



IBM Software

Application Management Solution

CICS Performance Analyzer for z/OS

Fundi Software – Sylvia Ku

Session agenda

- Introduction
- Overview
- Functions
- Summary

Introduction

Problem: Need to measure and predict CICS system and CICS application performance

Solution: CICS Performance Analyzer for z/OS help you develop, tune and manage your CICS systems.

Introduction

IBM CICS Performance Analyzer for z/OS

- Powerful off-line reporting tool to help you develop, tune and manage your CICS systems.
- Comprehensive performance reporting and analysis for CICS using the following SMF record types:
 - ▶ CICS Monitoring Facility (CMF), Resource and Exception classes
 - ▶ CICS Transaction Server Statistics, CICS Server Statistics
 - ▶ CICS Transaction Gateway Statistics
 - ▶ DB2 and WebSphere MQ accounting
 - ▶ OMEGAMON ODBM
 - ▶ z/OS system logger (CICS Journal)

Who needs it?

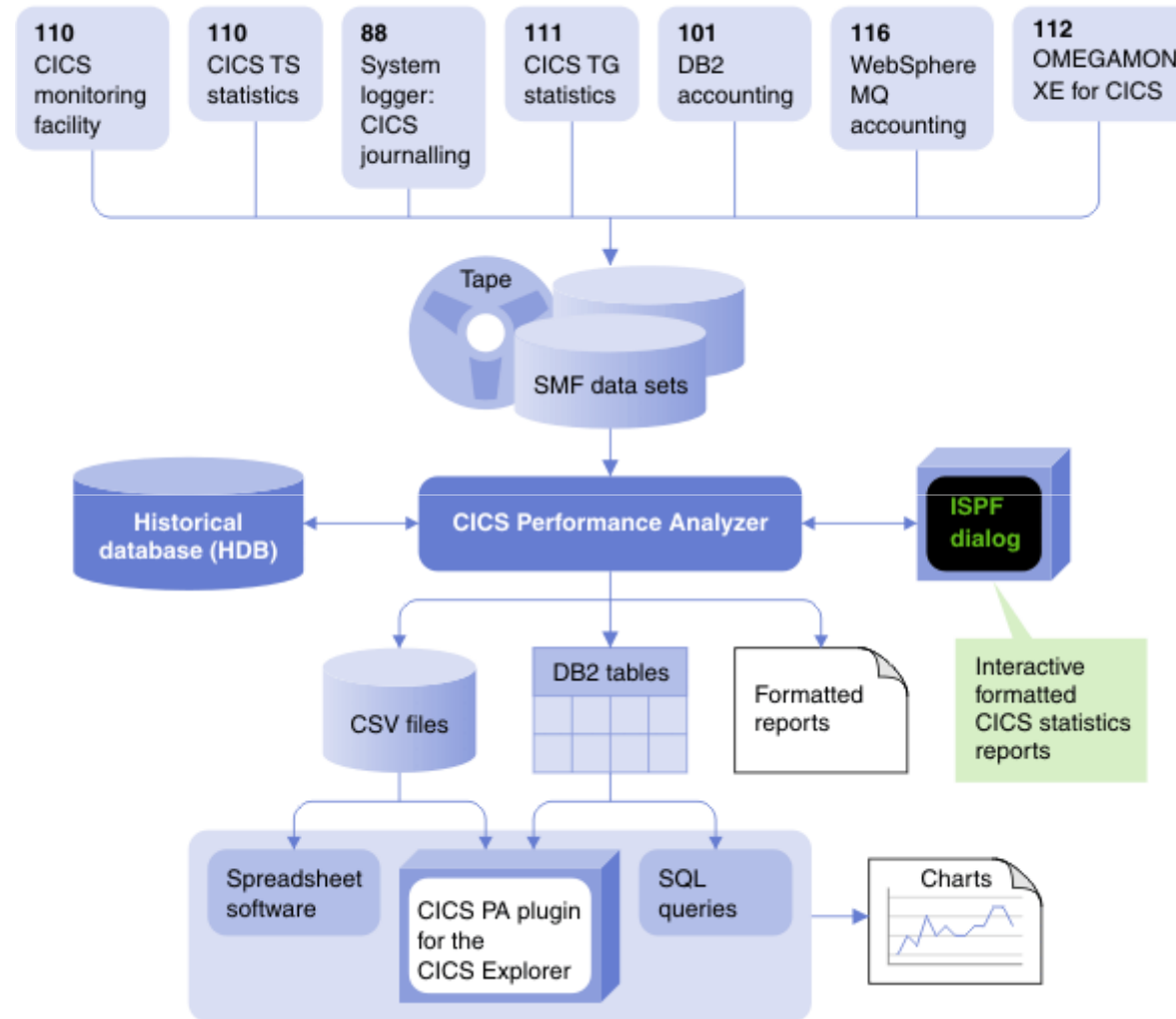
- **Anyone who needs to monitor and manage CICS system and CICS application performance.**
 - ▶ CICS System Programmers
 - System performance monitoring and tuning
 - Improve CICS system resource usage
 - Improve transaction response times

 - ▶ CICS Application Programmers
 - Analyze CICS application performance
 - Transaction performance monitoring
 - DB2 and VSAM database performance monitoring

 - ▶ IT Managers
 - Capacity planning
 - Service Level Agreements
 - Provide ongoing system management and measurement reports

Components

SMF record types:



CICS PA - Functions

File Options Help

V5R1M0 CICS Performance Analyzer - Primary Option Menu

Option ==>

- | | | |
|---|----------------------|---|
| 0 | CICS PA Profile | Customize your CICS PA dialog profile |
| 1 | Systems | Specify, SMF Files and Groups |
| 2 | Report Sets | Request and submit reports and extracts |
| 3 | Report Forms | Define Report Forms |
| 4 | Object Lists | Define Object Lists |
| 5 | Historical Database | Collect and process historical data |
| 6 | Statistics | Report CICS Statistics |
| 7 | Profiling | Request Transaction Profiling |
| 8 | Resource Definitions | Resource Lists, Application Groups and Alerts |
| X | Exit | Terminate CICS PA |

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```
File Systems Confirm Options Help
-----
EDIT                               Report Set - DEMO                               Row 1 of 35
Command ==>> _____ Scroll ==>> PAGE

Description . . . CICS PA Report Set _____

Enter "/" to select action.

___  ** Reports **                               Active
+ ___ Options                                   No
+ ___ Selection Criteria                         No
- ___ Performance Reports                       No
    ___ List                                    No
    ___ List Extended                           No
    ___ Summary                                 No
    ___ Totals                                  No
    ___ Wait Analysis                           No
    ___ Transaction Profiling                   No
    ___ Cross-System Work                       No
    ___ Transaction Group                       No
    ___ BTS                                     No
    ___ Workload Activity                       No
- ___ Exception Reports                         No
    ___ List                                    No
    ___ Summary                                 No
- ___ Transaction Resource Usage Reports        No
    ___ File Usage Summary                     No
    ___ Temporary Storage Usage Summary        No
    ___ Transaction Resource Usage List        No
- ___ Statistics Reports                       No
    ___ Alert                                   No
- ___ Subsystem Reports                       No
    ___ DB2                                    No
    ___ WebSphere MQ                           No
    ___ OMEGAMON                                No
- ___ System Reports                           No
    ___ System Logger                           No
+ ___ Performance Graphs                       No
- ___ Extracts                                 No
    ___ Cross-System Work                       No
    ___ Export                                  No
    ___ Record Selection                       No
```

Daily Reporting

Drill down performance details for further investigation



Report Forms

```

File Edit Confirm Upgrade profiling Options Help
-----
EDIT SUMMARY Report Form - DAILY          Row 1 of 21 More: >
Command ==>                               Scroll ==> PAGE
Description . . . Daily Summary Report      Version (VRM): 660
Selection Criteria:
  _ Performance                             Page width . . 360_

  Field  Sort
  / Name + K O Type Fn Description
  ---
  FINANCE K A APG Application Group
  TRAN K A Transaction identifier
  TASKCNT Total Task count
  RESPONSE AVE Transaction response time
  RESPONSE RNG Transaction response time
  RESPONSE MAX Transaction response time
  SUSPEND TIME AVE Suspend time
  SUSPEND TIME RNG Suspend time
  SUSPEND TIME MAX Suspend time
  DISPATCH TIME AVE Dispatch time
  DISPATCH TIME RNG Dispatch time
  CPU TIME AVE CPU time
  CPU TIME RNG CPU time
  DISPWAIT TIME AVE Redispatch wait time
  FCWAIT TIME AVE File I/O wait time
  FCAMCT AVE File access-method requests
  IRWAIT TIME AVE MRO link wait time
  SC24UHWM AVE UDSA HWM below 16MB
  SC31UHWM AVE EUDSA HWM above 16MB
  EOR ----- End of Report -----
  EOX ----- End of Extract -----
***** Bottom of data *****
    
```

Summarizing Application performance by using Application Grouping



Report Forms

```

File Edit Confirm Upgrade profiling Options Help
-----
EDIT SUMMARY Report Form - DAILY          Row 1 of 21 More: >
Command ==>>                               Scroll ==>> PAGE
Description . . . Daily Summary Report      Version (VRM): 660
Selection Criteria:
  _ Performance                               Page width . . 360

/  Field      Sort
  Name +     K  O Type   Fn   From   To     Report
---
FINANCE     K  A  APG
TRAN        K  A
TASKCNT
RESPONSE    -
RESPONSE    -
RESPONSE    -
SUSPEND     -  TIME  AVE
SUSPEND     -  TIME  RNG  >=2.0  COUNT  Seconds
SUSPEND     -  TIME  MAX
DISPATCH   -  TIME  AVE
DISPATCH   -  TIME  RNG  >=3.0  COUNT  Seconds
CPU         -  TIME  AVE
CPU         -  TIME  RNG  >=2.0  COUNT  Seconds
DISPWAIT    -  TIME  AVE
FCWAIT     -  TIME  AVE
FCAMCT     -  TIME  AVE
IRWAIT     -  TIME  AVE
SC24UHWM   -  TIME  AVE
SC31UHWM   -  TIME  AVE
EOR
EOX
***** Bottom of data *****
    
```

Customized Summary report

Using the report form that you want to see for your daily summary report

V3R2M0

CICS Performance Analyzer
Performance Summary

SUMM0003 Printed at 14:44:18 5/14/2009 Data from 22:05:23 2/02/2008 to 15:16:22 2/06/2008 Page 1

FINANCE Group	Tran	#Tasks	Avg Response Time	>=2.0 Response Time	Max Response Time	Avg Suspend Time	>=2.0 Suspend Time	Max Suspend Time	Avg Dispatch Time	>=3.0 Dispatch Time	User CPU Time	>=2.0 User CPU Time	Avg Dispwait Time	IR wa	A Ti
credits	FATA	166	.0385	0	.7627	.0179	0	.2635	.0206	0	.0065	0	.0013	.00	.00
credits	FATD	155	.0298	0	.1448	.0220	0	.1259	.0078	0	.0047	0	.0011	.00	.00
credits	FATR	6	.3046	0	.9804	.1465	0	.7259	.1581	0	.0079	0	.1444	.00	.00
credits	FDBQ	3	.0576	0	.0951	.0255	0	.0349	.0321	0	.0074	0	.0065	.00	.00
credits	FDTS	4007	.0125	1	2.0905	.0075	1	2.0841	.0050	0	.0031	0	.0029	.00	.00
credits	FECI	1	92.3412	1	92.3412	92.1532	1	92.1532	.1880	0	.0618	0	.0086	.00	.00
credits	FEJR	7	3.9178	1	27.0522	3.8974	1	27.0288	.0204	0	.0018	0	.0856	.00	.00
credits	FEMT	9	10.5157	6	36.6263	9.3060	6	33.9147	1.2097	2	.2184	0	.3458	.00	.00
credits	FEOT	6	.0609	0	.2358	.0398	0	.2213	.0211	0	.0061	0	.0397	.00	.00
credits	FESD	5	.0989	0	.1220	.0291	0	.0345	.0697	0	.0034	0	.0032	.00	.00
credits	FESN	21	.0100	0	.0419	.0002	0	.0010	.0098	0	.0028	0	.0001	.00	.00
credits	FEX2	3	103326.0	3	153849.3	11698.54	3	16408.09	1.4828	0	1.0534	0	3.6063	.00	.00
credits	FGRP	7	2.0808	1	12.8681	1.8824	1	11.6552	.1985	0	.0050	0	1.1289	.00	.00
credits	FITS	7013	.0223	0	1.0802	.0173	0	.9663	.0051	0	.0034	0	.0043	.00	.00
credits	FJTR	7	.1501	0	.8281	.1353	0	.8246	.0147	0	.0016	0	.1252	.00	.00
credits	FLQ2	42	.2369	2	5.2328	.2331	2	5.2298	.0037	0	.0013	0	.0016	.21	.00
credits	FLR2	7	.0188	0	.1014	.0154	0	.0925	.0034	0	.0016	0	.0100	.01	.00
credits	FLS1	68	.5485	2	8.7762	.5229	2	7.8190	.0256	0	.0027	0	.1968	.00	.00
credits	FLS2	62	.3370	1	6.6824	.3280	1	6.5254	.0089	0	.0016	0	.0663	.00	.00
credits	FPIR	7	3.8793	1	25.0293	3.6641	1	23.5562	.2152	0	.0015	0	3.6482	.00	.00
credits	FPIS	7	4.5627	1	30.7888	4.5476	1	30.7298	.0151	0	.0023	0	4.5293	.00	.00
credits	FPLT	7	13.7436	7	34.5624	12.2723	7	31.8667	1.4713	0	.0991	0	.0357	.00	.00
credits	FQRY	166	.9500	1	8.4820	.9382	1	7.8966	.0118	0	.0011	0	.0001	.00	.00
credits	FRMD	13	.4354	1	4.5984	.2375	1	2.4640	.1979	0	.1519	0	.0256	.00	.00
credits	FRMF	73	.0034	0	.0213	.0001	0	.0015	.0032	0	.0018	0	.0000	.00	.00
credits	FRSQ	30	.9758	1	28.8618	.9734	1	28.8443	.0024	0	.0009	0	.0102	.00	.00

Historical Data Bases

CICS PA Historical Data Base (HDB) is a repository of CICS performance and statistics data.

- ▶ build a history of CICS transaction activity from CMF performance class data.
- ▶ collect CICS TS, CICS TG and CICS Server statistics, including alerts.
- ▶ used to generate customized reports to meet your various reporting requirements.
- ▶ extracted to DB2 tables or PC CSV files for analysis using the Explorer plugin for CICS PA or other products.

Statistics

CICS PA provides comprehensive reporting for CICS Transaction Server statistics and Server statistics in SMF 110 and CICS Transaction Gateway SMF 111 records.

- ▶ Short-term in-depth analysis.
- ▶ long-term trend analysis for your CICS statistics using CICS PA Historical Database (HDB).
- ▶ Statistics Alerts

Statistics Reports

```

File Edit Options View Help
REPORT                               Statistics Reports                               Line 1 of 76
Command ==> _____ Scroll ==> PAGE
System: CICSPSAP/POLP                Type: EOD  Interval: 2008/02/05 00:00:00 Tuesday

---  -  ---  ** Reports **                               Size
      -  ---  Regions                               437
          ---  Transaction Manager                   1
          -  ---  CICS Dispatcher                   38
              ---  Dispatcher Overview              1
              ---  Dispatcher TCB Modes             18
              ---  Dispatcher TCB Pools              4
              ---  MVS TCB Overview                  1
              ---  MVS TCBS                          14
          -  ---  CICS Storage                       359
              ---  Storage Overview                  1
              ---  DSAs                              8
              ---  Domain subpools                   346
              ---  Task subpools                      4
          +  ---  CICS Dumps                          20
              ---  Enqueue Pools                    19
+  ---  Connectivity                               1,136
-  ---  Files and Databases                         425
      ---  Files                                    190
      ---  VSAM LSR Pools                           2
      ---  VSAM LSR Pool Buffers                     44
      ---  VSAM LSR Pool Files                       189
      ---  DB2 Connections                           0
      ---  DB2 Entries                               0
      ---  IMS DBCTL Subsystems                      0
-  ---  Logging                                    8

```

Statistics report – Transaction Manager

```

File  Form  Options  Help
-----
REPORT      Transaction Manager                Line 00000001  col 001 080
Command ==> _____ Scroll ==> PAGE

System: CICSPSAP/POLP      Type: EOD  Interval: 2008/02/05 00:00:00 Tuesday

Transactions . . . . .                281,735
Current MAXTASK . . . . .                70
Current Active User Transactions . . . . .    9
Current Queued User Transactions . . . . .    0
Times at MAXTASK . . . . .                5
Peak Active User Transactions . . . . .        42
Peak Queued User Transactions . . . . .         5
Total Active User Transactions . . . . .    277,086
Total Delayed User Transactions . . . . .         10
Total Queuing Time for MAXTASK . . . . . 00.05.10.853691
Current Queuing Time for MAXTASK . . . . . 00.00.00.000000
Total Transactions to Last Reset . . . . .    3989
    
```

value should close to 0

Statistics report - Files

File Edit Form Options Help

REPORT Files Line

Command ==>

Form is active
Scroll ==> CSR

System: CICSPSAP/POLP Type: EOD Interval: 2008/02/05 00:00:00 Tuesday

File Name	RLS File Indicator	Data Set Name	Get Requests	Get Update Requests	Update Requests	VSAM EXCPS Data	VSAM EXCPS Index	Total String waits	Strings	Close Status
CT	NONRLS	PRODSAP.CT	449835	0	0	181047	2505	0	4	
CTCMN	NONRLS	PRODSAP.CTCMN	0	0	0	0	0	0	4	
CTCM1	NONRLS	PRODSAP.CTCM1	0	0	0	0	0	0	4	
CTDAT	NONRLS	PRODSAP.CTDAT	0	0	0	0	0	0	4	
CTDLK	NONRLS	PRODSAP.CTDLK	0	0	0	0	0	0	4	
CTJRN	NONRLS	PRODSAP.CTJRN	0	2	2	4	0	1	2	
CTLEX	NONRLS	PRODSAP.CTLEX	0	0	0	0	0	0	4	
CTLOG	NONRLS	PRODSAP.CTLOG	0	129	129	184	0	0	2	
CTSEC	NONRLS	PRODSAP.CTSEC	4600	0	0	561	3420	1	4	
CTSWS	NONRLS	PRODSAP.CTSWS	0	0	0	0	0	0	4	
DFHCMACD	NONRLS	CICSP.V31.DFHCM	0	0	0	0	0	0	1	
DFHCSD	NONRLS	CICSP.V31.DFHCS	0	0	0	0	0	0	4	
DFHDBFK	NONRLS		0	0	0	0	0	0	1	
DFHDPFMB	NONRLS	CICSP.V31.CICSP	0	0	0	0	0	0	10	
DFHDPFMP	NONRLS	CICSP.V31.CICSP	0	0	0	476	0	0	10	
DFHLRQ	NONRLS	CICSP.V31.CICSP	0	0	0	0	0	0	10	

should be 0

IBM CICS Explorer - C:/Users/adhsid01/.cicsexplorer

File Edit Project Search Window Help

Recorder Project

Detail for Transaction summary
Records after: 2011-09-01 15.46.42

Applid

- CICST0G1
- CMASA01
- CMASMMP
- MBGACMAS
- MBGATOR1

Transaction ID

- CCVC (2)
- CCVW (2)
- CSMI (2)

Transaction summary tree

- 2012-10-11

Transaction summary (69/69 rows)

Applid: CICST0G1, CMASA01, CMASMMP, MBGACMAS, MBGATOR1. Records after: 2011-09-01 15.46.42

Start Date	Start time	Applid	MVS ID	Ver...	Type	Transacti...	Current ...	Current a...	Current ...	Times at ...
2012-10-11	09.55.00	CMASA01	XLST	2	1.0...	69	0.011300	69	0.011300	69
2012-10-11	10.00.00	CMASA01	TSMH	0	714...	2	0.000311	2	0.000311	2
2012-10-11	10.00.00	CMASM...	TSMH	0	714...	2	0.000392	2	0.000392	2
2012-10-11	10.05.00	CICST0G1	CCVC	1	0.0...	2	0.000744	2	0.000744	2
2012-10-11	10.05.00	CICST0G1	CCVW	1	0.0...	1	0.001832	1	0.001832	1
2012-10-11	10.05.00	CICST0G1	CSMI	1	0.0...	4	0.000149	4	0.000149	4
2012-10-11	10.05.00	CMASA01	XLST	42	601...	4.023810	0.001852	4.023810	0.001852	4.023810
2012-10-11	10.05.00	MBGAT...	CISE	1	247...	4	0.000440	4	0.000440	4
2012-10-11	10.05.00	MBGAT...	CISR	1	247...	4	0.000510	4	0.000510	4
2012-10-11	10.05.00	MBGAT...	COID	1	236...	11	0.001786	11	0.001786	11
2012-10-11	10.05.00	MBGAT...	CONL	1	239...	1006	0.050194	1006	0.050194	1006
2012-10-11	10.05.00	MBGAT...	CSNE	1	243...	99	0.016289	99	0.016289	99
2012-10-11	10.05.00	MBGAT...	CSOL	1	250...	11	0.008951	11	0.008951	11
2012-10-11	10.10.00	CICST0G1	CCVC	2	0.0...	3	0.001214	3	0.001214	3
2012-10-11	10.10.00	CICST0G1	CCVW	2	0.0...	4.500000	0.001932	4.500000	0.001932	4.500000
2012-10-11	10.10.00	CICST0G1	CSMI	38	0.0...	2.684211	0.000173	2.684211	0.000173	2.684211
2012-10-11	10.10.00	CMASA01	WMSC	10	0.0...	1	0.000381	1	0.000381	1

Alerts Start Date=2012-10-11, Start time=10.10.00, Applid=MBGATOR1, Transaction ID=CGRP

Records after: 2011-09-01 15.46.42

Alert description	Start Date	Start time	Applid	MVS ID	Resource ...	Resource ...
Warnings						
Program load requests that waited	2012-08-...	03.17.29	IYCUZC40	MV2A		
Writes greater than DFHTEMP CI size	2012-08-...	10.10.57	IYCUZC40	MV2A		
Program load requests that waited	2012-08-...	10.10.57	IYCUZC40	MV2A		
Writes greater than DFHTEMP CI size	2012-08-...	03.17.29	IYCUZC40	MV2A		
Program load requests that waited	2012-08-...	10.10.52	IYCUZC39	MV2A		

IZE0100I Connected user AXS to host fts1 on port 446

DB2P

IBM CICS Explorer - C:/Users/adhsid01/.cicsexplorer

File Edit Project Search Window Help

Recorder Project

Transaction summary (69/69 rows)

Appid: CICST0G1, CMASA01, CMASMMP, MBGACMAS, MBGATOR1. Records after: 2011-09-01 15.46.42

Start Date	Start time	Appid	Transacti...	Tas...	Respons...	User Dispa...	User Dispa...	User CP...	User CPU...	CPUO...
12-10-11	10.10.00	MBGATOR1	CEPF	1	258.6972...	6	0.005603	6	0.000442	
12-10-11	10.10.00	MBGATOR1	CEPM	1	258.8489...	6	0.004327	6	0.000797	
12-10-11	10.10.00	MBGATOR1	CESF	80	0.006089	1.100000	0.000334	1.100000	0.000198	1.100
12-10-11	10.10.00	MBGATOR1	CGRP	1	0.059631	6	0.006552	6	0.000570	
12-10-11	10.10.00	MBGATOR1	CISC	1	0.049375	3	0.006379	3	0.000616	
12-10-11	10.10.00	MBGATOR1	CISB	2	2.250124	10	2.220872	10	0.014401	

Alerts Host Connections Start Date=2012-10-11, Start time=10.10.00, Appid=MBGATOR1, Transaction ID=CGR

Start Date=2012-10-11, Start time=10.10.00, Appid=MBGATOR1, Transaction ID=CGRP

Start Date=2012-10-11, Start time=10.10.00, Appid=MBGATOR1, Transaction ID=CGR

Transaction response time (average)

Average Response time of 0.059631 seconds.

Performance averages at a glance

- CICS Response time
- Suspend time detail
- CPU time
- CICS TCB usage
- Task Storage usage
- File Request activity

1 items selected

DB2P

IBM CICS Explorer - C:/Users/adhsid01/.cicsexplorer

File Edit Project Search Window Help

Recorder Project

Detail for Transaction Manager
Records after: 2011-09-01 15.46.42

Applid

- IYCUZC07
- IYCUZC31
- IYCUZC39
- IYCUZC40

Transaction Manager tree

2012-08-23

Transaction Manager (8/8 rows)

Applid: IYCUZC07, IYCUZC31, IYCUZC39, IYCUZC40. Records after: 2011-09-01 15.46.42

Start Date	Start time	Applid	MVS ID	Ver...	Type	Transacti...	Current ...	Current a...	Current ...	Times at ...	Pe
2012-08-23	03.17.27	IYCUZC39	MV2A	680	EOD	368	150	1	0	0	
2012-08-23	03.17.29	IYCUZC40	MV2A	680	EOD	2631	150	1	0	0	
2012-08-23	10.10.52	IYCUZC39	MV2A	680	EOD	93	150	1	0	0	
2012-08-23	10.10.57	IYCUZC40	MV2A	680	EOD	131	150	1	0	0	
2012-08-23	10.18.07	IYCUZC31	MV2A	680	EOD	40	150	1	0	0	
2012-08-23	10.32.52	IYCUZC31	MV2A	680	EOD	50	150	1	0	0	
2012-08-23	10.42.41	IYCUZC07	MV2A	680	REQ	21800	250	10	0	0	
2012-08-23	12.01.05	IYCUZC31	MV2A	680	EOD	6618	150	1	0	0	

Alerts Host Connections Start Date=2012-10-11, Start time=10.10.00, Applid=MBGATOR1, Transaction ID=CGR

Records after: 2011-09-01 15.46.42

Alert description	Start Date	Start time	Applid	MVS ID	Resource ...	Resource ...
Warnings						
Program load requests that waited	2012-08-...	03.17.29	IYCUZC40	MV2A		
Writes greater than DFHTEMP CI size	2012-08-...	10.10.57	IYCUZC40	MV2A		
Program load requests that waited	2012-08-...	10.10.57	IYCUZC40	MV2A		
Writes greater than DFHTEMP CI size	2012-08-...	03.17.29	IYCUZC40	MV2A		
Program load requests that waited	2012-08-...	10.10.52	IYCUZC39	MV2A		

IZE0100I Connected user AXS to host fts1 on port 446

DB2P

What's new in CICS PA V5.1

- Support of CICS Transaction Server for z/OS Version 5 Release 1
- CICS Transaction Gateway statistics reports
- New facility for managing (removing) data loaded to CICS PA DB2 tables
- SMF log stream support in system definitions
- Dialogue enhancements
- Provide filtering by APPLID or IMAGE – statistics reporting option to allow SMF datasets to be displayed
- SMF to DB2 - deletion or bypass of HDB data
- Rename HDB Register to CICS PA repository
- Provide CPU Totals on CICS PA MQ reports
- Performance Improvements - need to handle large volumes of data
- CICS CTG V9.0 Exploitation

Summary

- ▶ CICS Performance Analyzer provides the level of detail and flexibility that easily helps you
 - find new ways to improve CICS system performance,
 - lower support costs,
 - and strategically plan IT investments.

More information

CICS Performance Analyzer for z/OS website:

<http://www-306.ibm.com/software/htp/cics/panaly/>