

IBM IMS Tooling for Transaction Management

Nick Griffin
IMS Tools Product Manager

Andy Nguyen
Software Engineer – IMS Tools Lab



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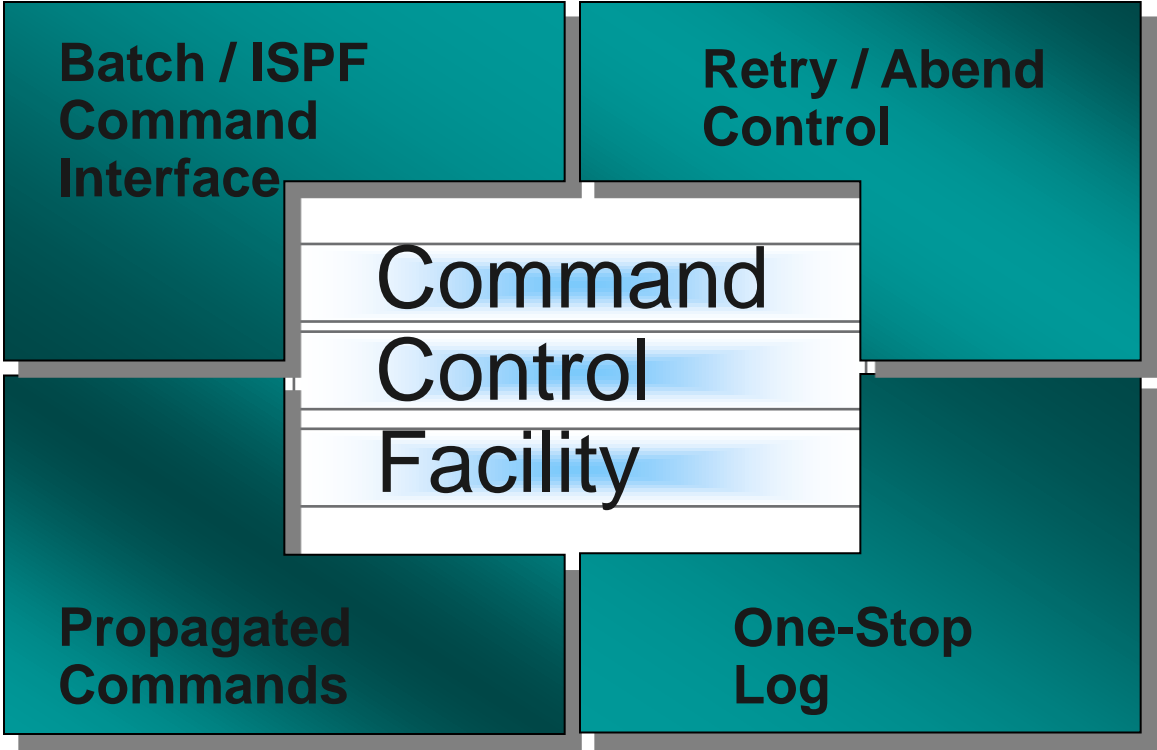
Agenda

- IMS Tools TM Portfolio
 - IMS Command Control Facility
 - IMS HP Sysgen
 - IMS ETO Support
 - IMS Queue Control Facility
 - IMS Workload Router
 - IMS Sysplex Manager - Challenges and Solutions
 - Shared Queues
 - Data Sharing
 - RM Resources
- Q&A



IMS Command Control Facility

Solutions



IMS Command Control Facility

Simplify management of large IMS environments IMS commands from a single view while automating processes

- Issue commands to from 1 to 64 IMS systems simultaneously.
- Issue commands to any type of IMS system: DBCTL, DCCTL, or DB/DC.
- Issue commands using any of the following methods:
 - A batch program
 - An ISPF interface
 - A callable application programming interface (API)
- Create a combined log for IMS messages, commands, and command responses
- Process both IMS type-1 and type-2 commands (dependent upon setup options)



CCF IMS Command Panel

Option ==> _____ Scroll ==> CSR

IMSID/GROUP: GRPI9
Command ==> /DIS DB DBIZT1 DI21PART

***** Top of Data *****

CCF0329I - COMMAND EXECUTING ON: IMSI

/DIS DB DBIZT1 DI21PART

Table with columns: DATABASE, TYPE, TOTAL UNUSED, ACC, CONDITIONS. Rows for DBIZT1 and DI21PART.

CCF0329I - COMMAND EXECUTING ON: IMS9

/DIS DB DBIZT1 DI21PART

Table with columns: DATABASE, TYPE, TOTAL UNUSED, ACC, CONDITIONS. Rows for DBIZT1 and DI21PART.

***** Bottom of Data *****

TB@ 1:z236 07,15 00:00.547 07:57 SCOTCP27

IMS HP Sysgen

IMS ETO Support

IMS High Performance System Generation

- Manage your IMS Sysgen Definitions using ISPF
 - Database, program, transaction, and route code definitions
 - Dynamic changes to definitions
 - Tools to keep sysgen source in sync with IMS control blocks
 - One user can define what changes are required, and have another user implement the change at a later time, via ISPF or batch.
 - Back out changes installed by HP Sysgen Tools.
- Use ETO Support to manage your terminal definitions
 - Get rid of IMS exit management and use a standard solution
 - *No need to have Assembler skill*
 - *Continuous availability*
 - Allow dynamic deployment of new requests





EDIT IMS HP Sysgen Tools - Add a Transaction Definition

Command ==>

Primary Commands:

COPY Copy Attributes from an Existing Transaction Definition

<u>Parameter</u>	<u>Value</u>	<u>Description</u>	More: +
Tran Code	<u>addinv2</u>	Transaction Code	
PSB Name	<u>DFSSAM04</u>	Associated PSB Name	
DCLWA	<u>NO</u>	DC Log Write Ahead (YES or NO)	
Edit Case	<u>UC</u>	Upper Case (UC) or Upper/Lower Case (ULC)	
EDIT Name	<u></u>	Transaction Edit Routine Module Name	
FPATH	<u>NO</u>	Fast Path Specification (NO, YES or 12-30720)	
INQUIRY	<u>NO</u>	Inquiry Mode (NO or YES)	
RECOVER	<u>RECOVER</u>	Recoverable Transaction (RECOVER or NORECOV)	
MAXRGN	<u>0</u>	Maximum regions (0-255)	
MODE	<u>SNGL</u>	Mode (SNGL or MULT)	
MSGTYPE	<u>SNGLSEG</u>	Segments (SNGLSEG or MULTSEG)	
RESPONSE	<u>NO</u>	Response mode (NO or YES)	
CLASS	<u>3</u>	Transaction Class (1-999)	
PARLIM	<u>NONE</u>	Parallel Limit Count (NONE or 0-32767)	
COUNT	<u>65535</u>	PROCLIM Count (0-65535)	
SECONDS	<u>65535</u>	PROCLIM Time (0-65535)	

IMS ETO/SUPPORT SOLUTION: Global Signon Options

```
LOGON PROCESS                                DFS3649                                DFS3650
1 1 - ETO-SUPPORT                             5 1 - IMS DEFAULT
2 2 - USER DFSLGNX1                          2 - DFS2002 MESSAGE
3 3 - AUTO SIGNON                            3 - ETO-SUPPORT
                                           4 - USER DFSGMSG1
                                           5 - USER MOD IZI$MOD1
LTERM/USER NAMING OPTIONS:                   IDLE NODE TIMEOUT: (BLANKS, 0000, 0010-1440)
2 1 - IMS DEFAULT
3 2 - NODE=USER=LTERM
4 3 - USERID FROM TABLE
5 4 - SUFFIXED USERID
6 5 - USER DFSSGNX1
7 6 - APPEND "$" TO USERID
```

Very little change to IMS ETO/Support Reserved MOD Names for special MFS formatting as requested by the customer

IMS ETO/SUPPORT SOLUTION :

Update LTERM Abend Table

START ==> UPDATE LTERM ABEND TABLE

SEL	ORIGIN	ABEND	TYPE
—	CQS*		
—	CQS*	0777	USER
—	CQS*	3303	USER
—	GPA0*		
—	I*		
—	TCPL6*		
—	*	806	SYS
—	*	0777	USER



ROW COMMANDS: "S" OR "E" - TO EDIT ENTRY, "D" - TO DELETE ENTRY
 COMMAND LINE: "A" OR "ADD" - TO ADD AN ENTRY, "F" - FORWARD, "B" - BACKWARD

- IMS ETO Support Solution implements the capability offered by DFSNDMX0 to decide how to handle abending messages
- It extends the functionality allowing to managed abending messages by input transaction (Transaction Name) or msg origin (Input Lterm/Tpipe/Luname)

IMS Queue Control Facility

IMS Queue Control Facility

- Can help the customer manage all aspects of the IMS Queues
 - Requeue messages - after IMS cold start, after application failures, for testing, for IMS migration, etc.
 - Monitor the existing queue space usage and notify problems in time to do something about it
 - Manage the in-process IMS Queue
 - List and manage tasks that are flooding the queue
 - Query the queues to determine the kind
 - of queue usage by various IMS entities (input, program output, etc..).
 - Look at specific queue entries
 - View message content
 - Move or Copy messages to a dataset
 - Requeue moved or copied messages



Help

QSN Table Maintenance for Uncommitted messages

Option ==>

Press ENTER to continue or press END to exit.

Server . . . : IQCSERVA
IMS ID . . . : IMS1

APAR . . . : BASE-07 07/05/01
JDTE . . . : 2007.186
TIME . . . : 11:08:28
DATE . . . : 2007/07/05

Data set name for the JCL: . . . 'IMST00L.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 %

Fill in the appropriate information for your simulation.

F1=Help

F3=

own

F10=Actions

F12=Cancel

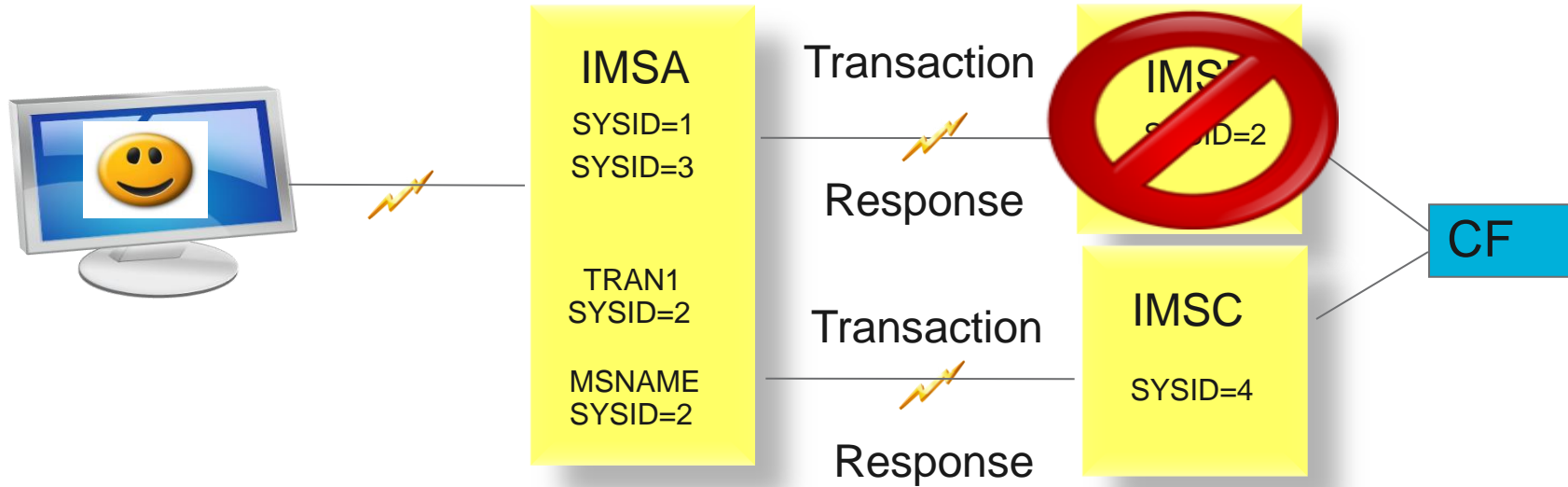
IMS Workload Router

IMS Workload Router

- Routes IMS transactions that originate from network input or program-to-program message switches.
- Provides for weighted distribution of transactions, that is, different MSC Links can receive different parts of the work load.
- Provides an online, real-time administrator interface for monitoring and dynamically updating the IMS Workload Router configuration.
- Supports parallel MSC sessions between MSC end-points.
- Automatically recognizes and avoids routing transactions to unavailable IMS systems and MSC links. Automatically reconfigures the work load when planned or unplanned outages occur.
- Allows routing to single paths or links, or to a system of IMS Workload Router-defined paths or links.



WLR Inter-Plex Configuration – Partner Outage



IMS Sysplex Manager

Andy Nguyen
Software Engineer – IMS Tools Lab

IMS Sysplex Manager

- Real-time management of multiple IMS systems in a sysplex or IMSplex environment
- Single point of control through a simplified user interface (ISPF)
- Structured displays of IMS resources and CF structures
- Statistics for CSL (OM, RM, ODBM and SCI), IRLM, and CQS
- Real-time IRLM Long Lock Report
- Assign affinity capability for transactions in shared-queues environment
- Automatic overflow protection for local buffers and SQ structure*
- Dashboard with key system indicators and threshold monitoring



IMS Sysplex Challenges and Solutions

- Shared Queues
 - Transaction affinity
 - CF structures and log streams
 - Full queue protection

- Shared Databases
 - Long lock detection
 - DEDB VSO statistics

- Shared Resources
 - Sysplex serial programs



Transaction affinity – The Challenges

- Force local affinity for efficiency
- Assign affinity to specific IMS due to resource availability
- Reduce false-scheduling overhead
- Reduce contention



Sysplex Manager Tool - Transaction Affinity Highlights

- Finer control of transaction scheduling
- Non-invasive to existing definition and operation
 - **No** omission of transaction definitions in sysgen
 - **No** stopping of transactions
 - **No** re-classing of dependent regions
 - **No** operational impact for loss of a system
- User defined affinity to route transaction messages
 - Any IMS in the shared queues group
 - Any subset of IMS systems
 - Equal or weighted distribution



Affinity Routing Statistics – System View

```
Menu View Options Actions Help
-----
GJEP93A Affinity Options/Systems Realtime snapshot
COMMAND ==> █ Row 1 to 6 of 6
SCROLL ==> PAGE

SMplex . . . ISM01 Date . . : 08/04/09
SM server . : UIS1 Time . . : 15:36:07
Route . . . *

Structure name: GJESMAFN
Updated on. :Date: 08/03/09 Time: 16:02:36
Status . ENABLED PGMREJECT . AB-U3303 NETREJECT . 2175
More: >

Target . . . *

Total number of calls for routing. . . . . 36
Total number of messages routed. . . . . 0

Enter 'e' to edit an affinity system

Cmd Target Status Msgs-Routed to Target-IMS -----
___ IMSGRP02 ENABLED 0 IMS2
___ IMSGRP03 DISABLED 0 IMS3
___ IMSGRP01 ENABLED 0 IMS1
___ IMSGRP13 ENABLED 0 IMS1 IMS3
___ IMSGRP1A ENABLED 0 IMS1 IMSA
___ IMSGRP04 ENABLED 0 IMS4
***** Bottom of data *****
```


Affinity Routing Statistics – Destination View

```

Menu  View  Filter  Options  Actions  Help
-----
GJEP94A                                     Realtime snapshot
Destination Affinities                     Row 1 to 15 of 15
COMMAND ==>>                               SCROLL ==>> PAGE

SMplex . . . ISM01                          Date. . . : 08/04/09
SM server. : UIS1                           Time. . . : 15:44:07
Route. . . . *

Structure name: GJESMAFN
Updated on. :Date: 08/04/09 Time: 15:37:37
Status.: ENABLED          PGMREJECT.: AB-U3303      NETREJECT.: 2175

Transact . . *

Enter 's' to view transaction detail data
      'r' to view affinity router statistics
      'c' to exec IMS commands
      'e' to edit destination affinity

-Destination- -----Target-----
Cmd      Name/Class Primary Secondary Match-count Disposition Status
-----
TRAN2    IMSGRP01  IMSGRP02      0 REJECT      ENABLED
APOL11   IMSGRP02  IMSGRP01      0 REJECT      ENABLED
TRAN1    IMSGRP01  IMSGRP02      0 REJECT      ENABLED
APOL12   IMSGRP1A  IMSGRP02      0 REJECT      DISABLED
XYZ      IMSGRP04                      0 REJECT      ENABLED
TSTAD2R2 IMSGRP1A  IMSGRP02      0 REJECT      ENABLED
APOL21   IMSGRP13  IMSGRP02      0 REJECT      ENABLED
TRAN% C  IMSGRP1A                      0 QUEUE      DISABLED
%%F3     IMSGRP01                      0 QUEUE      ENABLED
%RAN23U% IMSGRP01  IMSGRP02      0 REJECT      ENABLED
T%B%    IMSGRP01  IMSGRP02      0 REJECT      ENABLED
JAVC%NV* IMSGRP02  IMSGRP01      0 REJECT      ENABLED
%%F4    IMSGRP01                      0 QUEUE      ENABLED
TXBANK*  IMSGRP1A  IMSGRP02      0 REJECT      ENABLED
TRANAB*  IMSGRP1A                      0 QUEUE      DISABLED
***** Bottom of data *****

```


Affinity Routing Statistics – Add Destination

```

Menu  View  Filter  Options  Actions  Help
-----
GJEP94A          Destination Affinities          Realtime snapshot
COMMAND ===>          Row 1 to 15 of 15
                                SCROLL ===> PAGE

SMplex . .
SM server.
Route. . .

Structure n
Updated on.
Status.: EN

Transact .

Enter 's' t
      'r' t
      'c' t
      'e' t
      -
Cmd      N

GJEPADT          Add Destination Affinity
COMMAND ===> _____

Structure name: GJESMAFN

Destination name . TRAN3
Tran. class list . _____ xxx,xxx,..
Primary target . . IMSGRP01
Secondary target . IMSGRP13
Disposition. . . . REJECT      Queue or Reject
Status . . . . . ENABLED      Enabled or Disabled

F1=HELP      F2=SPLIT      F3=END      F4=RETURN
F5=RFIND     F6=RCHANGE     F7=UP      F8=DOWN

atus
TRAN2      IMSGRP01  IMSGRP02      0 REJECT      DISABLED
APOL11     IMSGRP02  IMSGRP01      0 REJECT      ENABLED
TRAN1      IMSGRP01  IMSGRP02      0 REJECT      ENABLED
APOL12     IMSGRP1A  IMSGRP02      0 REJECT      DISABLED
XYZ        IMSGRP04      0 REJECT      ENABLED
TSTAD2R2   IMSGRP1A  IMSGRP02      0 REJECT      ENABLED
APOL21     IMSGRP13  IMSGRP02      0 REJECT      ENABLED
TRAN%%C    IMSGRP1A      0 QUEUE      DISABLED

```

IMS Sysplex Challenges and Solutions

- Shared Queues
 - Transaction affinity
 - CF structures and log streams
 - Full queue protection
- Shared Databases
 - Long lock detection
 - DEDB VSO statistics
- Shared Resources
 - Sysplex serial programs



IMS CF Structures and log streams – The Challenges

- Growing use of Coupling Facility Structures
 - Data Sharing, Shared Message Queues, Resource Manager, CQS log streams, VSO
 - No single source for list of in use structures and details
- Check log stream attributes
- Monitor offload activities



IMS Coupling Facility Structures

Menu View Options Help

GJEP900 Coupling Facility Structures Realtime snapshot
COMMAND ==> Row 1 to 10 of 10
SCROLL ==> PAGE

IMSpIex. . . PLEX1 Date. . . : 05/22/13
SM server. : UIS1 Time. . . : 13:30:25
Route. . . : *

Enter 's' to select a structure for statistics
'l' to select a structure for logstream information

Cmd	Structure name	Type	Status	-Connections-		----Utilization---	
				Conns/Maxconns	Entries	Elements	
___	IMSMGQ01	MSGQ	ALLOCATED	2 /	32	0 %	1 %
___	IMSMGQ01OFLW	OVFL	UNALLOCATED	0 /	0	0 %	0 %
___	IMSEMHQ01	EMHQ	ALLOCATED	2 /	32	0 %	0 %
___	IMSEMHQ01OFLW	OVFL	UNALLOCATED	0 /	0	0 %	0 %
___	IMSRSRC01	RSRC	ALLOCATED	2 /	32	14 %	0 %
___	MVSLOGMSGQ01	FFLS	ALLOCATED	2 /	32	18 %	5 %
___	MVSLOGEMHQ01	FPLS	ALLOCATED	2 /	32	6 %	2 %
___	GJESMAFN	AFFN	ALLOCATED	2 /	32	0 %	0 %
___	LT01	IRLM	ALLOCATED	2 /	32	0 %	0 %
___	OSAMSESXI	OSAM	ALLOCATED	3 /	32	0 %	0 %

***** Bottom of data *****

IMS Coupling Facility Structures

Menu View Options Help

Realtime snapshot

Row 1 to 23 of 23

SCROLL ==> PAGE

GJEP901 Coupling Facility Structure statistics

COMMAND ==>

IMSplex. . . : PLEX1 Date. . . : 04/24/14
SM server. . : UIS1 Time. . . : 21:32:56
Route. . . . : *

Structure name. : IMSMSGQ01 Type. : MSGQ

Description Value

STRUCTURE STATISTICS

Entry count. : 17
Element count. : 30
Maximum entry count. : 10,248
Maximum element count. : 10,369
Entry ratio. : 1
Element ratio. : 1
Entries in use (%). : 0
Elements in use (%). : 0

Policy size. : 27,648K
Policy initial size. : 18,432K
Policy minimum size. : 0K
Structure full threshold (%). : 80
Marginal structure size. : 2,176K
Actual structure size. : 18,432K
Storage increment size : 512K

Event monitor control count. . . : 1,300
Max event monitor cntrl count. . : 13,437
Maximum connections. : 32
Nr of crnt IMS connections . . . : 2
CF Max access time (1/10th s). . : NOLIMIT

***** Bottom of data *****

View VSO cache structures

```
Menu  View  Filter  Options  Actions  Help
-----
GJEP52C          IMS Resource Information - Databases          Realtime snapshot
COMMAND ==>          Row 1 to 13 of 13
SCROLL ==> PAGE

SMplex . . . ISM01          Date. . . : 04/27/14
SM server. : UIS1          Time. . . : 11:12:55
Route. . . *
Sharelvl . . 3

Enter 's' to view database detail data
      'c' to exec IMS commands
      'v' to view structure(s) details

Cmd  IMSid  Name          Area/
     SYS3  DEDBJN21     DB21AR0  Type  Share
     SYS3  DEDBJN21     DEDB      3
     SYS3  DEDBJN21     DB21AR10  AREA   3
  v   SYS3  DEDBJN21     DB21AR2  AREA   3  DB21AR2@STRUCT@1  DB21AR2@STRUCT@2
     SYS3  DEDBJN21     DB21AR1  AREA   3  DB21AR1@STRUCT@1
     SYS3  DEDBJN21     DB21AR3  AREA   3  DB21AR3@STRUCT@1
     SYS3  DEDBJN21     DB21AR4  AREA   3  DB21AR4@STRUCT@1  DB21AR4@STRUCT@2
     SYS3  DEDBJN21     DB21AR11  AREA   3  DB21AR11@STRUC@1
     SYS3  DEDBJN21     DB21AR9  AREA   3  DB21AR9@STRUCT@1
     SYS3  DEDBJN21     DB21AR8  AREA   3  DB21AR8@STRUCT@1  DB21AR8@STRUCT@2
     SYS3  DEDBJN21     DB21AR7  AREA   3  DB21AR7@STRUCT@1
     SYS3  DEDBJN21     DB21AR6  AREA   3  DB21AR6@STRUCT@1  DB21AR6@STRUCT@2
     SYS3  DEDBJN21     DB21AR5  AREA   3  DB21AR5@STRUCT@1

***** Bottom of data *****
```



View VSO cache structures

```
Menu View Options Help
-----
GJEP900 Coupling Facility Structures Realtime snapshot
COMMAND ==> Row 1 to 2 of 2
SCROLL ==> PAGE

SMplex . . . ISM01 Date. . : 04/27/14
SM server. : UIS1 Time. . : 11:14:23
Route. . . : *

Enter 's' to select a structure for statistics
      'l' to select a structure for logstream information

-Connections- ----Utilization---
Cmd Structure name Type Status Conns/Maxconns Entries Elements
-- DB21AR2@STRUCT@1 VSO ALLOCATED 2 / 32 0 % 0 %
-- DB21AR2@STRUCT@2 VSO ALLOCATED 2 / 32 0 % 0 %
***** Bottom of data *****
```



CQS Structures

Menu View Options Help

Realtime snapshot

GJEP191 Common Queue Server Structure Statistics

COMMAND ==>

IMSpLex. . . : PLEX1

SM server. . : UIS1

Route. . . . : *

Date. . . . : 04/10/08

Time. . . . : 09:58:03

CQS-id. . . . : *_____ Structure name. : IMSMSGQ01

Type. . . . : PRIM

Checkpoint

System : 6

Structure. : 0

Rebuild : 0

Overflow threshold processing : 0

Entry counts

Primary

Overflow

Total. : 41 0

Maximum. : 18,084 0

Entry ratio : 1 0

Percentage in use : <1 0

Element counts

Total. : 78 0

Maximum. : 18,084 0

Element ratio : 1 0

Percentage in use : <1 0

CQS Structures

Menu View Options Help

Realtime snapshot

GJEP193 Common Queue Server Structure Rebuild Statistics

COMMAND ==>

IMSplex. . . : PLEX1 Date. . . : 04/10/08
SM server. . : UIS1 Time. . . : 10:04:51
Route. . . . : *

CQS-id. . . . : CQS2 Structure name. : IMSMSGQ01 Type. . . : PRIM

	Old	New (Rebuild)
Data Elements in use.	78	78
Data Elements allocated	18,084	18,084
Data Entries in use	41	41
Data Entries allocated	18,084	18,084
EMCS in use	1,243	622
EMCS allocated.	36,487	36,487
Size in 4K Blocks	4,096	4,352
CF Total space in 4K Blocks	13,632	13,632
CF Free space in 4K Blocks.	2,048	6,144
Old CF name Structure allocated on. :	LF03	LF03

CQS Structures

```
Menu View Options Help
GJEP194 Common Queue Server Structure Checkpoint Stats Realtime snapshot
COMMAND ==> SCROLL ==> PAGE Row 1 to 30 of 36

IMSplex. . . : PLEX1 Date. . . : 04/10/08
SM server. . : UIS1 Time. . . : 10:06:45
Route. . . : *

CQS-id. . . : * Structure name. : IMSMSGQ01 Type. : PRIM

Description Value
Return code for this Structure checkpoint . 00000000

QUIESCE TIME
Start date . . . . . 04/10/08
Start time . . . . . 10:06:36.0
End date . . . . . 04/10/08
End time . . . . . 10:06:36.4
Quiesce elapsed time(ms) . . . . . 366

DATA SPACE/DATA SET CAPTURE TIME
Start date . . . . . 04/10/08
Start time . . . . . 10:06:36.4
End date . . . . . 04/10/08
End time . . . . . 10:06:36.5
Data space capture time (ms) . . . . . 90

End data set capture date . . . . . 04/10/08
End data set capture time . . . . . 10:06:36.5
Structure resume START date . . . . . 04/10/08
Structure resume START time . . . . . 10:06:36.5
Date all System checkpoints completed . . . 04/10/08
Time all System checkpoints completed . . . 10:06:37.6
```

SM Solution - CQS Log Stream info

Menu View Options Help

GJEP904 CQS Logstream information

Realtime snapshot

Row 1 to 21 of 21

COMMAND ==>

SCROLL ==> PAGE

IMSplex. . . : PLEX1 Date. . . : 05/22/13
SM server. . : UIS1 Time. . . : 13:30:25
Route. . . : *

Structure name. : MVSLOGMSGQ01 Type. : FFLS

Description Value

LOGSTREAM INFORMATION

Logstream name	: SYSLOG.MSGQ01.LOG
Auto delete.	: N
Loss of data	: N
Uses physical structure.	: Y
Uses secondary structure	: N
Local buffer duplexing	: Y
Staging DS duplexing	: N
Staging DS duplexing with XRC.	: N
Structure duplexing.	: N
DASD only logstream.	: N
Retention period	: 0
Low loss data blockid.	: 000000000000000000
High loss data blockid	: 000000000000000000
Most recent offload dataset.	: 0
Most recent offload DS size.	: 0
Structure size	: 12,582,912
Staging dataset size	: 0
Max # of logstream to structr.	: 1
Nr of logstreams to structure.	: 1
Nr of bytes usable in structr.	: 3,397,120

***** Bottom of data *****

SM Dashboard

```
GJEPDBD                               View Dashboard
COMMAND ==>                               Page: * (1 of 1)
IMSpIex. : PLEXM Dashboard. : IMSSM dashboard   Date: 09/20/13 Time: 18:24:55
MSGQ % in use----- Aggr. local OM request- EMHQ % in use-----
P-Entry. : <1          Reg commands  . : 256      P-Entry. : <1
P-Element: <1          Notify rdy   . : 55       P-Element: <1
O-Entry. : 22          Notify not rdy: 30       O-Entry. : 0
O-Element: 44          Dereg normal . : 0        O-Element: 0
Msg queue depths (SMQ)-
COLDQ . . . : 21      Commands . . . : 0
TRAN RDY Q. : 0        Queries . . . : 0
TRAN SPD Q. : 0        AO commands . : 52,554
TRAN SER Q. : 0        ZQRY requests: 4
LTRM RDY Q. : 15,027  ZSHUT requests: 0
APPC RDY Q. : 0        QRY IMSplx cmd: 0
RMTE RDY Q. : 0        Reg. clients . : 16
OTMA RDY Q. : 0        Cmd timeouts . : 0
PRGMRDYQ-FP: 0        Undel.output . : 0
DB processing stats---- Aggr. local SCI req.---
Lcl deadlocks.: 7,824  Local Regs. . . : 107
Glbl deadlock.: 7     Remote Regs . . : 291
SCI IXCMMSGO statistics-
Successful . . : 21,998  Notify Rmte reg: 50
Bfr shortage . : 0     Local Ready . . : 101
Othr Rsrc shtg: 0     Remote Ready . . : 273
Coupling facility stat-
EMC high cnt : 4,713  Local Quiesce . : 0
Max EMCs . . . : 80,640 Remote Quiesce . : 10
Max connects.: 32     Lcl Dereg norm.: 83
IMS connects.: 4      Lcl Dereg abn . : 9
Max acc. time: NOLIMIT Rmte Dereg norm: 242
Exceptions----- Rmte Dereg abn.: 37
Bfr ovrflw: 0        Notify abend. . : 9
Qbuff util: 20      Member init . . : 17
IRLM locks: 0
PI locks . : 0
LogStOffLd: 0
```


IMS Sysplex Challenges and Solutions

- Shared Queues
 - Transaction affinity
 - CF structures and log streams
 - Full Queue Protection
- Shared Databases
 - Long lock detection
 - DEDB VSO statistics
- Shared Resources
 - Sysplex serial programs



Full Queue Protection Challenges

- Local Queue
 - Local buffer overflow can abend or stall IMS control region
- Shared queue structures
 - Full structures will stall IMS



SM Solution - Full Queue Protection

- Local Queue
 - Employ the Queue Space Notification Exit (DFSQSSP0)
 - Automatic actions for warning, critical or Severe thresholds
 - Identify programs using large number of buffers
- Shared queue structures
 - Alert structure utilization exceeding predefined thresholds
 - **Coming soon**: reject new messages to Full Function message structure



IMS Sysplex Challenges and Solutions

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Diagnosing Long Locks - The Challenges

- DB Lockouts by applications holding IRLM locks for an inordinate amount of time
 - Could go unrecognized until it becomes critical
 - Lack of supported tools to assist in recognition and identification of problem
 - Manual intervention required to resolve



SM Solution - Data Sharing Long Locks

- Automatic real-time recognition when IRLM detects
- Information consolidated, analyzed for top blocker, and presented
- Information recorded in exceptions file and sent to z/OS console
- Messages can be sent to z/OS console using user exit so that automated operations can resolve
- Problem quickly resolved with automation



Data Sharing Long Lock Exceptions



```
Display Filter View Print Options Help
-----
SDSF SYSLOG          4.102 STL1 STL1 01/23/2006 3W          4367          COLUMNS 51 130
COMMAND INPUT ==>> SCROLL ==>> HALF
0090 GJE0361I LOCKNAME = 090000040C800501D700000000000000 STRUCTURE = LT01
0090 GJE0361I Top Blocker-Message to IMS1
0090 GJE0361I PSTNumber=0001 PSBName=HPC$BA00 IMSID=IMS2
0090 GJE0361I Type=BMP Batch/Trans Name=BMP21 CICS Task=
0090 GJE0361I TranElapsedTime=00:07:00
0090 GJE0361I RecoveryToken=IMS2 4040404000000001
0090 GJE0361I Waiter -Message to IMS1
0090 GJE0361I PSTNumber=0002 PSBName=SMQPSB6 IMSID=IMS1
0090 GJE0361I Type=MPP Batch/Trans Name=SMQ6 CICS Task=
0090 GJE0361I TranElapsedTime=00:07:01
```

Data Sharing Long Lock Exceptions

```
STLMVS1 - [24 x 80]
File Edit View Communication Actions Window Help
-----
Display Filter View Print Options Help
-----
SDSF SYSLOG          4.103 STL2 STL2 01/24/2006 2W          5721          COLUMNS 51 130
COMMAND INPUT ==> _          SCROLL ==> HALF
0290  R 15,/STO REGION JOBNAME BMP21          ABDUMP.
0090  IEE600I REPLY TO 15 IS;/STO REGION JOBNAME BMP21          ABDUMP.
0090  DFS058I 10:09:46 STOP COMMAND IN PROGRESS          IMS2
0090  *16 DFS996I *IMS READY*          IMS2
0090  DFS554A BMP21          00001 BMP          HPC$BA00(2)          000,0474 PSB
          2006/024 10:09:47 IMS2
0090  DFS552I BATCH          REGION BMP21          STOPPED ID=00001 TIME=1009          IMS2
0090  WTSC          |S WTSC          THIS |W (AUTOMASTER |DFS970I 9:09:|GJE220I DATA
          |GJE220I IMS S|DFS554A BMP21 |DFS552I BATCH |
0090  IEA995I SYMPTOM DUMP OUTPUT 520
0090  USER COMPLETION CODE=0474
0090  TIME=10.09.46 SEQ=00065 CPU=0000          ASID=002D
0090  PSW AT TIME OF ERROR 078D1000          9130664A          ILC 2          INTC 01
0090  ACTIVE LOAD MODULE          ADDRESS=113058B0          OFFSET=00000D9A
0090  NAME=DFSREXX1
0090  DATA AT PSW 11306644 - 5410AEF8          0A015850          92695860
0090  AR/GR 0: 80C62A4A/00000001          1: 00000000/1130C518
0090  2: 00000000/000069B0          3: 00000000/000000FF
0090  4: 00000000/1130C518          5: 00000000/113252D8
0090  6: 00000000/000000FF          7: 00000000/00000000
```


IMS Sysplex Challenges and Solutions

- Shared Queues
 - Transaction affinity
 - CF structures and log streams
 - Full Queue Protection
- Shared Databases
 - Long lock detection
 - **DEDB VSO statistics**
- Shared Resources
 - Sysplex serial programs



DEDB VSO Statistics – The challenges

- Which DBs share the same structure?
- How to quickly check structure definitions?
- How to quickly check cache hit performance?



SM Solution - VSO cache structure attributes

Menu View Options Help

Realtime snapshot

GJEP900 Coupling Facility Structures

Row 1 to 2 of 2

COMMAND ==>

SCROLL ==> PAGE

SMplex . . . ISM01

Date. . . : 04/27/14

SM server. : UIS1

Time. . . : 11:14:23

Route. . . : *

Enter 's' to select a structure for statistics

'l' to select a structure for logstream information

Cmd	Structure name	Type	Status	-Connections-	---Utilization---
				Conns/Maxconns	Entries Elements
___	DB21AR2@STRUCT@1	VSO	ALLOCATED	2 / 32	0 % 0 %
___	DB21AR2@STRUCT@2	VSO	ALLOCATED	2 / 32	0 % 0 %

***** Bottom of data *****

SM Solution - view VSO cache hit stats

```
Menu View Filter Options Actions Help
-----
GJEP52D          IMS Resource Information - Databases          Realtime snapshot
COMMAND ===>                                         Row 1 to 13 of 13
                                                         SCROLL ===> PAGE

SMplex . . . . ISM01                               Date. . . : 04/23/14
SM server. : UIS1                                   Time. . . : 20:56:43
Route. . . . SYS3
Sharelvl . . . 3                                     More: <

Enter 's' to view database detail data
      'c' to exec IMS commands

----- CF I/O ----- DASD I/O ----- Hit
Cmd  IMSid  Name          Area/      Type  Gets  Puts  Gets  Puts  Pct
-----
___  SYS3    DEDBJN21     DEDB      DEDB    0     0     0     0     0
___  SYS3    DEDBJN21     DB21AR0   AREA   151   300   150   0     50
___  SYS3    DEDBJN21     DB21AR1   AREA   155   150   150   0     50
___  SYS3    DEDBJN21     DB21AR10  AREA    3     2     1     0     75
___  SYS3    DEDBJN21     DB21AR11  AREA   21    38    19     0     52
___  SYS3    DEDBJN21     DB21AR2   AREA    1     2     1     0     50
___  SYS3    DEDBJN21     DB21AR3   AREA   164   157   150   0     52
___  SYS3    DEDBJN21     DB21AR4   AREA   151   300   150   0     50
___  SYS3    DEDBJN21     DB21AR5   AREA   151   150   150   0     50
___  SYS3    DEDBJN21     DB21AR6   AREA   155   304   150   0     50
___  SYS3    DEDBJN21     DB21AR7   AREA   151   150   150   0     50
___  SYS3    DEDBJN21     DB21AR8   AREA   153   302   150   0     50
___  SYS3    DEDBJN21     DB21AR9   AREA    3     2     1     0     75
***** Bottom of data *****
```

SM Solution - view VSO cache hit stats

```
Menu  View  Filter  Options  Actions  Help
-----
GJEP52E          IMS Resource Information - Databases          Realtime snapshot
COMMAND ===>                                         Row 2 to 13 of 13
                                                    SCROLL ===> PAGE

SMplex . . . . . ISM01                               Date. . . : 04/27/14
SM server. : UIS1                                   Time. . . : 19:45:03
Route      : SYS3
VS01 . . . . . DB21AR1@STRUCT@1                      More: <

Enter 's' to view database detail data
      'c' to exec IMS commands
      'v' to view structure(s) details

----- Lookaside-Pool Buffer -----
Cmd  IMSid  Name          Partition  Type  Searches  Hits  Pct  Valid Hit  Pct
-----
___  SYS3    DEDBJN21      DB21AR0   AREA  153       0    0    0          0
___  SYS3    DEDBJN21      DB21AR1   AREA  157       0    0    0          0
___  SYS3    DEDBJN21      DB21AR2   AREA   3        0    0    0          0
___  SYS3    DEDBJN21      DB21AR8   AREA  155       0    0    0          0
___  SYS3    DEDBJN21      DB21AR7   AREA  153       0    0    0          0
___  SYS3    DEDBJN21      DB21AR6   AREA  157       0    0    0          0
___  SYS3    DEDBJN21      DB21AR5   AREA  153       0    0    0          0
___  SYS3    DEDBJN21      DB21AR4   AREA  153       0    0    0          0
___  SYS3    DEDBJN21      DB21AR3   AREA  166       0    0    0          0
___  SYS3    DEDBJN21      DB21AR11  AREA   23       0    0    0          0
___  SYS3    DEDBJN21      DB21AR10  AREA    5        0    0    0          0
___  SYS3    DEDBJN21      DB21AR9   AREA    5        0    0    0          0
***** Bottom of data *****
```

IMS Sysplex Challenges and Solutions

- Shared Queues
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 - **Sysplex serial programs**



Sysplex Serialized Program Management – The Challenges

- **The IMS who scheduled the serial program abnormally terminated and not coming back for a while, the scheduled serial program is locked and no other IMS in the Sysplex can use it.**



SM Solution - Sysplex Serialized Program Management

- **Delete the locked RM entry to allow the serial program to be scheduled by other IMS via ISPF**



IMS Resource Structure Content

Menu View Options Help

Realtime snapshot

GJEP220 IMS Dependent Region Activity

Row 1 to 2 of 2

COMMAND ==>

SCROLL ==> PAGE

Data from one or more IMSs in the group is not obtainable OR is not available

IMSplex. . . PLEX1 Date. . . : 05/23/13

SM server. : UIS1 Time. . . : 12:38:24

Route. . . . *

More: >

Enter 's' to select a region for detailed activity
't' to view transaction resource definition data
'p' to view PSB resource definition data
'c' to process IMS commands
'd' to produce an SVC dump for the selected region
'dt' to produce SVC dumps for the selected region type across the plex

Cmd	IMS	Rgn	Type	Jobname	Trancode	Program	X-M	Locks-held	Status
__	IMS1	1	TP	MPP11	SKS1	STLDDLT1	N	2	ACTIVE
__	IMSA	1	TP	MPP21			N	0	WAITING

***** Bottom of data *****

IMS Resource Structure Content

Menu View Options Help

Realtime snapshot

GJEPRML IMS RM Management

Option ==> 12

IMSplex. . . PLEX1
SM server. : UIS1
Route. . . : *
Filter . . . : *

Select one of the following resource types:

- | | |
|----------------------|-------------------------------|
| 1. Transactions | 9. Userids |
| 2. Lterms | 10. Static node users |
| 3. Remote MSnames | 11. Databases |
| 4. Dynamic users | 12. Scheduled Serial Programs |
| 5. Remote Nodes | 13. Areas |
| 6. IMSplex | 14. All of the above |
| 7. CPIC transactions | |
| 8. APPC descriptors | |

IMS Resource Structure Content

Menu View Options Help

Realtime snapshot

GJEP76C1 RM Resource Information

Row 1 to 1 of 1

COMMAND ==>

SCROLL ==> PAGE

IMSplex. . . : PLEX1

Date. . . : 05/22/13

SM server. . : UIS1

Time. . . : 16:13:18

Route. . . : *

Filter . . . *

Resource type. . : SER PROG

Enter 'd' to delete the resource

'dxx' to delete multiple resources (xx = 1-99)

Cmd	Resource	Prompt	Version	Owner	Rsvd-PWFI
d	STLDDLT1		000000000000000001	IMS1	N

***** Bottom of data *****

IMS Resource Structure Content

Menu View Options Help

Realtime snapshot

GJEP76C1 RM Resource Information

Row 1 to 1 of 1

COMMAND ==>

SCROLL ==> PAGE

IMSpdex. . . : PLEX1

Date. . . : 05/22/13

SM server. . : UIS1

Time. . . : 16:21:49

Route. . . . : *

Filter : *

Resource type. . : SER PROG

Enter 'd' to delete the resource

'dxx' to delete multiple resources (xx = 1-99)

Cmd	Resource	Prompt	Version	Owner	Rsvd-PWFI
___	STLDDL1	Deleted	00000000000000001	IMS1	N

***** Bottom of data *****

IMS Resource Structure Content

Menu View Options Help

Realtime snapshot

GJEP220 IMS Dependent Region Activity

Row 1 to 2 of 2

COMMAND ==>

SCROLL ==> PAGE

Data from one or more IMSs in the group is not obtainable OR is not available

IMSplex. . . PLEX1

Date. . . : 05/23/13

SM server. : UIS1

Time. . . : 11:04:42

Route. . . . *

More: >

- Enter 's' to select a region for detailed activity
- 't' to view transaction resource definition data
- 'p' to view PSB resource definition data
- 'c' to process IMS commands
- 'd' to produce an SVC dump for the selected region
- 'dt' to produce SVC dumps for the selected region type across the plex

Cmd	IMS	Rgn	Type	Jobname	Trancode	Program	X-M	Locks-held	Status
___	IMSA	2	TP	MPP11	SKS1	STLDDLT1	N	2	ACTIVE
___	IMSA	1	TP	MPP21			N	0	WAITING

***** Bottom of data *****

Summary

Challenges	Product	Resolution
IMS command management	IMS Control Command Facility	Managing and Automating IMS commands from a single view
Terminal and SysGen Management	IMS ETO Support IMS HP SysGen	Manage your IMS Sysgen Definitions
Managing LOCAL Queues	IMS Queue Control Facility	Manage all aspects of the IMS Queues
Transaction Routing when IMS goes away	IMS Workload Router	Automatic Routing and Load Management of IMS Transactions
Transaction Affinity management	IMS Sysplex Manager	Seamless, persistent, dynamic update of transaction affinity
CF Structures monitoring	IMS Sysplex Manager	All IMS CF info in one place including VSO Current utilization and checkpoint stats
Full Queue Protection	IMS Sysplex Manager	Automatic rejection of new messages to local buffers and queue structure
Long Lock Detection	IMS Sysplex Manager	Real time WTO alerts
VSO stats	IMS Sysplex Manager	Buffer hit stats for shared and non-shared VSO



Thank You!
Your Feedback is Important to Us

