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## The Winning Combination

IMS Connect Extensions  
 IMS Performance Analyzer  
 IMS Problem Investigator

December 2004

@business on demand software

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## Agenda

- IMS Connect Extension Overview
- IMS PI Overview
- IMS PA Overview

IMS Connect Extension  
5655-K58

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## IMS Connect Extensions

New Tool

- **Event Collection and Recording**  
Enhances and augments the services of IBM IMS Connect:  
Receives notification of significant events, as transactions are being processed by IMS Connect  
Collects and reports on performance-monitoring and system availability data
- **Transaction Routing and workload balancing**  
Allows for dynamic transaction routing to alternative datastores and workload balancing  
Supports pacing of incoming messages to datastores to prevent overloading
- **Security Improvements**  
Optional verification of user access to IMS Connect  
Enhanced performance of userid/password validation by keeping ACEEs in memory
- **Dynamic addition, reload, deletion, disabling or enabling of user exits**

■ Requires IMS Connect 2.2

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## Connect Extensions Operation

ISPF dialog  
Connect Extensions options, issue commands and display Connect activity  
Definitions data set  
Used to store settings and record journal definitions  
Event Collection  
Monitors and records IMS Connect activity  
Workload management  
Manages and controls transaction workloads

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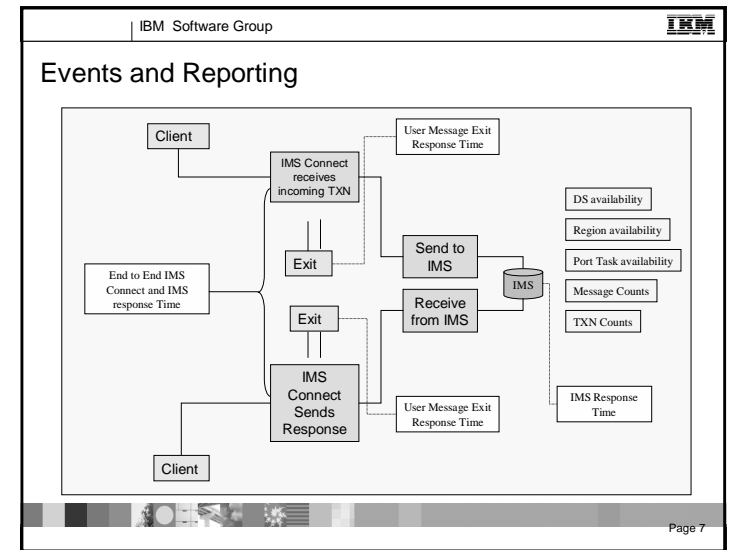
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## Event Collection

- **Connect Extensions gets control for all significant Connect events**
  - ▶ Events are recorded on Active Journals
  - ▶ User sets level of event recording
- **Active journals**
  - ▶ Archived when full
- **Archive journals can be used for :**
  - ▶ Producing summary and detail activity reports
  - ▶ Input to IMS Performance Analyzer for more extensive reporting

- **Level 0 Minimum level**
  - ▶ Collects start up and shut down events along with some error events
- **Level 1 Accounting level**
  - ▶ Collects Return from Exit events, OTMA timeout and session error events. This level provides accounting information in terms of the number of messages by Transaction, User Exit, etc.
- **Level 2 Transit time reporting**
  - ▶ Collects the minimum number of records to run simple transit time reports
- **Level 3 Comprehensive performance analysis**
  - ▶ Collects all TCP/IP read and write events which provides for analysis of TCP/IP activity
- **Level 4 Maximum level**
  - ▶ Collects read and write socket events

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## Reporting - Utilities

- **IMS Connect Extensions Print Utility**
  - ▶ Produces report output of formatted event records
  - ▶ Prints summary and detailed event records
  - ▶ Accepts an input parameter that tailors the level of detail to print
  - ▶ Accepts input from an Archive Journal data set
- **Recorder trace print utilities**
  - ▶ CEXRTCNV - Converts the RECORDER trace data into variable length records in the format of IMS Connect Extensions event records
  - ▶ CEXTRPRT - Formats and prints the RECORDER trace event records created by CEXRTCNV

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## Event Collection – Print Utility

```

ID=49.073, V=01, TSKID=0106, KEY=BB47AA342328EE00, READ SOCKET
TCPB: LL=0028, BLKID=01, VVRR=0202, APAR=0001, PORT#=0037, SOCKET#=001C
SOCKET FLAG=40, PORT FLAG=00, RMT REQ LEN=00000049, RMT ACT LEN=00000049
SPECIAL REQUEST DATA=00000000, RC=00000049, RMT RSN CODE=00000000
TIME=BB47AA3450353480, LSN=0000000000000099

ID=3D.061, V=01, TSKID=0106, KEY=BB47AA342328EE00, MSG EXIT ENTERED
VAR DATA: APAR=0001, EXIT=HWSSMPL0
LEN=000A, APAR=0001, FUNC=READ, FLAG1=40, CONTENT=00
TIME=BB47AA3450854180, LSN=000000000000009A

ID=41.065, V=01, TSKID=0118, KEY=BB47AA342994E480, MSG SENT TO OTMA
DSIB: LL=0038, BLKID=02, FLAG=10, VVRR=0202, APAR=0001
DATASTORE NAME=ACFMMMD3, DATA LEN=000001C3, DATA ADDR=04DCD0A0
RC=00000000, RSN=00000000, PIPE NAME=3383, TOKEN=0000000000000000
OTMA CTL TYPE=TRAN, RESP=NONE, COMT=NONE, CMD=NONE, PROC=, CHAIN=FL
DUMP OF OTMA CONTROL SECTION FOLLOWS
000 01 000000 0000F3F3 F8F34040 4040A0F0  : ...3383  0*
010 00000002 00000000 00000000 00010000  : .....
TIME=BB47AA34542C4140, LSN=000000000000009B

ID=3E.062, V=01, TSKID=0106, KEY=BB47AA342328EE00, MSG EXIT RETURN
VAR DATA: APAR=0001, RC=00000000, RSN=00000000, EXIT=HWSSMPL0
LEN=0028, APAR=0001, FUNCTION=READ, FLAG1=40, FLAG2=00, UFLAG1=00, CONTENT=08
EXPXXX RC=00000000, EXPXX RSN=00000000
IPV: FAMILY=0002, PORT=1005, IP ADDRESS=172.017.069.067
DATA LENGTH=00000225, CLIENT ID=TRAN0008
IRM DATA: SECTION LL=0012, APAR=0001, MSG LL=0050, F5=00, TIMER=00
SOCKET=00, SCHEMA=00, CLIENTID=TRAN0008
MSG DATA: LL=004E, APAR=0001, STATUS=00, ORIG DSN=IMD3, RTED DSN=
TRAN CODE=PART, USERID=DVP, RACF GROUP=, MODNAME=
LTERM=, ORIG ID=TRAN0008, EXIT #=0001, FLAG=14, SYNCLEVEL FLAG=20
SOCKET FLAG=00, AFLAG=00, AFLAG1=40, TFLAG1=04
TIME=BB47AA3454D0DE00, LSN=000000000000009C

```

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## IMS PA Connect Reports

- **IMS Performance Analyzer V3.3 provides Connect Extensions reporting**
  - ▶ Automatic Archive Journal selection based on date and time
  - ▶ Categories of reports
    - Transaction Transit
    - Resource Usage
      - Port Usage
      - Resume Tpipe
      - ACK/NAK
      - Exception Events
    - Trace

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## Workload Management

- **Workload Management provides three features**
  - ▶ Transaction Routing
    - Redirects transactions from the original datastore as specified by the client to another datastore
  - ▶ Workload Balancing
    - Redirects transactions based on the capabilities of the individual datastores rather than the destination of the transactions
  - ▶ Transaction Pacing
    - Protects datastores from surges. Can automatically reject the incoming message requests

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## IMS Connect Extensions Status Monitor

- **IMS Connect Extensions constantly records statistics for each IMS Connect system**
  - ▶ Current Activities
  - ▶ Processing rates
  - ▶ At the end of every 20 seconds
- **Displayed on the Status Monitor in two views:**
  - ▶ System View
  - ▶ Port View

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## Status Monitor – System Overview

```

File Menu Form Help
Status Monitor - System Overview Row 1 of 13
Command ==> Scroll ==> PAGE
Interval . . . 2 1. 20 Seconds 3. 01-15 Minutes 5. 31-45 Minutes 7. Hour
                2. Minute 4. 16-30 Minutes 6. 46-60 Minutes

11.31.07
Name Type Input Input Accepted Routed REROUTE Accepted Routed
Message Messages Message Message Message Messages Messages
Total Per Sec Total Total Total Per Sec Per Sec
-----
TRICKLE HwS 60 1.00 60 10 0 1.00 0.17
DSG3 DG 38 0.63 28 0 0 0.47 0.00
DSG4 DG 22 0.37 32 10 0 0.53 0.17
IHD3 DS 38 0.63 28 0 0 0.47 0.00
IHD4 DS 22 0.37 32 10 0 0.53 0.17
Unknown DS 0 0.00 0 0 0 0.00 0.00
HWSJAVA0 EXIT 0 0.00 0 0 0 0.00 0.00
HWSMPL0 EXIT 60 1.00 60 10 0 1.00 0.17
HWSMPL1 EXIT 0 0.00 0 0 0 0.00 0.00
  
```

- Global view of activity across IMS Connect system
  - Seven intervals: Last 20 seconds, last Minute,last four quarters, last hour
  - Across various definitions: IMS Connect system , Datastore Groups, Datastores, User Exits

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## Status Monitor – Port Overview

```
File Menu Form Help
Status Monitor - Port Overview Row 1 of 19
Command ==> | Scroll ==> PAGE
Interval . . . 2 1, 20 seconds 2. Minute
```

Port	Input Message Total	Input Messages Per Sec	Accepted Message Total	Accepted Messages Per Sec	Routed Message Total	SendOnly Messages Per Sec	RTPiPE Messages Per Sec
3382	30	0.50	30	0.50	0	0.00	0.00
3383	7	0.12	7	0.12	5	0.00	0.00
3384	7	0.12	7	0.12	0	0.00	0.00
3385	7	0.12	7	0.12	0	0.00	0.00
3386	0	0.00	0	0.00	0	0.00	0.00
3387	8	0.13	8	0.13	5	0.00	0.00
3388	0	0.00	0	0.00	0	0.00	0.00
3389	0	0.00	0	0.00	0	0.00	0.00
3390	0	0.00	0	0.00	0	0.00	0.00
3391	0	0.00	0	0.00	0	0.00	0.00
3392	0	0.00	0	0.00	0	0.00	0.00
3393	0	0.00	0	0.00	0	0.00	0.00
3394	0	0.00	0	0.00	0	0.00	0.00

- Global view of activity across ports in the IMS Connect system
- Two intervals:
  - ▶ Last 20 seconds
  - ▶ Last Minute



## Status Monitor – Form Definition

- Controls the presentation of the Status monitor output
  - ▶ Information relevant to you is displayed
  - ▶ Choose the fields and formats you need
  - ▶ Define a Form for each Status Monitor panel (system overview, system detail, port overview and port detail)

```
Status Monitor Form Definition
Command ==> | Status Monitor Row 1 to 18 of 19
Field Names Scroll ==> PAGE
```

Name	Count/Length	Func	Description
INPUT	COUNT TOTAL		Input Messages
INPUT	COUNT RATE		Input Messages
ACCEPTED	COUNT TOTAL		Accepted Messages
ACCEPTED	COUNT RATE		Accepted Messages
ROUTED	COUNT TOTAL		Routed Messages
ROUTED	COUNT RATE		Routed Messages
SENDONLY	COUNT RATE		Send Only Messages
RTPiPE	COUNT RATE		Resume TPIPEs
NAK	NAK COUNT		NAK COUNT
DEALLOC	DEALLOC COUNT		DEALLOC COUNT
RETURNED	RETURNED MESSAGES		RETURNED MESSAGES
REJECTER	MESSAGES REJECTED BY EVER		MESSAGES REJECTED BY EVER
REJSEC	MESSAGES REJECTED BY SECURITY		MESSAGES REJECTED BY SECURITY
REJPACE	MESSAGES REJECTED BY PACING		MESSAGES REJECTED BY PACING
REJROUTE	MESSAGES REJECTED BY ROUTING		MESSAGES REJECTED BY ROUTING
REQUEST	MESSAGE REQUESTS		MESSAGE REQUESTS
IGNORE	MESSAGES IGNORED		MESSAGES IGNORED



## Security

- IMS Connect Extensions enhances the security features of IMS Connect:
  - ▶ User ID and Password validation
    - Cache ACEE structures to save system overhead
    - ACEE structures kept for an period of time before being deleted
  - ▶ IMS Connect validation
    - Verify that the user has been granted access to the IMS Connect system
    - Validates against a pre-defined security Resource Class
    - Preloads security Resource Class to improve performance



## USER EXIT management

- IMS Connect Extensions allows you to manage user exits without interrupting IMS Connect execution
  - ▶ **ADD** loads and initialises a new user exit
  - ▶ **RELOAD** loads a new copy of an existing exit
  - ▶ **DELETE** logically deletes a user exit
  - ▶ **DISABLE** prevents an exit from being used
  - ▶ **ENABLE** enables a previously disabled exit

## Connect Extensions Commands

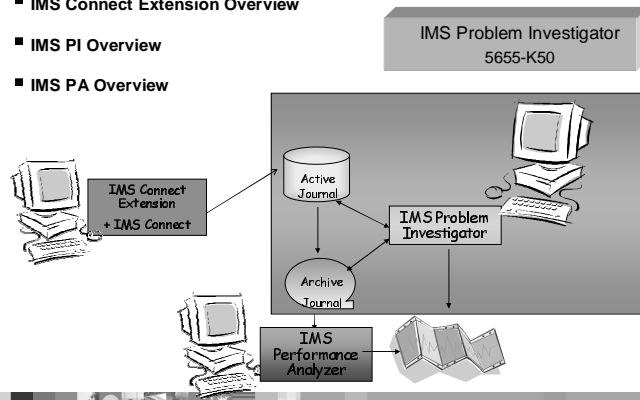
- **IMS Connect Extensions commands:**
  - ▶ **USER EXIT**
    - Existing user exits can be Reloaded, Deleted, Disabled or Enabled
    - New user exits can be Added dynamically
  - ▶ **SECURITY command is used to:**
    - Refresh SAF Class Rules
    - Delete any cached User Id security profiles
  - ▶ **REFRESH command causes IMS Connect Extensions definitions to be re-built from the definitions dataset, for example: Pacing thresholds, Transaction Routing options, datastore capacity weightings, security settings**
  - ▶ **SET command is used to temporarily override IMS Connect Extensions definition settings**
- **Commands are dynamic and can be executed without stopping IMS Connect**

## Summary

- **IMS Connect**
  - ▶ Continues opening up IMS to TCP/IP Clients
    - Standard interface
    - Defined application protocol
    - Comprehensive set of capabilities
  - ▶ Accessed by the IMS Connectors
    - IMS Client for Java, IMS Connector for Java, ...
  - ▶ Accessed by user-written programs
    - Documented and well-defined interfaces
- **IMS Connect Extensions**
  - ▶ Enhances the ability to perform problem determination
    - Receives notification of significant events, as transactions are being processed by IMS Connect
  - ▶ Collects and reports on performance-monitoring and system availability data

## Agenda

- **IMS Connect Extension Overview**
- **IMS PI Overview**
- **IMS PA Overview**



## IMS Problem Investigator

- **Tool for analyzing problems with your IMS DB and TM systems**
- **IMS PI provides ...**
  - ▶ Enhanced IMS log and IMS Connect journal formatting and reporting
    - Powerful facilities for examining IMS logging and trace data
    - Intimate knowledge of the fields in IMS logging and trace records
  - ▶ Filters enabling control over which records and fields to display
  - ▶ Navigation aids
  - ▶ Drill-down "Zoom" capability

### IMS PI

Easy to use, no initial set-up required

Constantly growing and improving

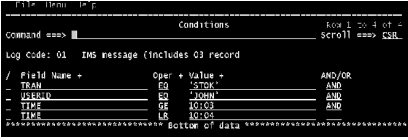
Full exploitation support for new IMS releases

Used by IBM for product development and customer support

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## Navigation through the Log File

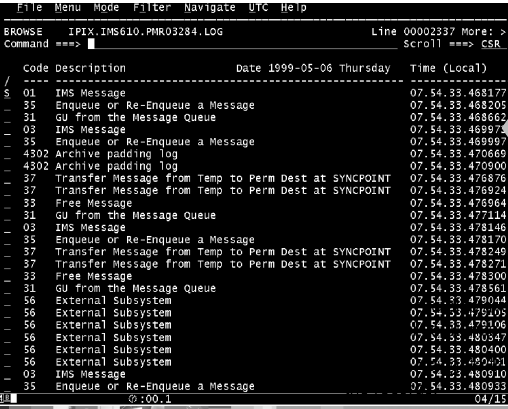
- You can navigate through the log file looking for particular problems or events of interest
- Move forwards or backwards in time by a specified amount
- Look for events associated with a particular IMS resource:
  - Transaction
  - Program
  - User ID
  - LTERM or VTAM Terminal
  - Database (and optionally RBA/ RBN)
  - IMS Dependent Region ID
  - Transaction Origin Tracking UOW ID
  - UOW Recovery ID



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## IMS PI – View Log Records

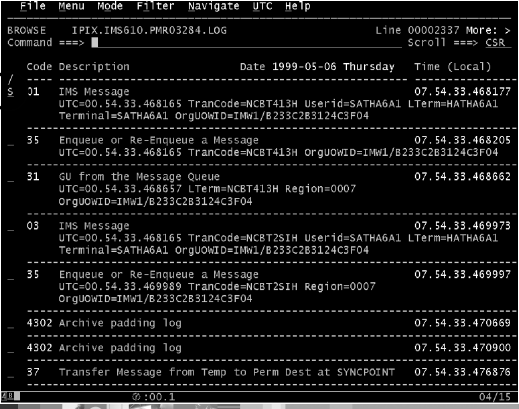


Can alternately show LSN

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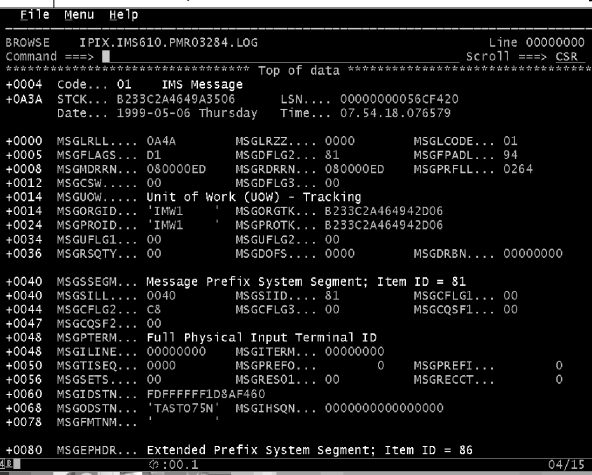
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## IMS PI – View Log Records ...



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```

File Menu Help
BROWSE IPIX. IMS610. PMR03284. LOG Line 00000028
Command ==> Scroll ==> CSR
+0080 MSGSILL... 0010 MSGSIID... 86 MSGEPTL... 01E4
+0086 MSGEPFL1... FC MSGEPFL2... 00

+0090 LU62PREF... MVS APPC System Segment for LU6.2; Item ID = 87
+0090 LUP_LENGTH... 00F6
+0094 LUP_MSG_PREFIX_TYPE... 00
+0095 LUP_CONVERSATION_TYPE... 'M'
+0096 LUP_SYNC_LEVEL... 'N'
+0097 LUP_MSG_TYPE... 89 LUP_MSG_FLAG... 80
+0099 LUP_RACE_OPT... 00 LUP_NETWORK_ID... 'GTEDCAL'
+00A4 LUP_LUNAME... 'SAAMV53'
+00AC LUP_MODENAME... 'OPENAPPC'
+00B4 LUP_SIDENAME...
+00C4 LUP_LUMBLK_TOKEN... 1D8AF460
+00C8 LUP_USER_ID... 'DTPACGOS'
+00D0 LUP_GROUP_NAME... 0000000000000000
+00D8 LUP_TP_ID... 1C7A0B0000048941
+00E0 LUP_TRANCODE... 'TAST075N'
+00E8 LUP_LTERM... 'SAAMV53'
+00F4 LUP_TOKEN... B233C2A46429C806
+00FC LUP_FLAGS... 00000000
+0100 LUP_LUWID... LUW ID
+0100 LUP_LUWID_LENGTH... 00
+011A LUP_TPN_LENGTH... 0008
+011C LUP_TPNNAME... 'TAST075N'
+0124 UTOKLENGTH... 50
+0125 UTOKNAME...
+0000 01804655 51555555 55555555 *.....*
0:00.1 04/15

```

Notice the APPC data in this 01 message record  
 IMSPI "understands" the information contained in every IMS Log record and makes it available to you.

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### IMS PI - Zooming-in on Log Record Fields

- Zoom allows you to drill down to obtain more information about a log record's fields
- From the Formatted Record display (previous foils), simply position the cursor at any field of interest and press Enter
  - Zoom provides additional field analysis and detailed field description

```

File Menu Help
BROWSE IPIX. IMS610. PMR03284. LOG Line 00000000
Command ==> Scroll ==> CSR
***** Top of data *****
+0068 MSGODSTN... 'NCBT2SIH'

Destination CNT Name or SMB Name.
For APPC transaction, Dest field made up
of 2 parts: Dest Type and Dest address
- valid only if MSGC2APP flag on.
1. MSGOD62I APPC (LU6.2) Dest Type QAB/TIB
2. MSGOD62A APPC (LU6.2) Dest Addr QAB/TIB
***** End of data *****

```

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### IMS PI - Log Record Flags

```

File Menu Help
BROWSE IPIX. IMS610. PMR03284. LOG Line 00000000
Command ==> Scroll ==> CSR
***** Top of data *****
+0006 MSGDFLG2... 81 Flags From QDFLG2 of QDEST

On QDF2PRM... 80 This Destination is permanent and
implies that fields exist for
1. Average Msg length
2. Enqueue and Dequeue counts
3. Name field
If the above bit is off,
the fields are assumed to be absent
Off QDF2BKR... 40 Backup queue is required, either
for Resend or Conversational process
Off QDF2QMOV... 20 QMOVE in Process : XRF
Off QDF2LOUE... 10 Local QPOOL in Use : XRF
Off QDF2CLNR... 08 Cleanup Check Request Flag : XRF
Off QDF2MDEL... 04 Message Deletion in Progress Flag : XRF
Off QDF2BTYP... 03 Destination Type bits
On QDF2SMB... 81 Generated SMB - Transaction
Off QDF2CNT... 82 Generated CNT - Logical Terminal
***** End of data *****

```

IMSPI "knows" about Flags.  
 Zoom to see which bits are on or off.

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### IMS PI - Other Features

- Formatted display or ISPF browse
  - ISPF dialog or command interface
- Batch reporting option
- Forms to personalize record reporting layouts
- DBRC log selection and sysplex support
- Extract function to produce reduced log files
- Support for IMS Versions 6, 7 and 8

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## Agenda

- IMS Connect Extension Overview
- IMS PI Overview
- IMS PA Overview

IMS Performance Analyzer 5655-E15

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## IMS Performance Analyzer Version 3.3 (5655-E15)

- What it does**
  - Analyzes IMS Logs, IMS Monitor files or IMS Connect Journal files
  - Produces performance reports
- User has complete control of what gets reported and how
- Objectives: Allow you to -**
  - Spot IMS performance trends
  - Foresee and avoid IMS performance problems
  - Uncover, analyze and understand IMS performance problems
- Supports IMS Versions 7, 8 and 9** from same load library

*“IMS PA addresses the need for a single, comprehensive log analysis program that requires a minimum of sorting and system resources. With IMS PA, the log is passed once, and there is no sorting”*

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## IMS Features Supported

- IMS TM, IMS DBCTL, IMS Batch and IMS Connect** New in 3.3
- Full Function and Fast Path Data Bases**
- Full Function Message Queuing and Fast Path EMH**
- DASD Queues and Shared Queues (FF and EMH)**
  - processes multiple parallel logs to give consolidated view for shared queues and/or shared databases
- Traditional terminals, APPC and OTMA**

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## Setting Up a Monitoring Run

- The ISPF interface is used to build a Report Set**
  - Choose the report category
    - E.g. Log Transit Time Analysis or Monitor System IWAIT reports
  - For each category, select specific reports required
    - User-friendly 'Windows Explorer'-like interface
  - For each report choose one or more report sequences and selection criteria
    - Selection can be by wild card or using a predefined "object list"
    - E.g. transit time report sorted by USERID where trancode is "ACC"
  - "Activate" the actual reports you want to print from the report set
  - SAVE the report set (if required) and RUN the analysis
- Run Time Options**
  - Generate JCL and run it
  - Generate JCL, EDIT JCL, and run it
  - Generate JCL with control statements, edit control statements, and run it
- For IMS Log analysis, DBRC can be used to select log files**
  - Generated control statements can reference log date by relative day number (today = 0)
  - Same job can be run every day without editing

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## IMS PA Log Reporting

- Log reporting categories are Full function transit time, Full function resource usage, Fast path transit time, Fast path resource usage, and Trace reports
- In many cases IMS PA log reporting can produce reports at three levels
  - ▶ Management and Exception reports
    - Can be numeric tables or graphical diagrams
  - ▶ Detailed analysis reports
  - ▶ Trace reports
- Additionally, IMS PA offers a choice of ways to extract data and write it out for further analysis with GDDM or PC tools
  - ▶ IMS PA 3.3 also introduced a History file for helping with trend analysis



## Dashboard Report



- Provides a quick overview of critical system performance

Start : 27Aug2003 00.09.00.07 End : 27Aug2003 23.59.00.06 Interval : 23.50.00 (HHMM.MS.SS)

MPP	Count	In Q	Exec	Out Q	Total
MPP	43809	397	217		671
JMP	0				
OTMA	126	2,860	1,113	0	3,973
APPC	426	159,301	2,446	0	161,747
CPI-C	0				
MSC	14258	23	29	0	51
MSC Send	3798				
BMP	7	1,056	1,736	0	2,792
JBP	0				
JFP	13147	9,448	2,158	0	11,606
DBCTL	96				
Unknown	1	0	2,001	0	2,001

----- Message Queue Pool Statistics -----

Locates:	1,229,640	Reads:	260	IWAITS:	200
In Pool:	1,229,380	Writes:	1,899	I/O Errors:	0

----- OSAM Buffer Pool Statistics -----

-ID-	Size	Count	Locates	In Pool	Read IO	Write IO	Waits
AIDD	512	4	70,844	70,840	4	0	1
BIDD	1,024	64	1,071	1,059	94	0	2
CIDD	2,048	4	0	0	0	0	0
DIDP	4,096	4	0	0	0	0	0
E263	26,624	256	6,244	5,904	851	710	8
FIDD	32,768	4	93,029	93,018	156	149	10

... and similarly for VSAM buffers



## Full Function Analysis Reports

*You have a large selection to choose from!*

- Scheduler
- Latch management
- Logger
- Dispatcher (TCBs)/ Dynamic SAPs
- Numbers of conversations
- Recany buffer usage
- RACF SIGN-ON
- Message Queue Utilisation
- Data Base Update Activity
- OSAM Sequential Buffering
- Deadlock (new in IMS PA 3.2)
- Checkpoint (new in IMS PA 3.2)
- BMP Checkpoint (new in IMS PA 3.3)
- Transaction Transit Time Analysis
- Transaction Resource Usage (new in IMS PA 3.2)
- Resource Availability
- CPU Usage
- Pools
  - ▶ Message queue, MFS, DB buffers,
  - ▶ DMB, PSB, DMB Work, PSB Work, EPCB
  - ▶ CIOP, HIOP, CESS, AOIP, EMHB, FPWP, LUMP and LUMC
  - ▶ Control blocks (DDIR, SMB, TCBT, BQEL, etc. etc.)
- Program isolation
- IRLM statistics
- DL/I calls



## Full Function Trace Reports



- Transaction Transit Log
  - ▶ similar to DFSILTA0, but with shared queues support
- Data Base Trace
  - ▶ a trace of all DB updates (before and after images)
- Region Histogram
  - ▶ graphic display of region usage
- DC Queue Manager Trace

Start 04Aug2003 16:10:15.91 IMS Performance Analyzer Page 1

Time	IMS	PSB	Database	D	CL/I	Reason	Segment	Offset	Hexadecimal	Data Display	Interpreted Data
161019.93											
161019.94	IMS2	2	DBTRN				Input				
161019.94	IMS2	0	PINMLDUP	DDBANRNC	1	Open	Pgm Sched				"DBANRNC"
161019.93											
161019.94	IMS2	2	PINMLDUP	DBTRN			Pgm Term		00000000		
161019.97	IMS2	2	DBTRN				Pgm Sched				
161019.99											
161019.10	IMS2	0	PINMLDUP	DDBANRNC	1	Open	Input				"DBANRNC"
	IMS2	0	PINMLDUP	DDBANRNC	1	Open					"DBANRNC"
	IMS2	0	PINMLDUP	DDBANRNC	1	Open					"DBANRNC"
	IMS2	0	PINMLDUP	DDBANRNC	1	Open					"DBANRNC"
161019.28	IMS3	27	DBTRN				Pgm Sched		00000000		
161019.28	IMS3	27	PINMLDUP	DDBANRNC	1	Open	Pgm Term		00000000		
161021.59	IMS2	2	PINMLDUP	DDBANRNC	1	REPL	Pgm Sched		00000000		
							Pgm Sched		00000000		
							Pgm Sched		00000000		
							Pgm Sched		00000000		



## Fast Path Reports

Fast Path log reports cover the same spectrum – from management reporting to detailed traces, and there is a transaction extract facility

Reports include –

- ▶ EMH Transaction Exception Report
- ▶ EMH Transaction Transit Analysis
- ▶ FP Resource Usage and Contention
- ▶ FP Database Call Statistics
- ▶ IFP Region Occupancy
- ▶ EMH Message Statistics
- ▶ DEDB Update Activity
- ▶ VSO Statistics
- ▶ Fast Path Transit Log
- ▶ DEBD Update Trace



Program	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region	Region
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...



## IMS PA Monitor Reports

The categories of reports available are

- ▶ Summary Reports (regions, programs, DB IWAITs, etc)
- ▶ System IWAIT Reports
- ▶ Program Analysis Reports
- ▶ Resource Usage (Communications, MSC, etc)
- ▶ Fast Path Analysis

Sets of PSB names or DDnames can be reported as separate groups

Reports can be in normal sequence (by region number, PSBname, etc) or from worst to best performance (according to elapsed time, IWAIT time, etc, as appropriate)

- ▶ Can limit reports to just print the worst cases

Program and I/O Performance Thresholds can be set for

- ▶ IWAITs per call
- ▶ DL/I call elapsed time
- ▶ I/O IWAIT elapsed time



An Exception Listing report is printed for each time a threshold value is exceeded



## Fast Path Analysis

The IMS Monitor has included Fast Path monitoring since IMS V7. But only IMS Performance Analyzer can analyze the data and produce reports

Most of the Monitor reports integrate fast path and full function, but some aspects unique to fast path are reported in this separate sets of reports

- ▶ DEDB Resource Contention
- ▶ Fast Path Buffer Statistics
- ▶ BALG/Shared EMHQ Analysis
- ▶ OTHREAD Analysis
- ▶ VSO Summary



## IMS PA with IMS Connect Extensions



IMS Connect Extensions 5655-K48 provides an Event Collector for IMS Connect

- ▶ Uses a set of Active Journals (cf. OLDS) which are archived to Archive Journals (cf. SLDS)
- ▶ Collects performance and accounting data  
Amount depends on which event collection level (0 to 4) is current

IMS PA 3.3 introduces reporting of the archived data

- ▶ Transit Time reports
- ▶ Resource Usage reports
- ▶ Detailed Event Trace
- ▶ Accounting and chargeback by exporting transit data

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## IMS Connect Transit Analysis Report

New  
in 3.3

**IMS Connect Transit Analysis**  
From 01Apr2004 16.30.06.98 To 21Apr2004 13.55.10.56 Page

Transact Code	Time	Message Count	Response Time	Input				-Process-		Output			Rate Time /Sec	Time Ex	NAK
				Pre-OTMA	READ	SOCK	READ	Ex	SAF	OTMA	Confirm	Post-OTMA			
DSPALL1	16.57.00	40	Avg	627.906	351.026	345.913	0.115	0.000	179.675	0.000	97.205	0.134	1	0	0
			80%	851.963	461.978	454.183	0.140	0.000	316.649	0.000	202.327	0.272			
	16.58.00	60	Avg	739.120	405.811	397.993	0.205	0.000	224.447	0.000	108.861	0.176	1	0	0
			80%	1,029.203	538.471	527.321	0.742	0.000	435.416	0.000	206.930	0.525			
	15.00.00	1	Avg	379.674	303.223	302.479	0.131	0.000	74.694	0.000	1.755	0.125	0	1	0
			80%	379.674	303.223	302.479	0.131	0.000	74.694	0.000	1.755	0.125			
DSPALL1	Subtotal	111	Avg	655.272	371.567	365.446	0.166	0.000	189.409	0.000	94.296	0.155	2	1	2
			80%	929.141	495.318	485.849	0.561	0.000	370.394	0.000	192.971	0.424			

### IMS Connect Transit Log Report

**IMS Connect Transit Log - DVPCFGDA**  
Log from 15Mar2004 10.48.30.65 Page 1

Start Time HH.MM.SS.ThHtju	Transact Code	Target DataStor	Port Number	Response Time	Input				-Process-		Output			
					Pre-OTMA	READ	SOCK	READ	Ex	SAF	OTMA	Confirm	Post-OTMA	XMIT
10.48.30.652239	DVPRANS	IM04	8801	512.956	1.262	0.355	0.239	0.000	131.904	379.666	379.789	0.143		
10.48.31.165943	DVPRANS	IM04	8801	2.746	0.719	0.275	0.047	0.000	0.669	0.000	1.337	0.105	N	
10.48.44.439308	DVPRANS	IM03	8801	638.705	233.365	232.164	0.250	0.000	145.504	259.803	259.836	0.151		
10.48.45.479782	DVPRANS	IM03	8801	619.949	0.983	0.373	0.174	0.000	65.249	553.684	553.715	0.119		
10.48.46.407703	DVPRANS	IM03	8801	631.340	1.198	0.507	0.243	0.000	60.516	569.538	569.626	0.105		
10.48.47.455908	DVPRANS	IM03	8801	641.975	0.839	0.388	0.161	0.000	43.400	597.644	597.735	0.117		
10.48.48.403977	DVPRANS	IM03	8801	638.017	0.725	0.357	0.232	0.000	15.356	620.419	1.516	0.228		
10.49.06.240175	IVTCV	IM03	8801	294.089	0.743	0.249	0.199	0.000	75.222	218.048	218.123	0.116		
10.49.06.837155	IVTCV	IM03	8801	712.028	0.745	0.392	0.235	0.000	101.217	610.034	610.065	0.122		
10.49.07.549765	IVTCV	IM03	8801	2.668	0.523	0.234	0.088	0.000	0.749	0.000	1.394	0.045	N	

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## IMS Connect Resource Usage Reports ...

New  
in 3.3

**IMS Connect Exception Summary - DVPCFGDA**  
From 22Apr2004 09.02.04.64 To 22Apr2004 09.02.04.81

ID	Description	Total
11	Datastore Un-Available	65
13	TMember leaves XCF group	64
41	Msg to OTMA response is NAK	156
42	Msg from OTMA response is NAK	12
	RSN=14 Second client-bid sent, first still active	1
	RSN=24 Previous conversation still in progress	11
45	OTMA time-out	342
47	Session error	173

**IMS Connect Exception Report - DVPCFGDA**  
Report from 04Mar2004 10.19.36.22

Event Time	ID	Description	Information
10.19.36.229174	11	Datastore Un-Available	DSname=XCFMIMD3
10.19.36.234938	11	Datastore Un-Available	DSname=XCFMIMD4
10.19.36.376444	13	TMember leaves XCF group	DSname=HWSDEV3
10.19.36.380776	13	TMember leaves XCF group	DSname=HWSDEV4
10.27.50.682345	11	Datastore Un-Available	DSname=XCFMIMD3
10.27.50.684494	11	Datastore Un-Available	DSname=XCFMIMD4
10.27.50.940388	13	TMember leaves XCF group	DSname=HWSDEV3
10.27.50.944613	13	TMember leaves XCF group	DSname=HWSDEV4
08.49.02.395660	41	Msg to OTMA response is NAK	DSname=XCFMIMD4 Tipe=8801 RSN=0000
08.50.20.882001	11	Datastore Un-Available	DSname=XCFMIMD3
08.50.20.882091	47	Session error	Type=TERM

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## Questions ?

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    graph TD
      A[IMS Connect Extension + IMS Connect] --> B((Active Journal))
      B --> C[IMSP Problem Investigator]
      B --> D((Archive Journal))
      C --> E[IMS Performance Analyzer]
      D --> E
      
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