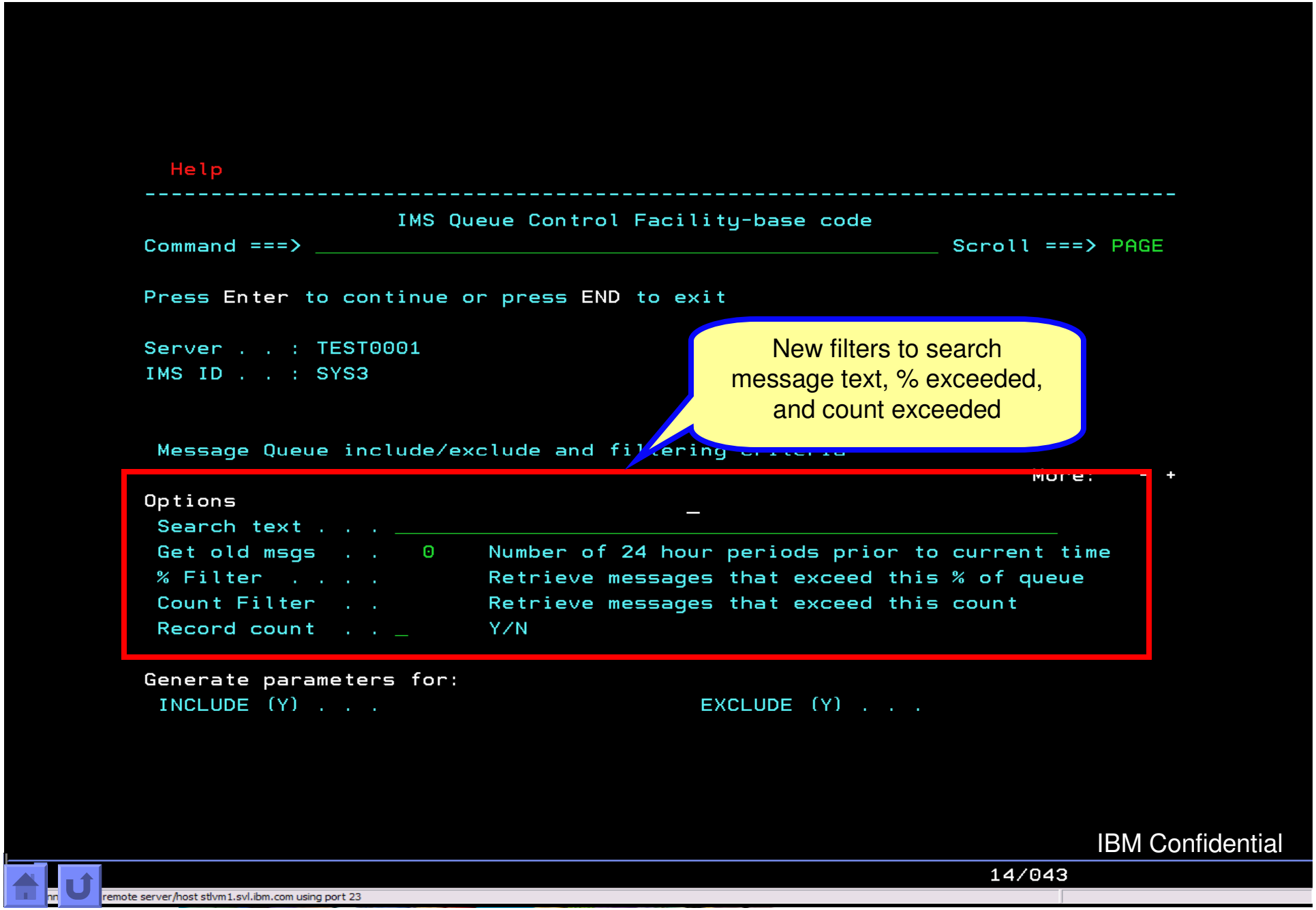
- **QSUN allows the user extreme flexibility in setting up their queue management policies to prevent queue overflow.**
- Policy can be by total queue space usage (small/large queues)
  - The queue space can be divided into 10 logical partitions
  - Each partition is expressed as a percentage of the total queue space
  - Actions can be taken in each partition based on customer specifications
  - Actions are against all users of the queue space
  - This policy ensures that heavy queue space utilization will not bring IMS down
  - Policy can be by specific queue space usage (small/large queues)
    - The queue space can be divided into 10 logical partitions
    - Each partition is expressed as a percentage of the total queue space
    - Actions can be taken in each partition based on customer specifications
    - Actions are against specific users of the queue space
    - This policy helps identify specific heavy users of the queue space
  - Policy actions are: NONE, WTO, WAIT, STOP, ABEND

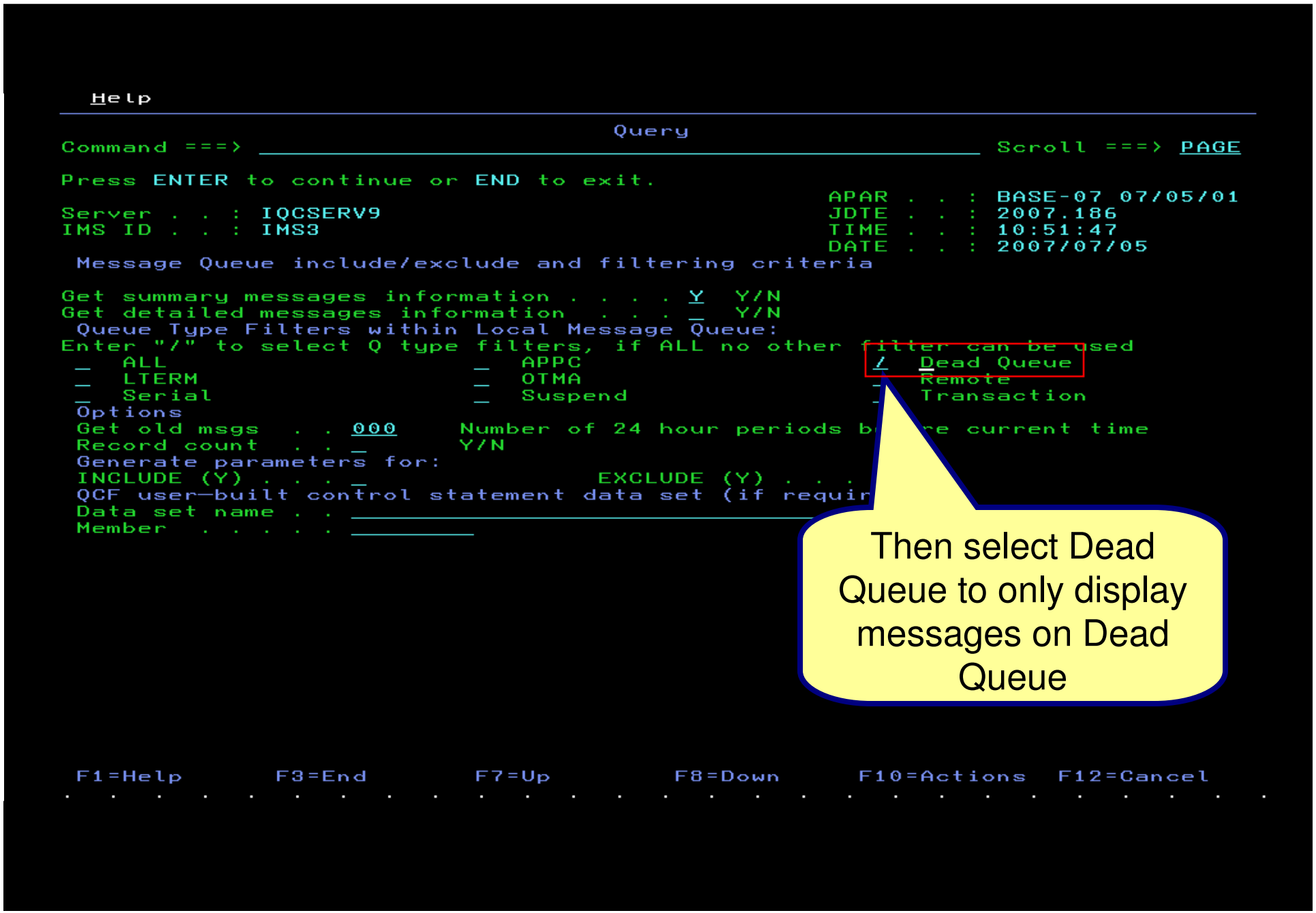

Help
Queue Threshold parameters
Command ===>
Press ENTER to continue or END to exit.
Server . . : IQCSERVA
IMS ID . . : IMS1
APAR .
JDTE .
TIME .
DATE
Committed and uncommitted messages: Thresholds.
Queue upper threshold . . : 075
Queue IQC6101 threshold . . : 085
Committed messages: Job/Procedure names to be called at threshold crossover.
Ignore application calls inserting messages to express PCBs . . . : Y
Jobnames - A-B: . . . : IQCPRCAB B-C: . . : IQCPRCBC C-D: . . : IQCPRCCD
Procnames - A-B: . . . : IQCMEMAB B-C: . . : IQCMEMBC C-D: . . : IQCMEMCD
Jobname - IQC6101 . : IQCPRCUT
Procname - IQC6101 . : IQCMEMUT
F1=Help F3=End F7=Up F8=Down F10=Actions F12=Cancel
Set upper/lower message thresholds for committed and uncommitted messages dynamically

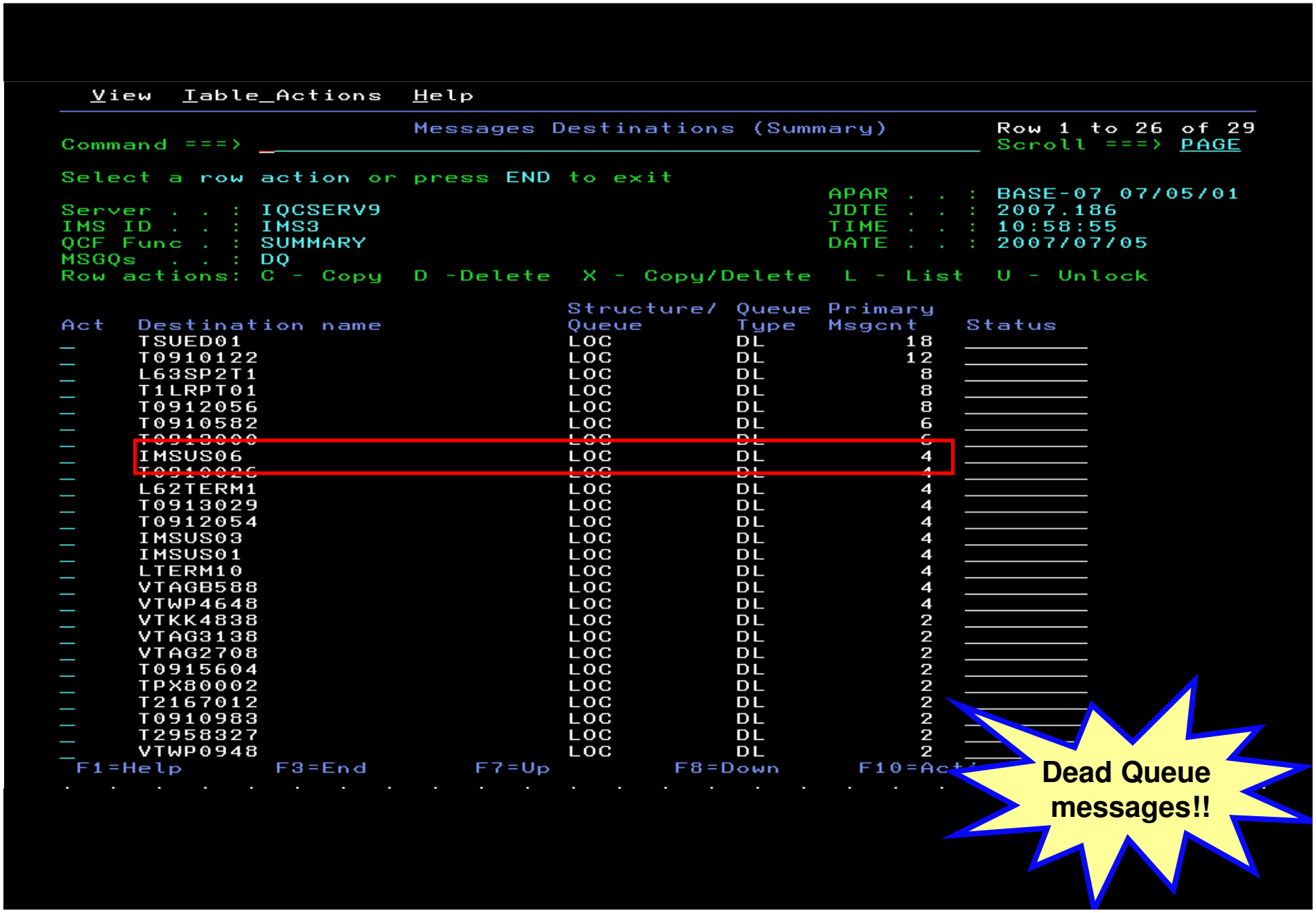


Unprecedented flexibility in defining how you want to partition your queue buffers and what actions QCF should take depending on the queue utilization


Help
Queue Overflow Notification Parameters
Command ===>
Scroll ===> PAGE
ENTER to continue, END to go to previous panel.
Server . . : QCFSERVE
IMS ID . . : IMS1
APAR . . : PK57478 07/12/15
JDTE . . : 2008.009
TIME . . : 14:44:01
DATE . . : 2008/01/09
Select percent queue utilization and action for each FAILSAFE statement.
Actions: A - ABEND, N - NONE, O - WTO, S - STOP, W - WAIT
FAILSAFE ID
PERCENT
PERCENT ALLOWED
ACTION
FAIL0001 50 00 O
FAIL0002 55 00 O
FAIL0003 60 00 O
FAIL0004 65 00 O
FAIL0005 70 00 O
FAIL0006 75 30 A
FAIL0007 80 00 W
F1=Help
F3=End
F7=Up
F8=Down
F10=Actions
F12=Cancel




Help
Query
Command ===>
Scroll ===> PAGE
Press ENTER to continue or END to exit.
Server . . : IQCSERV9
IMS ID . . : IMS3
APAR . . : BASE-07 07/05/01
JDTE . . : 2007.186
TIME . . : 10:51:47
DATE . . : 2007/07/05
Message Queue include/exclude and filtering criteria
Get summary messages information . . . . Y Y/N
Get detailed messages information . . . _ Y/N
Queue Type Filters within Local Message Queue:
Enter "/" to select Q type filters, if ALL no other filter can be used
_ ALL
_ LTERM
_ Serial
_ APPC
_ OTMA
_ Suspend
/ Dead Queue
_ Remote
_ Transaction
Options
Get old msgs . . 000 Number of 24 hour periods b re current time
Record count . . _ Y/N
Generate parameters for:
INCLUDE (Y) . . . _
EXCLUDE (Y) . . .
QCF user-built control statement data set (if requir
Data set name . .
Member . . . . . _
Then select Dead Queue to only display messages on Dead Queue
F1=Help F3=End F7=Up F8=Down F10=Actions F12=Cancel


View Table_Actions Help
Messages Destinations (Summary)
Row 1 to 26 of 29
Command ===>
Scroll ===> PAGE
Select a row action or press END to exit
Server . . . : IQCSERV9
IMS ID . . . : IMS3
QCF Func . . : SUMMARY
MSGQs . . . : DQ
APAR . . . : BASE-07 07/05/01
JDTE . . . : 2007.186
TIME . . . : 10:58:55
DATE . . . : 2007/07/05
Row actions: C - Copy D -Delete X - Copy/Delete L - List U - Unlock
Act Destination name Structure/ Queue Queue Type Primary Msgcnt Status
TSUED01 LOC DL 18
T0910122 LOC DL 12
L63SP2T1 LOC DL 8
T1LRPT01 LOC DL 8
T0912056 LOC DL 8
T0910582 LOC DL 6
IMSUS06 LOC DL 4
L62TERM1 LOC DL 4
T0913029 LOC DL 4
T0912054 LOC DL 4
IMSUS03 LOC DL 4
IMSUS01 LOC DL 4
LTERM10 LOC DL 4
VTAGB588 LOC DL 4
VTWP4648 LOC DL 4
VTKK4838 LOC DL 2
VTAG3138 LOC DL 2
VTAG2708 LOC DL 2
T0915604 LOC DL 2
TPX80002 LOC DL 2
T2167012 LOC DL 2
T0910983 LOC DL 2
T2958327 LOC DL 2
VTWP0948 LOC DL 2
F1=Help F3=End F7=Up F8=Down F10=Act
Dead Queue messages!!

Displaying highest count destinations

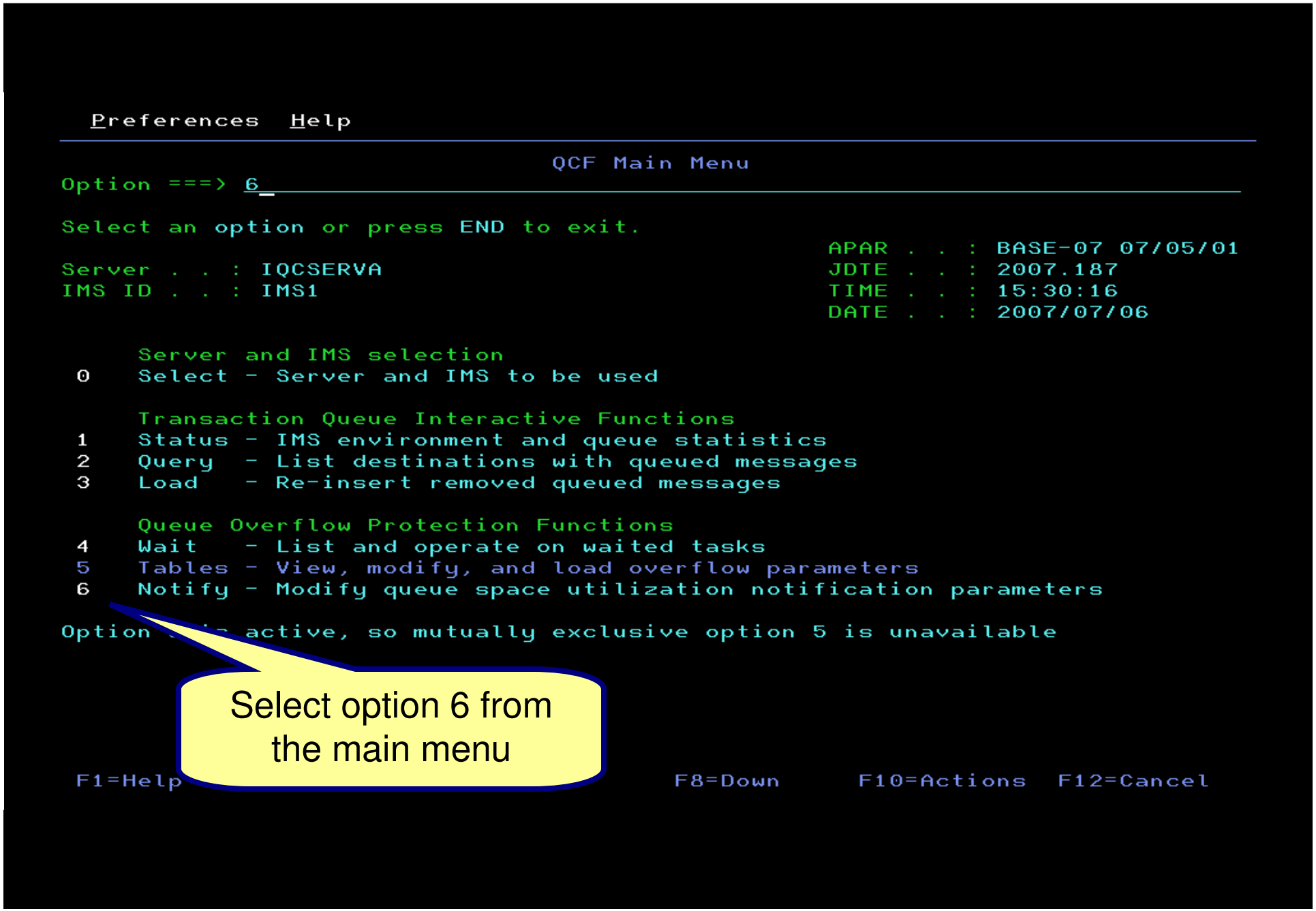
- **Query command is introduced to allow the customer entering an MVS command to display the top number of destinations using the message queues**
- **Demo**
  - F IQCSERV9,QRY QCFIMS NAME(IMS1) INCLUDE(TOPAM(3))

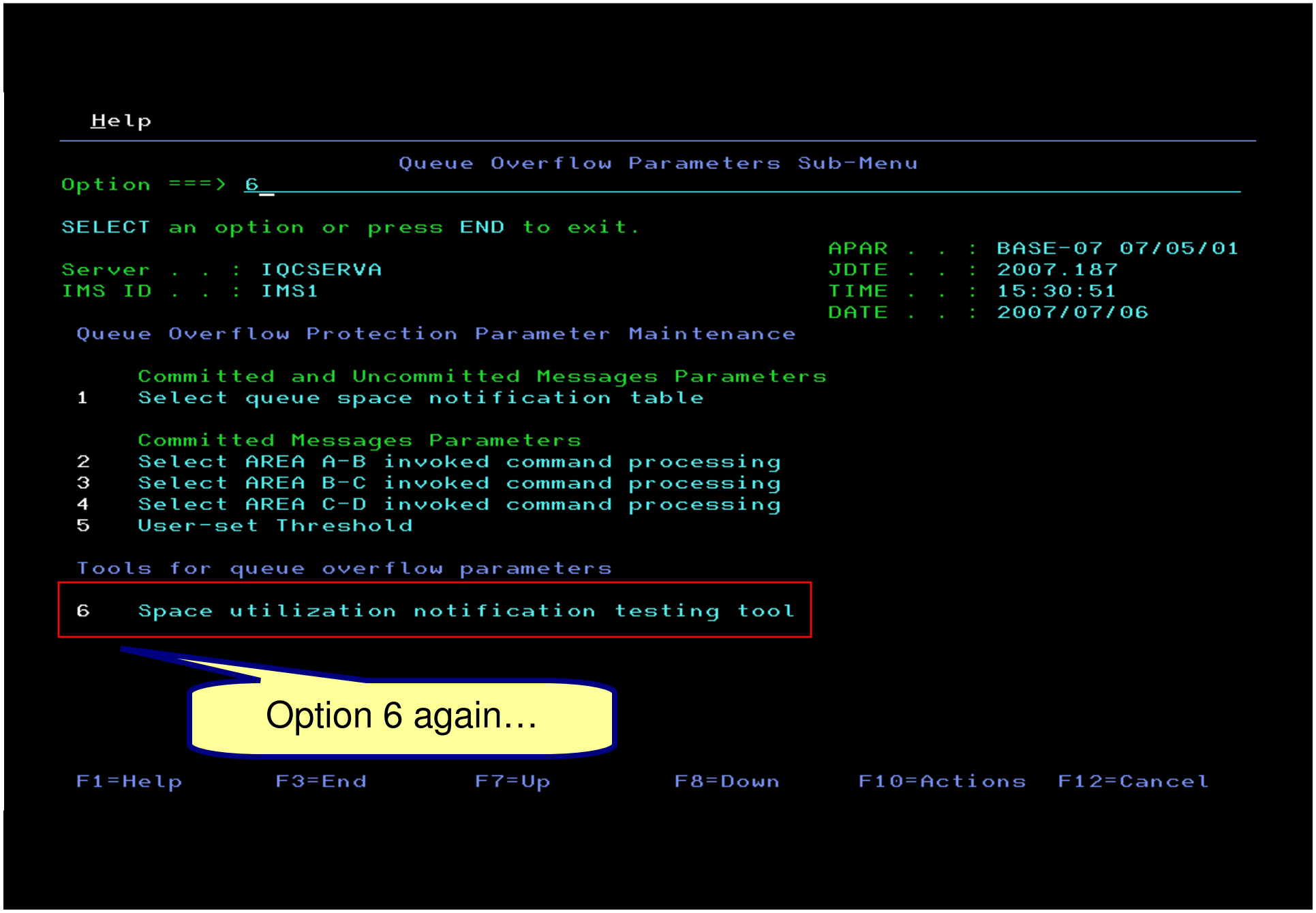
```
   *10.46.30 JOB00279 *58 DFS996I *IMS READY*  IMSA
   *10.37.01 JOB00313 *74 DFS996I *IMS READY*  IMS3
   *10.55.07 JOB00308 *75 DFS996I *IMS READY*  IMS1
     $SI(1-24)
   - 11.06.21           o F IQCSERV9,QRY QCFIMS NAME(IMS1) INCLUDE(TOPAM(3))
     11.06.21           IEE305I 0        COMMAND INVALID
   - 11.06.28           F IQCSERV9,QRY QCFIMS NAME(IMS1) INCLUDE(TOPAM(3))
     11.06.28 STC00286  BPE0032I QRY QCFIMS COMMAND COMPLETED
00- 11.06.31 STC00286  IQC3519I Top         3         All   Queue
   -  Destinations     IMS1
   - 11.06.31 STC00286  IQC3520I Dest     QT      LongM    ShrtM   LongP/ShrtP
   -       LastActive
   - 11.06.31 STC00286  IQC3521I HARRY     DL     1598     5372  15.0%/ 9.9%
   -  07/07/03-13:04:23:0
   - 11.06.31 STC00286  IQC3521I CTRL      LT      203        0   1.9%/ 0.0%
   -  07/07/05-10:02:22:7
   - 11.06.31 STC00286  IQC3521I TRANAA05  DL      100        0   0.9%/ 0.0%
   -  07/07/03-11:07:29:7
   - 11.06.31 STC00286  IQC4998I QRYQIMS  RC=0000 AIBRC=0000 AIBRS=0000

IEE612I CN=ZS17MSTR DEVNUM=00F0 SYS=ECREG29  CMDSYS=ECREG29
_

IEE163I MODE= RD
```

Top 3 highest count destinations

New overflow testing tool

- **Provides job streams to queue committed messages on long or short message queues**
- **Provides job streams to queue uncommitted messages on long or short message queues (messages become committed once they all have been inserted)**
- **Also provides for area action and threshold action**
- **Demo**


Preferences Help
QCF Main Menu
Option ===> 6
Select an option or press END to exit.
APAR . . : BASE-07 07/05/01
JDTE . . : 2007.187
TIME . . : 15:30:16
DATE . . : 2007/07/06
Server . . : IQCSERVA
IMS ID . . : IMS1
Server and IMS selection
0 Select - Server and IMS to be used
Transaction Queue Interactive Functions
1 Status - IMS environment and queue statistics
2 Query - List destinations with queued messages
3 Load - Re-insert removed queued messages
Queue Overflow Protection Functions
4 Wait - List and operate on waited tasks
5 Tables - View, modify, and load overflow parameters
6 Notify - Modify queue space utilization notification parameters
active, so mutually exclusive option 5 is unavailable
F1=Help
F8=Down
F10=Actions
F12=Cancel
Select option 6 from the main menu


Help
Queue Overflow Parameters Sub-Menu
Option ===> 6
SELECT an option or press END to exit.
APAR . . : BASE-07 07/05/01
Server . . : IQCSERVA
JDTE . . : 2007.187
IMS ID . . : IMS1
TIME . . : 15:30:51
DATE . . : 2007/07/06
Queue Overflow Protection Parameter Maintenance
Committed and Uncommitted Messages Parameters
1 Select queue space notification table
Committed Messages Parameters
2 Select AREA A-B invoked command processing
3 Select AREA B-C invoked command processing
4 Select AREA C-D invoked command processing
5 User-set Threshold
Tools for queue overflow parameters
6 Space utilization notification testing tool
Option 6 again…
F1=Help F3=End F7=Up F8=Down F10=Actions F12=Cancel


Help
QSN Table Maintenance for Uncommitted messages
Option ===>
Press ENTER to continue or press END to exit.
APAR . . : BASE-07 07/05/01
JDTE . . : 2007.186
TIME . . : 11:08:28
DATE . . : 2007/07/05
Server . . : IQCSERVA
IMS ID . . : IMS1
Data set name for the JCL: . . 'IMSTOOL.QCF31.DEV.PROCLIB'
Member name for the JCL: . . . IQCSBMP
Execute the job . . . . . Y
Local Message Queue Data Set Capacity
Short message queue records . . . : 53800
Inuse count/percentage . . . . . : 5499 10 %
Available count/percentage . . . : 48301 90 %
Highwater count/percentage . . . : 5499 10 %
Long message queue records . . . : 10600
Inuse count/percentage . . . . . : 2523 23 %
Available count/percentage . . . : 8077 77 %
Highwater count/percentage . . . : 2526 23 %
QBLK records . . . . . : 1420
Inuse count/percentage . . . . . : 46 3 %
Available count/percentage . . . : 1374 97 %
Highwater count/percentage . . . : 46 3 %
F1=Help
F10=Actions F12=Cancel
Fill in the appropriate information for your simulation.


Help
QSN Table Maintenance for Uncommitted messages
Option ===>
Press ENTER to continue or press END to exit.
APAR . . : BASE-07 07/05/01
JDTE . . : 2007.186
TIME . . : 11:09:13
DATE . . : 2007/07/05
Server . . : IQCSERVA
IMS ID . . : IMS1
Long Messages queue blocks: : 10600
Short Messages queue blocks: : 53800
Data set name for the JCL: . : 'IMSTOOL.QCF31.DEV.PROCLIB'
Member name for the JCL: . . : IQCSBMP
Insert messages to:
Destination name APOL11
Number of Destinations . . . 01 Enter 2 digits number.
Types of Messages:
Long/Short messages: . . . . L L(ong)/S(hort) messages
Committed/Uncommitted: . . . C C(ommitted)/U(ncommitted) messages
Number of messages: . . . . . 00200 Enter number of messages(5 digits).
Percent of Queue . . . . . 00 Enter percent of queue(2 digits).
F1=Help F3=End F7=Up F8=Down
Then execute the job!

Data Management Tools

IMS Performance Analyzer

IMSPA – Introduction

IMS Performance Analyzer provides comprehensive transaction performance and system resource usage reporting for your IMS systems.

- Analyze IMS transaction response time and identify performance bottlenecks, then tune your IMS system based on this information
- Measure the usage and availability of critical resources such as databases, programs, regions, buffers, and queues
- Plan for the operational management of IMS, including the scheduling of database re-orgs, monitoring adherence to service level agreements, charge-back accounting, and capacity planning
- Produce high level management summaries, graphical reports, and detailed traces for in-depth analysis of critical performance information help you

IMSPA – Part of the IMS Performance Management portfolio

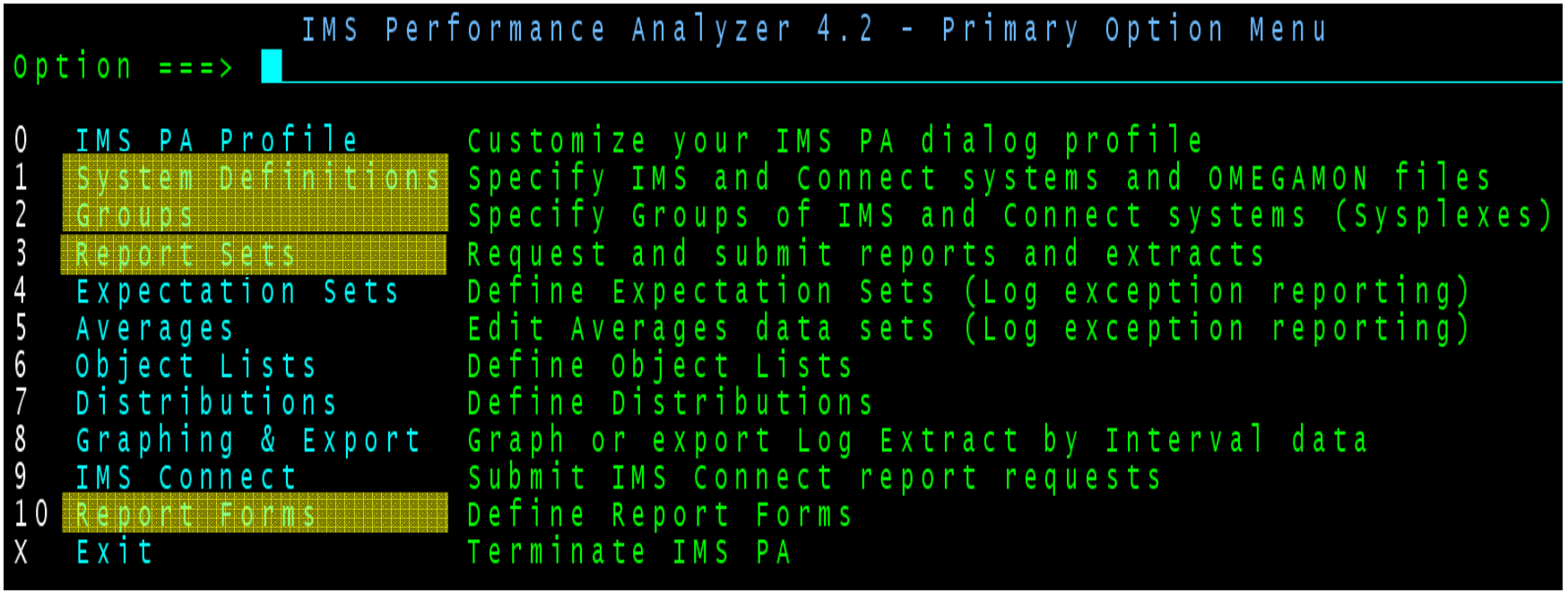
- IMS Problem Investigator provides an enhanced level of problem determination services for IMS.
  - You can use IMS PA to identify poor transaction response time, and then use IMS PI to drill down into the IMS log to determine the cause of problems.
- IMS Connect Extensions provides event collection for the transactions and messages processed by IMS Connect.
  - You can use IMS PA to report transaction performance in the IMS Connect black-hole, including transit analysis that extends from Connect and through to IMS for an end-to-end performance snapshot of your TCP and Web workflow.
- IBM Tivoli OMEGAMON XE for IMS on z/OS (5698-A34) Transaction Reporting Facility (TRF) provides detailed transaction accounting by collecting performance and resource utilization data.

IMSPA – Key features

- Delivers end-to-end transit analysis for all types of transaction workloads, including shared-queues by merging sysplex log files
- Measures performance in IMS Connect, and combines it with the IMS log for a complete transaction lifecycle picture
- Provides comprehensive reporting of OMEGAMON for IMS Transaction Reporting Facility
- Provides an ISPF dialog and batch commands to best manage reporting requirements across your entire IMS enterprise.
- Allows you to design your own transit reports via the Report Forms feature
- Offers DBRC Log selection for quick and easy log report requests
- Provides comprehensive IMS monitor reporting including Fast Path and the new IMS V11 synchronous call-out
- IMS Performance Analyzer complements IMS Problem Investigator in the investigation of IMS performance related problems.

Problem: How can you compare transaction performance when migrating from IMS V9 to V10?

Answer: Form-based reporting – design your report to compare IMS V9 and V10 transaction performance side-by side



1. Define you IMS systems
2. Design a specialized V2V Report Form
3. Submit a report request using the V2V form
4. Review the report output

Form-based Transit reporting advantages - *Useability*

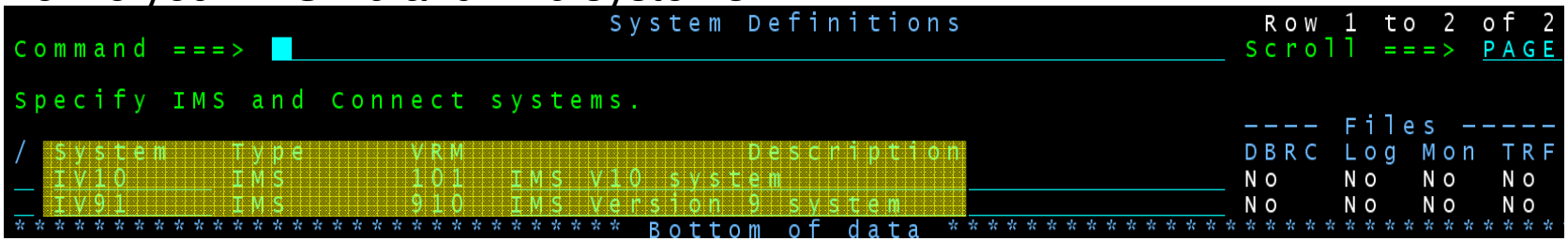
- Scenario based reporting:
  - Design your own report, select what you want to see and how you want to see it, for example "Migrating from IMS V9 to V10, has transaction performance changed?"
- 2 reporting styles:
  - List – Chronological list of transactions with performance details
  - Summary – Statistical analysis based on any key field combination
- Report output options:
  - Print the report or view it in SDSF
  - Extract to a CSV file for analysis in Excel
  - Export to DB2 table for SQL-based analysis
- Statistical functions – average, maximum, minimum, stand deviation, peak percentile, total
- Distributions or service levels
  - "What percentage of transactions had a response time greater than 1 second?"
- Create a Transaction Index – extract file that contains a record for each IMS transaction, together with all the cumulative information from the IMS log about that transaction
  - IMSPA – use to run additional reports, bypassing the SLDS log files and saving time
  - IMSPI – intelligent diagnosis – "Locate all transactions with response time greater than 1 second"

Form-based Transit reporting advantages – *Coverage*

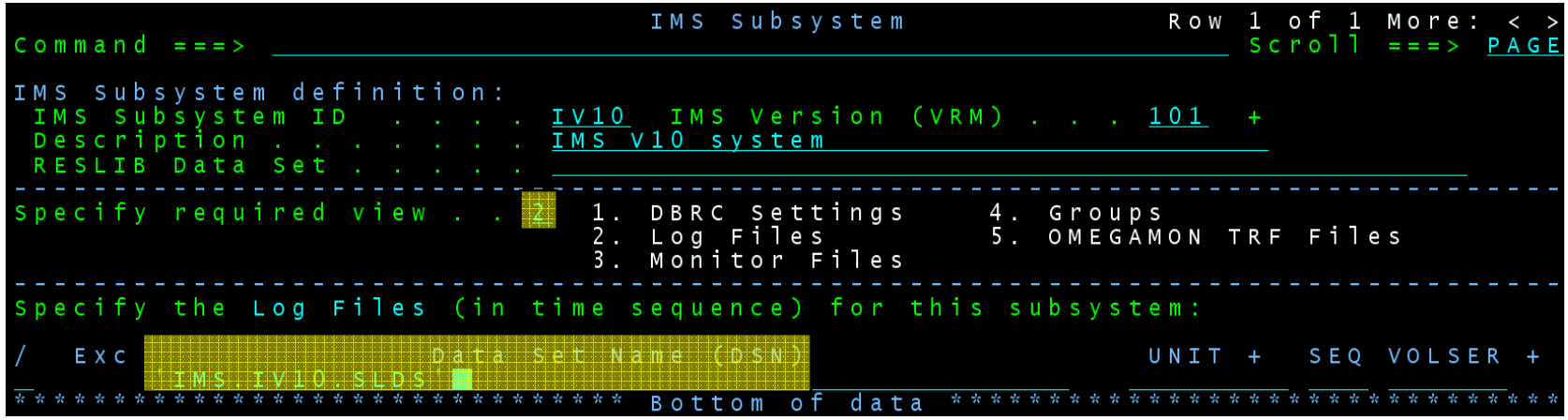
- Integrated MPP and IFP support – all transaction types now supported
  - See your entire transaction workload in a single report
- FP database support – for MPP and IFP transactions alike
  - DEDB calls, Area I/O, FP buffer usage and contention, VSO
- End-to-end MSC
  - Merge the front and back end logs to get complete response time breakdown
- IMS V10 ready – including support for 56FA transaction-level accounting – accurate CPU time, VSAM and OSAM DB IO and lock analysis
- IMS Connect reporting, including end-to-end IMS and Connect analysis
  - Create a form that contains both Connect and IMS events
  - Merge the IMS log with the IMS Connect Extension journal
  - View the resulting report that shows Connect and IMS event latencies together
- Comprehensive OMEGAMON TRF reporting

Step 1. Define IMS systems

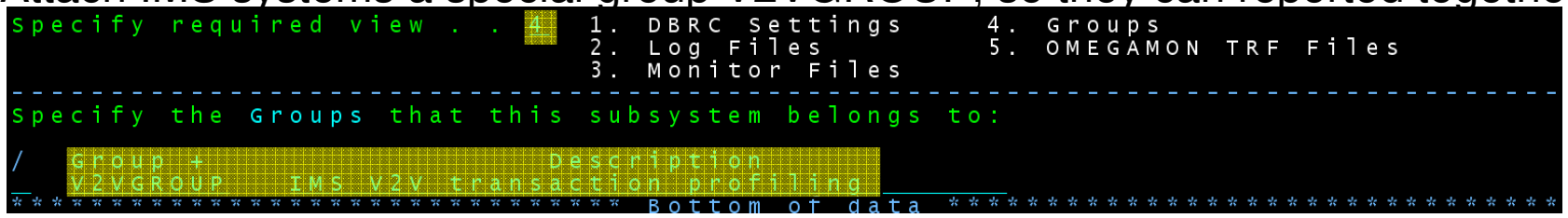
1. Define your IMS V9 and V10 systems



2. Specify their respective log files



3. Attach IMS systems a special group V2VGROUP, so they can reported together



Step 2. Design a specialized V2V Report Form

```
EDIT                        Summary Report Form - V2VFORM      Row 1 of 14 More: < >
Command ===>                                                    Scroll ===> PAGE

Description . . . IMS V2V transaction profiling      Page Width . . . 132
                                                     Precision  . . . 4
                                                     Digit Grouping   SEC

    Field      Sort
/   Name +     K   O  Func    Len  Description
___ TRANCODE   K   A  _______   8  Transaction Code
___ IMSVER     K   A  _______   4  Processing IMS Version
___ TRANCNT        _  _______  10  Transaction count
___ INPUTQ         _  AVE      8  Input queue time
___ PROCESS        _  AVE      8  Processing time
___ OUTPUTQ        _  AVE      8  Output queue time
___ TOTALTM        _  AVE          ---------- Range ----------
___ TOTALTM        _  MAX          From +       To          Report
___ INPUTQ         _  RANGE        > 0.1                    PERCENT  Seconds
___ TOTALTM        _  RANGE        > 0.5                    PERCENT  Seconds
___ CPUTIME        _  AVE      8  CPU time
___ DBCALLS        _  AVE     10  DB call count
___ RATESEC        _  _______ 10  Transaction rate / Second
___ EOR            _  _______       ---------- End of Report ----------
****************************** Bottom of data ********************************
```

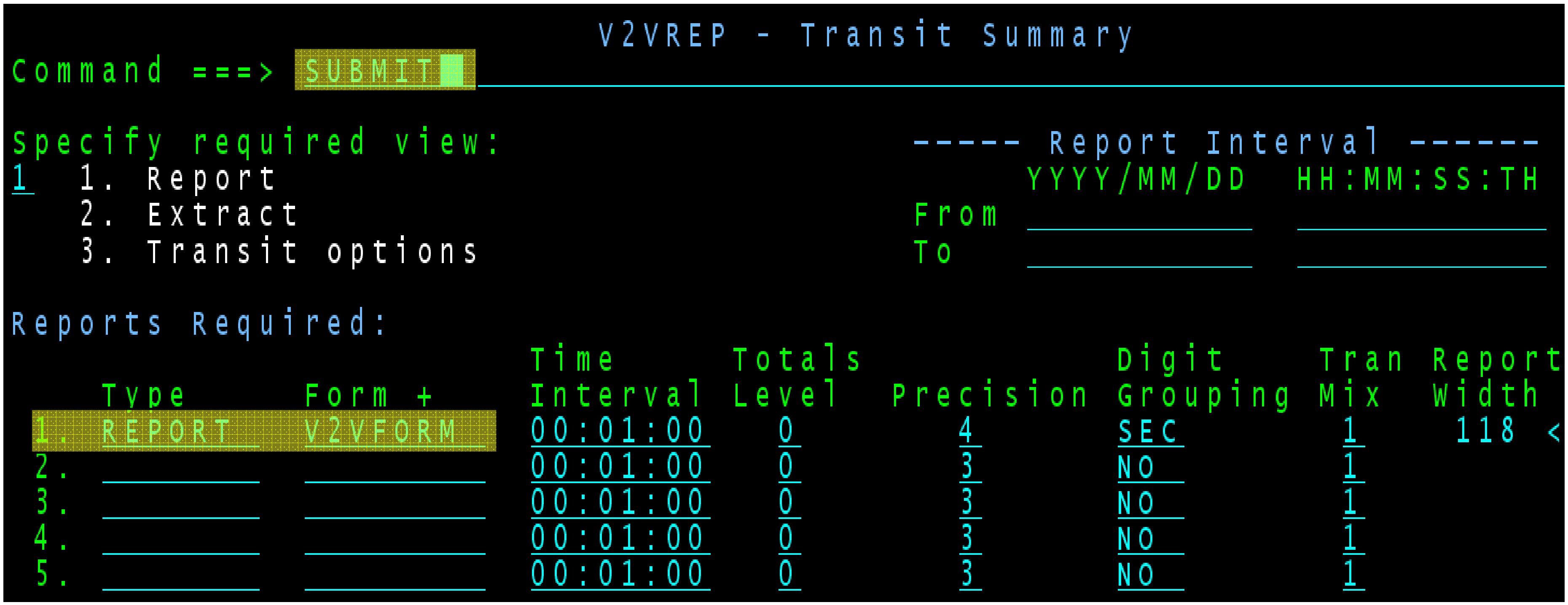
1. Summarize by Trancode and IMS version
2. Transit times – average and maximum
3. Input queue and Processing time – service levels using range function – % of transactions with processing time greater than 0.5 seconds
4. CPU time and DB call count
5. Transaction rate per second

Step 3. Build a report request

```
EDIT                          Report Set - V2VREP                     Line 1 of 51
Command ===>                                                      Scroll ===> CSR

Description . . . IMS V2V Report request

Enter "/" to select action.

                      ** Reports **                          Active
      -   ____      Options                                    Yes
                    ____   Log Global                          Yes
      -   ____      Transaction Transit Reports                No
                    ____   Transit Options                     No
                    ____   Analysis                            No
                    ____   Statistics                          No
                    ____   Log                                 No
                    ____   Graphic Summary                     No
                    ____   Extract by Interval                 No
                    ____   Transaction Exception               No
                    ____   Transaction History File            No
      -   ____      Transaction Transit Reports (Form-based)   Yes
                    ____   List                                No
                    S___   Summary                             Yes
                    ____   Transaction Index                   No
      -   ____      Resource Usage & Availability Reports      No
                    ____   Dashboard                           No
```

1. Use Dialog option 3 to create a Report Set, V2VREP, and specify type “Log” to analyze the IMS log
2. Select the Summary report in the Form-based transit report category

Step 4. Request a summary report using the V2V form



1. Specify the Form name, V2VFORM created in Step 2, to request the required report
2. Submit the report request

Step 5. Submit the report request

```
                          Run Report Set V2VREP
Command ===> _____________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                        ----- Report Interval ------
 System or Group . . . V2VGROUP  +             YYYY/MM/DD   HH:MM:SS:TH
                                         From _____________  _____________
                                         To   _____________  _____________

File Selection Options:                  Unresolved Data Set Options:
1   1. Use specified log files           2   1. Issue error message
    2. Use DBRC to select log files          2. Edit unresolved JCL

Execution Mode:                          Enter "/" to select option
3   1. Submit Report Set                 _   Bypass run-time options prompt
    2. Edit JCL before submit
    3. Edit JCL with command input
```

1. Specify the Group, V2VGROUP created in Step 1, to request reporting against our IMS V9 and V10 systems
2. IMSPA will generate JCL with the required log files, also specified in Step 1

Step 6. Review the Report JCL

```
//IMSPA     JOB ,NOTIFY=&SYSUID
//*
//IPI       EXEC PGM=IPIMAIN,PARM='V101'
//STEPLIB   DD  DISP=SHR,DSN=IPI411.DEVT.SIPILINK
//LIV10001 DD  DISP=SHR,DSN=IMS.IV10.SLDS  /* IMS V10 Log File */
//LIV91001 DD  DISP=SHR,DSN=IMS.IV91.SLDS  /* IMS V9 Log File */
//IPIOPTS   DD  *
 IMSPALOG SYSTEM(IV10,V101)                /* IMS System Definitions */
 IMSPALOG SYSTEM(IV91,V910)
/*
//SYSPRINT DD  SYSOUT=*
//IPICMD    DD  *                          /* Report Set Command Input */
 IMSPALOG  SUMMARY(DESC('IMS V2V transaction profiling'),
           SECGROUP,PRECISION(4),DDNAME(SUMM0001),
           FIELDS(TRANCODE(ASCEND),IMSVER(ASCEND),TRANCNT,
                  INPUTQ(AVE),PROCESS(AVE),OUTPUTQ(AVE),
                  TOTALTM(AVE),TOTALTM(MAX),
                  INPUTQ(RNGPERC(>0.1)),PROCESS(RNGPERC(>0.5)),
                  CPUTIME(AVE),DBCALLS(AVE),RATESEC))
 IMSPALOG  EXECUTE
/*
```

Step 7. Analyze the report output

IMS V2V transaction profiling

SUMM0001 Data from 11.30.00 01May2009 to 11.40.00 01May2009 Page 1

Trancode	Proc Vers	Tran Count	Avg InputQ Time	Avg Process Time	Avg Total IMS Time	Max Total IMS Time	>0.1 InputQ Time	>0.5 Total Time	Avg CPU Time	Avg DBcall Count	Rate /Sec
ORDER	1010	14526	0.0281	0.4561	0.5751	1.5642	4.65%	56.12%	0.2092	17	24
ORDER	910	14518	0.0314	0.5672	0.7102	1.8174	7.27%	72.27%	0.2187	17	24
. . .											
PART	1010	17891	0.0451	1.6080	1.4415	3.2362	12.65%	97.21%	0.9812	251	29
PART	910	17869	0.0472	1.7182	1.7632	4,1346	15.32%	94.12%	1.1239	251	29

1 2 3

1. Processing of transactions performed, on average, better in IMS V10 than V9
2. 72% of IMS V9 transactions took longer than 0.5 seconds to complete, compared to only 56% in IMS V10
3. CPU time, on average, was slightly lower in IMS V10

At a glance, we can verify that our migration to IMS V10 does not negatively impact performance.
In fact it has improved slightly!

Data Management Tools

IMS Problem Investigator

ON DEMAND BUSINESS™

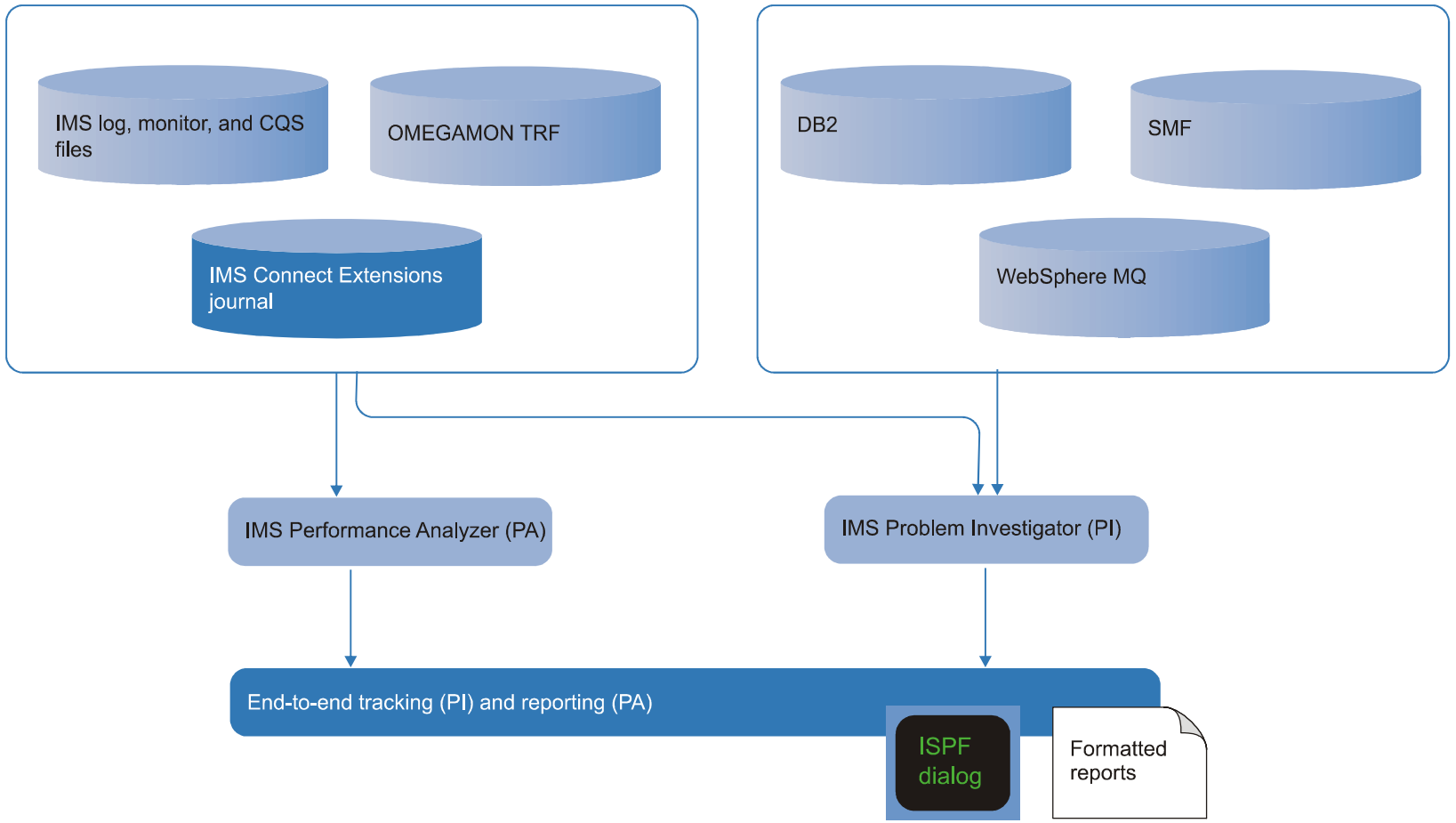
Introduction: what is IMS Problem Investigator?

- **IMS Problem Investigator is a log analysis tool that allows you to interactively browse IMS and other related logs via an ISPF dialog:**
  - View log files with all record types fully formatted with field values and detailed descriptions
  - Supports IMS log and monitor, Connect, CQS, OMEGAMON TRF, DB2 and MQ logs, SMF
  - Track (replay a transaction life-cycle) - from IMS Connect into an IMS sysplex, displaying Connect, IMS, DB2 and MQ events merged into a single session
  - Navigate to an exact point in time to find a problem
  - Investigate specific problem areas – transaction, database, trace
  - Determine transaction response time and event latencies
  - Record Forms lets you design a customized record reporting layout, so you view only the information you require
  - Filtering Criteria lets you select records by field name, avoiding field-offset calculations; conditional logic adds flexibility by allowing record selection using complex criteria
  - DBRC Log Selection automatically selects the required log files for the specified reporting period
  - Batch reporting, similar to the dialog
  - Extract capability to retrieve the required data for your analysis

Evolution of IMSPI

- ***PI V1*** supported the IMS log only. The log contains many of the events associated with the life-cycle of transactions, allowing replay and in-depth analysis:
  - Input and output messages
  - Database updates (not DLI call details)
  - External subsystem attachment and syncpoint activity (not ESAF call details)
  - Accounting information for performance and resource consumption
  - Traces and diagnostic data
- Whilst this allowed IMS specialists to drill-down in more detail, the problem of "what external factors are affecting transaction performance" was not solved.
- To this end, ***PI V2*** has evolved today into a more complete diagnosis tool – by merging additional data sources – to gradually complete the end-to-end picture:
  - Connect – TCPIP gateway into IMS
  - IMS monitor and OMEGAMON TRF – Detailed application call activity
  - CQS – Shared message queue logstream
  - DB2 – Events from the DB2 log + Accounting from SMF type 101
  - MQ – Events from the MQ log + Accounting from SMF type 116
- ***PI V3*** (in 2009) will support IMS V11 and is committed to improving usability, as well as and expanding its breadth of diagnostic capability, for example CICS-DBCTL.

IMSPA and PI: Reporting and problem determination - together



Transaction response time reporting that is available in IMSPA today will soon be accessible to IMSPI to help you identify the performance problem and to initiate the diagnosis process.

IMSPI Benefits

- **Rapidly isolate problems in complex interrelated enterprise systems, translating to reduced down-time**
- **Allow staff to focus on solving business problems rather than searching for and formatting logs**
- **Pinpoint exactly where and why transactions are delayed**
- **Enable less experienced staff to perform advanced analysis**
- **Map the life-cycle of individual transactions, providing you a better understanding of your environment**
- **Solve problems new and existing applications and transactions**
- **Audit changes, security violations, transaction pathways, and more**

Recently added and planned capabilities

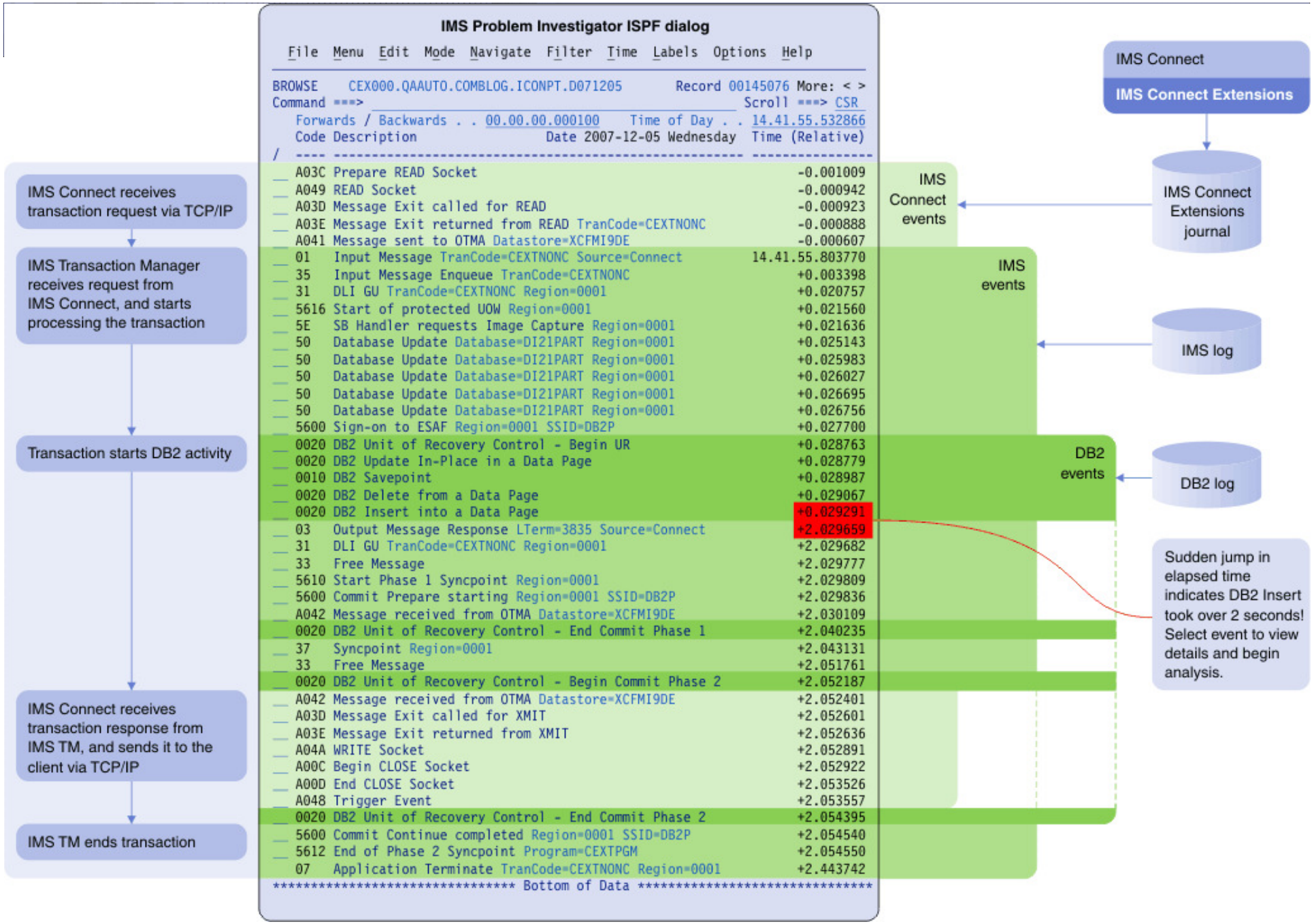
- **DB2 log support (APAR PK56005 – PTF UK32909)**
- **WebSphere MQ log support (APAR PK60772)**
- **SMF log support**
  - IRLM long locks (APAR PK57499)
  - DB2 + MQ thread accounting
  - IMS address space accounting
  - More as required
- **OMEGAMON Transaction Reporting Facility (TRF) record support (APAR PK43047 – PTF UK29631**)
- **IMS Performance Analyzer Transaction Accounting Index records**
  - Brings the power of IMS Performance Analyzer analysis directly into an IMS Problem investigator session; helping you identify problem transactions quicker
- **IMS Connect Send-Only with Resume TPIPE (TIRKS-like transaction model) end-to-end analysis**

Track transaction records in complex environments

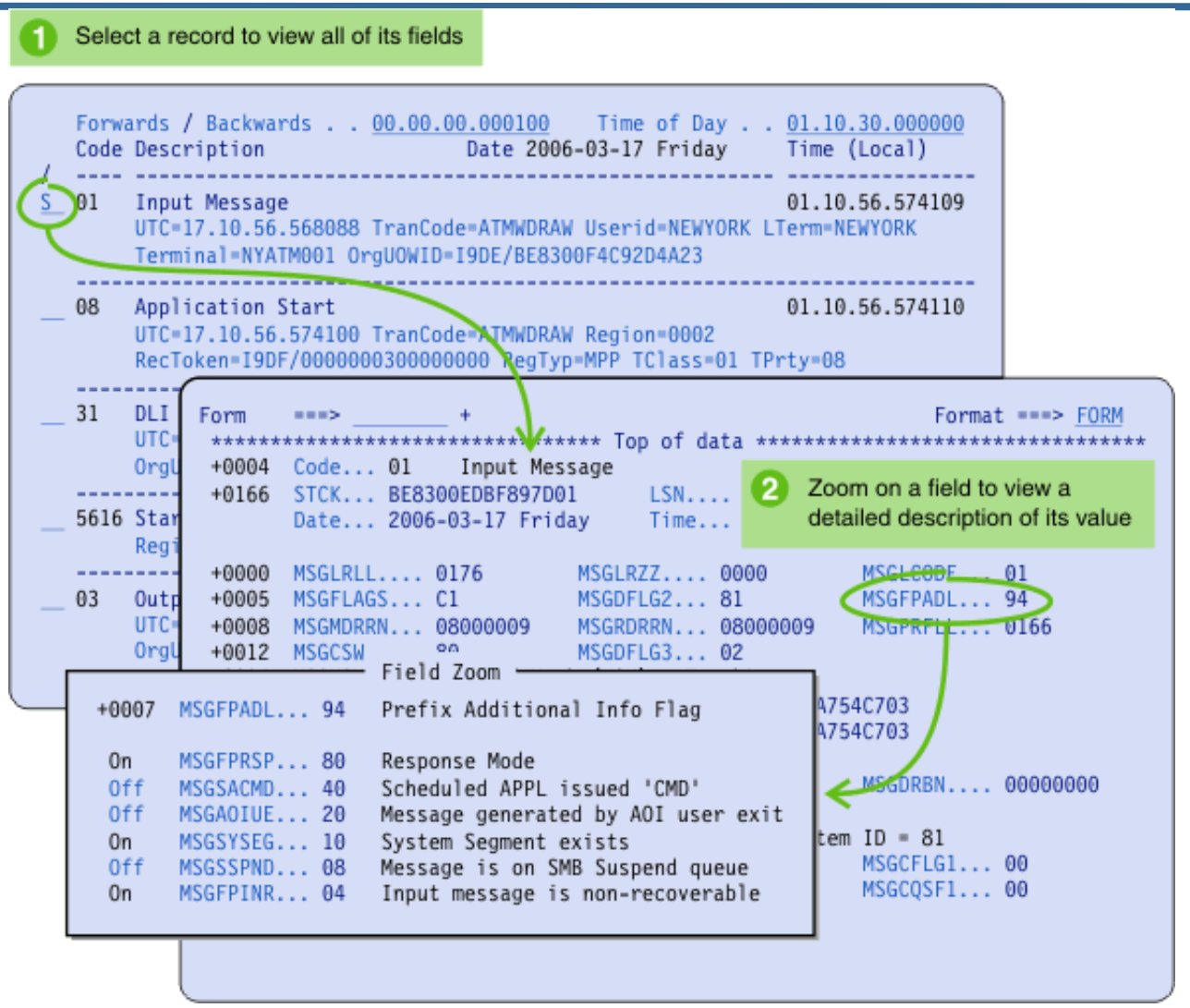
- **The results of recent and upcoming improvements are that you know have unparalleled ability to analyze transactions in complex environments**
- **With IMS PI you can now select multiple IMS, DB2, WebSphere MQ, and IMS Connect files and merge them into a single view**
- **The TX line action will connect records associated with the same transaction across all logs**
- **The action 'tracks' all records associated with the transaction and hides (potentially) thousands of records not related to the transaction**

The next foil illustrates this, showing:

- **IMS Connect transaction coming from Connect into IMS**
- **Processing in a dependent region**
- **Updating IMS and DB2 databases**
- **Finally responding back to the Connect client**



View formatted files, records, and fields from all sources



Scenario 1: Transaction delay – where is it?

IMS PA Forms-based reporting identifies a problem

Covers data from IMS Connect, IMS log and monitor , CQS, and OMEGAMON TRF

100's of fields can be summarized and analyzed

IMS PI drills-down to the associated records

IMS PI can follow the transaction to DB2 and Websphere MQ

Records not associated with the transactions are filtered out

Problem is solved or assigned to appropriate group

If assigned, the team resolving the problem (for example, the DB2 DBAs) often receive the necessary information to find the data in their specialized tools.

IMS Performance Analyser and IMS Problem Investigator

- **IMS Performance Analyzer is the de-facto tool for analyzing transaction response time performance and resource consumption**
- **However, today, a problem in IMS can often be caused by external systems: TCP/IP, DB2, MQ, etc...**

IMS Tran Start	Trancode	PST	CPU Time	InputQ Time	Process Time	OutputQ Time	Total IMS Time	. . .
09.49.26.679840	MQATREQ1	1	0.026658	0.000145	1.724738	0.000000	1.724883	
10.37.00.753450	MQATREQ2	2	0.015126	0.000221	0.491174	0.000000	0.491395	
10.37.41.829685	MQATREQ3	3	0.015126	0.000150	0.386636	0.000000	0.386786	
10.38.09.060759	MQATREQ4	4	0.015126	0.000265	0.404939	0.000000	0.405204	

Bad response time! What caused it?

Trancode . . .	Total IO Count	DB IO Time	VSAMRead Count	VSAMWrit Count	ESAFcall Count
MQATREQ1	7	0.000384	2	3	267
MQATREQ2	12	0.001034	4	7	57
MQATREQ3	16	0.001287	6	11	62
MQATREQ4	18	0.001564	9	16	71

Perhaps it was an external subsystem, but which one and what happened?

The problem highlighted by PA could be in any of these subsystems:

IMS Log – IMS events

```
01   Input Message TranCode=MQATREQ1
35   Input Message Enqueue TranCode=MQATREQ1
31   DLI GU TranCode=MQATREQ1 Region=0001
     OrgUOWID=IADG/C1D9273DAD4D3B40
     RecToken=IADG/0000000700000004
50   Database Update Database=DI21PART Region=0001
50   Database Update Database=DI21PART Region=0001
5600 Sign-on to ESAF Region=0001 SSID=DB3A
5600 Sign-on to ESAF Region=0001 SSID=CSQ6
5600 Commit Prepare starting Region=0001 SSID=CSQ6
03   Output Message Response LTerm=FUNTRM78
35   Output Message Enqueue LTerm=FUNTRM78 Region=0001
37   Syncpoint Region=0001
37   Syncpoint message transfer Region=0001
31   Communications GU LTerm=FUNTRM78
5600 Commit Continue completed Region=0001 SSID=CSQ6
5600 Commit Continue completed Region=0001 SSID=DB3A
5612 End of Phase 2 Syncpoint Program=MQATPGM Region=0001
36   Output Message Dequeue LTerm=FUNTRM78
07   Application Terminate TranCode=MQATREQ1 Region=0001
```

MQ Log – MQ events

```
0002 MQ Get Region=0001
0006 MQ Commit Phase 1 Region=0001
0007 MQ Commit Phase 2 Region=0001
0001 MQ Put Region=0001 IMSID=IADG
     Program=MQATPGM Userid=FUNTRM78
     RecToken=IADG/0000000700000004 SSID=CSQ6
     Delta=91 ConnType=IMS QMgr=CSQ6 QName=MQB_REQ_Q
0006 MQ Commit Phase 1 Region=0001
0007 MQ Commit Phase 2 Region=0001
```

DB2 Log – DB2 events

```
0020 DB2 UOR – Begin UR
     Userid=FUNTRM78 IMSID=IADG URID=00000291A804
     LUW=FTS3/DB3ALU/C1D84AD4BB30/0001
0020 DB2 Update In-Place in a Data Page
0010 DB2 Savepoint
0020 DB2 Delete from a Data Page
0020 DB2 Insert into a Data Page
0020 DB2 UOR – Begin Commit Phase 2
0020 DB2 UOR – End Commit Phase 2
```

SMF – DB2 and MQ accounting

```
101  DB2 Accounting
     RecToken=IADG/0000000700000004 SSID=DB3A SYSID=FTS3  CPU1=0.056791 CPU2=0.000000 I/O3=0.000000
     GtPgRq=13 SyPgUp=3 Suspnd=0 DeadLk=0 TimOut=0 MxPgLk=2 Sel=0 Ins=1 Upd=1 Del=1 Des=0 Pre=0 Ope=1 Fet=9 Clo=1
116  WebSphere MQ Accounting Class 3
     Program=MQATPGM Region=0001 RecToken=IADG/0000000700000004  UOWType=IMS SSID=CSQ6 SYSID=FTS3
     COMMIT=(Count=0 Elapsed=00.000000 CPU=00.000000) CALLS=(Count=1 Elapsed=0.000045 CPU=0.000044)
116  WebSphere MQ Accounting Class 1
     Program=MQATPGM Region=0001 RecToken=IADG/0000000700000004
     UOWType=IMS CPU=0.025967 Puts=1 Gets=100 SSID=CSQ6 SYSID=FTS3
```


IMS PI pulls in all the records from all subsystems

IMS database update

DB2 update

MQ Get

	Code	Description	Date 2008-01-25 Friday	Time (Relative)
/	----	----------		----------
__	01	Input Message TranCode=MQATREQ1		09.49.26.679852
__	35	Input Message Enqueue TranCode=MQATREQ1		+0.000023
__	31	DLI GU TranCode=MQATREQ1 Region=0001		+0.000137
__	5E	SB Handler requests Image Capture Region=0001		+0.000262
__	50	Database Update Database=DI21PART Region=0001		+0.000720
__	50	Database Update Database=DI21PART Region=0001		+0.000771
__	5600	Sign-on to ESAF Region=0001 SSID=DB3A		+0.001604
__	0020	DB2 Unit of Recovery Control - Begin UR		+0.023043
__	0020	DB2 Update In-Place in a Data Page		+0.023059
__	0010	DB2 Savepoint		+0.023347
__	0020	DB2 Delete from a Data Page		+0.023459
__	0020	DB2 Insert into a Data Page		+0.023683
__	5600	Sign-on to ESAF Region=0001 SSID=CSQ6		+0.145085
__	0002	MQ Get Region=0001		+0.145870
__	0006	MQ Commit Phase 1 Region=0001		+0.145870
__	0007	MQ Commit Phase 2 Region=0001		+0.145870
__	0001	MQ Put Region=0001		+0.621134
__	0006	MQ Commit Phase 1 Region=0001		+0.621134
__	0007	MQ Commit Phase 2 Region=0001		+0.621134
__	74	WebSphere MQ Accounting Class 3 SSID=CSQ6 SYSID=FTS3		+0.660147
__	74	WebSphere MQ Accounting Class 1 SSID=CSQ6 SYSID=FTS3		+0.660147
__	5600	Commit Prepare starting Region=0001 SSID=CSQ6		+0.664316
__	0020	DB2 Unit of Recovery Control - End Commit Phase 1		+0.693139
__	03	Output Message Response LTerm=FUNTRM78		+0.698435
__	35	Output Message Enqueue LTerm=FUNTRM78 Region=0001		+0.698461
__	37	Syncpoint Region=0001		+0.698489
__	37	Syncpoint message transfer Region=0001		+0.698522
__	33	Free Message		+0.698552
__	31	Communications GU LTerm=FUNTRM78		+0.698649
__	5600	Commit Continue completed Region=0001 SSID=CSQ6		+0.722814
__	0020	DB2 Unit of Recovery Control - Begin Commit Phase 2		+0.722947
__	0020	DB2 Unit of Recovery Control - End Commit Phase 2		+0.724659
__	5600	Commit Continue completed Region=0001 SSID=DB3A		+0.724865
__	5612	End of Phase 2 Syncpoint Program=MQATPGM Region=0001		+0.724875
__	36	Output Message Dequeue LTerm=FUNTRM78		+1.056038
__	33	Free Message		+1.056058
__	5E	SB Handler requests Image Capture Region=0001		+47.34.073971
__	74	WebSphere MQ Accounting Class 3 SSID=CSQ6 SYSID=FTS3		+47.34.230147
__	74	WebSphere MQ Accounting Class 1 SSID=CSQ6 SYSID=FTS3		+47.34.230147

The relative time since the start of the transaction – Big delay during MQ processing, the cause of the problem!

Scenario 2: TCP/IP client reports a problem

IMS Connect clients report poor transaction performance but online tools showing IMS performance ‘perfect’

How do we know if IMS Connect is the problem?

Data collected by Connect Extensions holds the key

IMS PA shows IMS Connect performance

IMS PI tracks the source of the problem

Three tools working together

- **To analyze the problem we need to use IMS Connect Extensions, IMS Performance Analyzer, and IMS Problem Investigator**
- **The combination of these tools can help isolate a performance problem to a particular system and often identify the underlying cause of the problem**
- **All three tools are needed because:**
  - Without IMS Connect Extensions you will not be able to identify if OTMA or IMS Connect is causing the problem
  - Without IMS Problem Investigator:
    - You will not be able to drill-down and see exactly what events are associated with the problem
    - You will not be able to correlate the transaction records with data in WebSphere MQ and DB2 logs

IMS Performance Analyzer report

IMS Connect response times slow

IMS is showing rapid response times

IMS Performance Analyzer 4.1
combined tran list

0LIST0001 Printed at 19:33:38 12Dec2007 Data from 13.57.52 12Dec2007

CON Tran Start	Trancode	OTMA	CON Resp Time	PreOTMA Time	OTMAproc Time	IMS Tran Start	InputQ Time	Process Time	Total IMS Time	PostOTMA Time
13.57.52.714	IMSTRANS	CONNECT	1.810	0.000	1.803	13.57.54.517	0.000	0.001	0.001	0.006
13.57.52.964	IMSTRANS	CONNECT	1.575	0.000	1.574	13.57.54.538	0.000	0.001	0.001	0.000
13.57.52.972	IMSTRANS	CONNECT	1.588	0.000	1.588	13.57.54.548	0.009	0.002	0.011	0.000
13.57.53.091	IMSTRANS	CONNECT	1.716	0.002	1.714	13.57.54.806	0.000	0.001	0.001	0.000
13.57.53.567	IMSTRANS	CONNECT	1.839	0.000	1.839	13.57.55.403	0.000			
13.57.54.044	IMSTRANS	CONNECT	1.800	0.000	1.799	13.57.55.836	0.006			
13.57.53.800	IMSTRANS	CONNECT	1.879	0.000	1.878	13.57.55.677	0.000			
13.57.54.120	IMSTRANS	CONNECT	1.851	0.000	1.850	13.57.55.903	0.006	0.001	0.007	0.000
13.57.54.213	IMSTRANS	CONNECT	1.904	0.000	1.903	13.57.56.116	0.000	0.001	0.001	0.000
13.57.54.251	IMSTRANS	CONNECT	1.931	0.000	1.930	13.57.56.180	0.000	0.001	0.001	0.000
13.57.54.713	IMSTRANS	CONNECT	2.007	0.001	2.005	13.57.56.718	0.000	0.001	0.001	0.000
13.57.55.461	IMSTRANS	CONNECT	2.207	0.000	2.206	13.57.57.665	0.000	0.002	0.002	0.000
13.57.55.632	IMSTRANS	CONNECT	2.070	0.001	2.069	13.57.57.700	0.000	0.001	0.001	0.001
13.57.55.890	IMSTRANS	CONNECT	2.061	0.002	2.055	13.57.57.946	0.000	0.001	0.001	0.003
13.57.56.147	IMSTRANS	CONNECT	2.171	0.002	2.169	13.57.58.314	0.000	0.003	0.003	0.000
13.57.56.190	IMSTRANS	CONNECT	2.158	0.001	2.157	13.57.58.347	0.000	0.001	0.001	0.000
13.57.56.559	IMSTRANS	CONNECT	2.222	0.000	2.222	13.57.58.780	0.000	0.001	0.001	0.000
13.57.56.909	IMSTRANS	CONNECT	2.048	0.002	2.045	13.57.58.955	0.000	0.002	0.002	0.000
13.57.56.934	IMSTRANS	CONNECT	2.033	0.001	2.0					000

OTMA is the source of the problem

Without IMS Connect Extensions, IMS Connect and OTMA performance cannot be obtained

IMS PI View of the problem

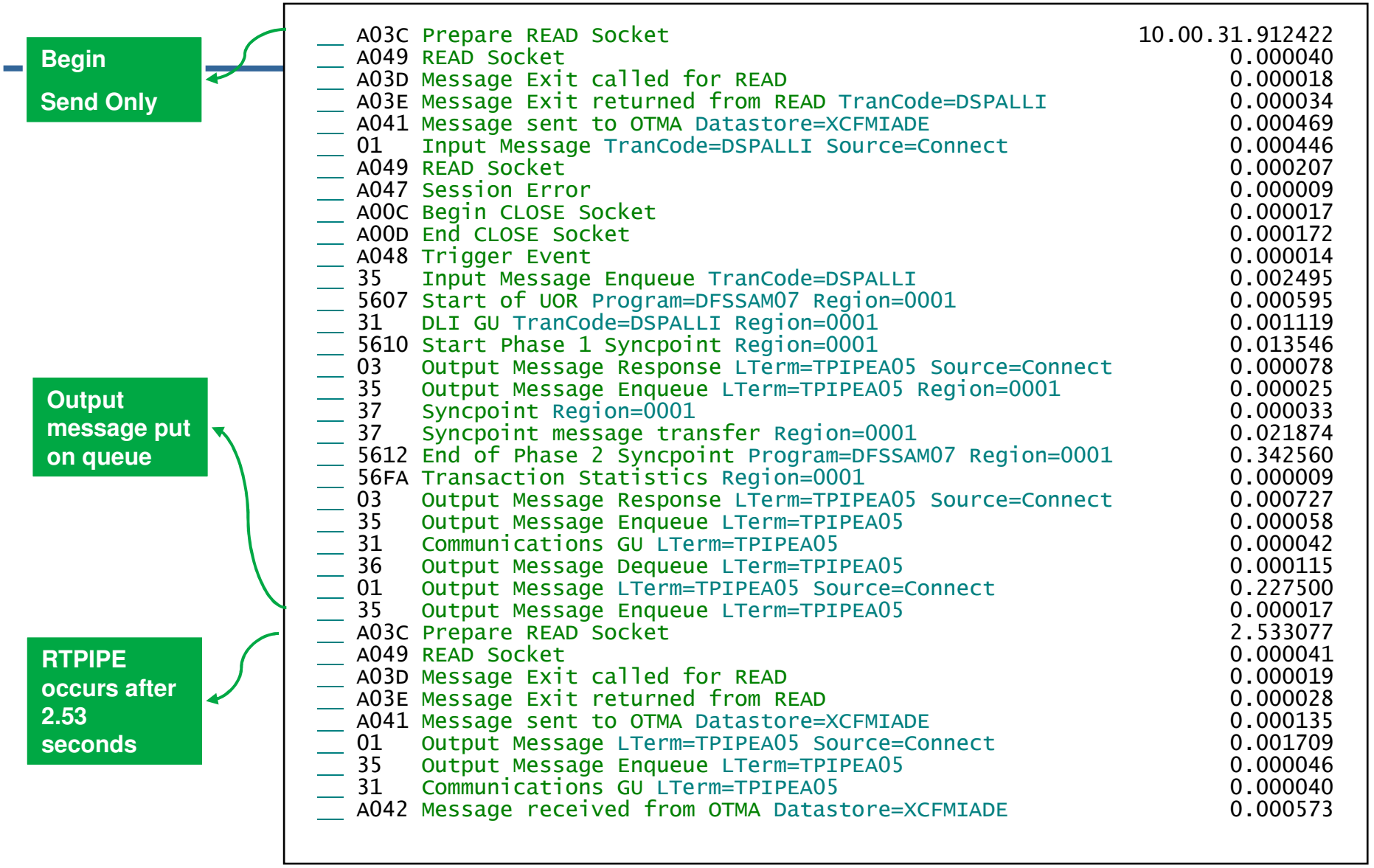
IMS Connect sends to IMS OTMA

```
A03C Prepare READ Socket                                          13.57.58.037571
A049 READ Socket                                                        +0.000048
A03D Message Exit called for READ                                       +0.000063
A03E Message Exit returned from READ TranCode=XXXXXXXXX                 +0.000082
A03F Begin SAF call                                                     +0.000097
A040 End SAF call                                                       +0.000539
A03F Begin SAF call                                                     +0.000548
A040 End SAF call                                                       +0.000658
A041 Message sent to OTMA Datastore=MMMMMM                              +0.000707
01   Input Message TranCode=XXXXXXXXX Source=Connect                    +2.485621
35   Input Message Enqueue TranCode=XXXXXXXXX                           +2.485636
08   Application Start TranCode=XXXXXXXXX Region=0184                   +2.485709
5607 Start of UOR Program=XXXXXXXX Region=0184                          +2.4857
31   DLI GU TranCode=XXXXXXXXX Region=0184                              +2.4857
03   Output Message Response LTerm=9999 Source=Connect                  +2.4887
31   DLI GU TranCode=XXXXXXXXX Region=0184                              +2.4887
33   Free Message                                                       +2.4887
5610 Start Phase 1 Syncpoint Region=0184                                +2.4887
37   Syncpoint Region=0184                                              +2.4888
33   Free Message                                                       +2.4888
5600 Commit found no work to do Region=0184 SSID=AAAA                   +2.4888
5612 End of Phase 2 Syncpoint Program=YYYYYYY                           +2.4888
A042 Message received from OTMA Datastore=MMMMMM                        +2.4889
A042 Message received from OTMA Datastore=MMMMMM                        +2.489037
A03D Message Exit called for XMIT                                       +2.489926
A03E Message Exit returned from XMIT                                    +2.489943
A04A WRITE Socket                                                       +2.489999
A048 Trigger Event                                                      +2.490032
```

IMS finally cuts the 01 log record, but only after a 2.5 second delay. OTMA is where the problem lies!

TIRKS and TIRKS-like transactions

- **IMS PI is expected to release support for automatically tracking transactions that use Send Only with Resume TPIPE, such as TIRKS.**
- **Benefits include:**
  - Rapidly troubleshoot problems with this transaction types
  - Analyze activity across IMS Connect, OTMA, IMS TM and message queues



Summary

- **Format and present data from across multiple log types. Including:**
  - IMS log, Monitor, CQS, OMEGAMON TRF
  - DB2
  - WebSphere MQ
  - SMF
- **Logs can be interactively browsed without pre-processing**
- **Merge logs from multiple sources and present them for analysis in real-time**
- **Track transactions records from across all supported subsystems**
- **Gain unparalleled insight into the IMS environment**

IMS Tools V11 Support

User Requirements

- **Customer needs for V11 QPP**
  - No Surprises
  - Use existing tool set with PTFs
  - Run-under support at start of QPP
  - Tool PTFs and/or upgrades for GA V11
  - IMS Tool support and required PTFs listed in presentation appendix

Summary

More information

- **IBM DB2 and IMS Tools website:**

  http://www.ibm.com/software/data/db2imstools/

Any Questions ?

Summary

- **IMS Tools from IBM provide, integrated, easy-to-use solutions that fit your company's needs**
- **IBM is dedicated to the continued success and support of IMS and the mainframe. We're invested for the long term, right beside you.**
- **We are continuing to invest in our IMS Tools technology and have a vision for our IMS Tools that centers around autonomic computing**

Additional Information

IMS Tools Supporting V11

Product Name	VRM	PID	Supported	Comments
Data Encryption for IMS and DB2 DBs	1.1.0	5655-P03	1/9/2009	No PTF Required
IMS ADF II	2.2.0	5665-348	1/9/2009	No PTF Required
IMS Checkpoint Wrapper (PRPQ)	1.1.0	5799-GLT	1/9/2009	PTF Required Only (PK74110/UK42315)
IMS Database Control Suite	3.2.0	5655-L08	1/9/2009	PTF Required Only (PK75657/UK42941)
IMS Database Repair Facility	1.2.0	5655-E03	1/9/2009	PTF for HPPC 3.1 Required 1/9/2009
IMS DB/DC Data Dictionary	1.6.0	5740-XXF	1/9/2009	No PTF Required
IMS HD Compression Extended	2.2.0	5655-E02	1/9/2009	PTF Required Only (PK76354/UK42267)
IMS MFS Reversal Utilities	1.1.0	5655-F45	1/9/2009	PTF for LIU 2.1 Required 1/9/2009
IMS Queue Control Facility	2.1.0 3.1.0	5697-N50	1/9/2009	PTFs Required Only (PK69503/UK43124 for V2.1, PK69502/UK42147 for V3.1)
IMS Sysplex Manager	1.3.0	5655-P01	1/9/2009	New Release and PTF Required (PK69359/UK43015)

IMS Tools Supporting V11 (continued)

Product Name	VRM	PID	Supported	Comments
IMS Connect Extensions	2.1.0	5655-S56	1/9/2009	PTF Required Only (PK77051/UK43455)
IMS Parameter Manager	1.2.0	5655-L69	1/9/2009	PTF Required Only (PK74693)
IMS Performance Analyzer	4.1.0	5655-R03	1/9/2009	PTF Required Only (PK73124/UK42365)
IMS Problem Investigator	2.1.0	5655-R02	1/9/2009	PTF Required Only (PK74040/UK43436)
IMS HALDB Conversion and Maint. Aid	3.1.0	5655-N46	1/9/2009	Now HALDB Toolkit V3.2 Available in new release 10/3/2008 (PK78078/UK42937)
IMS Online Reorganization Facility	1.2.0	5655-H97	1/9/2009	New Release and PTF Required
IMS Batch Backout Manager	1.1.0	5697-H75	1/9/2009	PTF Required Only (PK74731/UK43168)
IMS Buffer Pool Analyzer	1.3.0	5697-H77	1/9/2009	New release required 12/12/2008
IMS Command Control Facility	2.1.0	5655-R58	1/9/2009	PTF Required Only (PK74319/UK43074)

IMS Tools Supporting V11 (continued)

Product Name	VRM	PID	Supported	Comments
IMS ETO Support	3.1.0	5655-L61	1/9/2009	PTF Required Only (PK74318/UK74078)
IMS High Performance Sysgen Tools	2.2.0	5655-P43	1/9/2009	PTF Required Only (PK73855/UK42991)
IMS Network Compression Facility	1.1.0	5697-E41	1/9/2009	PTF Required Only (PK73853/UK42898)
IMS Program Restart Facility	2.1.0	5655-E14	1/9/2009	PTF Required Only (PK74730/UK43133)
IMS Workload Router	2.6.0	5697-B87	1/9/2009	New Release Required
IMS Batch Terminal Simulator	3.1.0	5655-J57	1/9/2009	PTF Required Only (PK74260/UK42660)
IMS DEDB Fast Recovery	2.2.0	5655-E32	1/9/2009	PTF Required Only (PK74272/UK42422)
IMS High Performance Fast Path Utilities	3.2.0	5655-R05	1/9/2009	New Release and PTF Required (PK74273/UK42791)
IMS High Performance Image Copy	4.1.0	5655-N45	1/9/2009	PTF Required Only (PL74296/UK42774)
IMS High Performance Load	2.1.0	5655-M26	1/9/2009	PTF Required Only (PK74299/UK42776)

IMS Tools Supporting V11 (continued)

Product Name	VRM	PID	Supported	Comments
IMS High Performance Pointer Checker	3.1.0	5655-U09	1/9/2009	New Version and PTF Required (PK74300/UK42777)
IMS High Performance Prefix Resolution	3.1.0	5655-M27	1/9/2009	PTF Required Only (PK74301/UK42704)
IMS High Performance Unload	1.2.0	5655-E06	1/9/2009	New Release and PTF Required (PK74302/UK42772)
IMS Library Integrity Utilities	2.1.0	5655-U08	1/9/2009	New Version and PTF Required (PK74275/UK42768)
IMS Parallel Reorganization	3.2.0	5655-M28	1/9/2009	New Release and PTF Required (PK74303/UK42773)
IMS Sequential Randomizer Generator	1.1.0	5655-E11	1/9/2009	No PTF Required
IMS Data Refresher	1.1.0	5696-703	1/9/2009	No PTF Required
IMS Database Recovery Facility	3.1.0	5655-N47	1/9/2009	PTF Required Only (PK72642/UK43183)
IMS High Performance Change Accum.	1.4.0	5655-F59	1/9/2009	New Release and PTF Required (PK73445/UK42540)
IMS Index Builder	3.1.0	5655-R01	1/9/2009	PK73802/UK43253

IMS Tools Supporting V11 (continued)

Product Name	VRM	PID	Supported	Comments
IMS Recovery Expert	**1.1.0**	**5655-R26**	**1/9/2009**	**PTF Required Only (PK73026)**
IMS Tools Knowledge Base	**1.1.0**	**5655-R34**	**1/9/2009**	**No PTF Required**
Common Code Pieces				
IMS Tools Online System Interface (TOSI)	**1.1.0** **1.2.0** **1.3.0**	**5655-P01**	**1/9/2009**	**PTF Required Only (PK73456/UK43031, PK73457/UK43032, PK69360)**
IMS Generic Exits	**1.3.0**	**5655-P01**	**1/9/2009**	**PTF Required Only (PK69360/UK43033)**