

Tuning CICS with CICS Performance Analyzer

Ezriel Gross
Circle Software

Tuesday 6 November 2018
16:30-17:30, Hungaroring
Session **GI**



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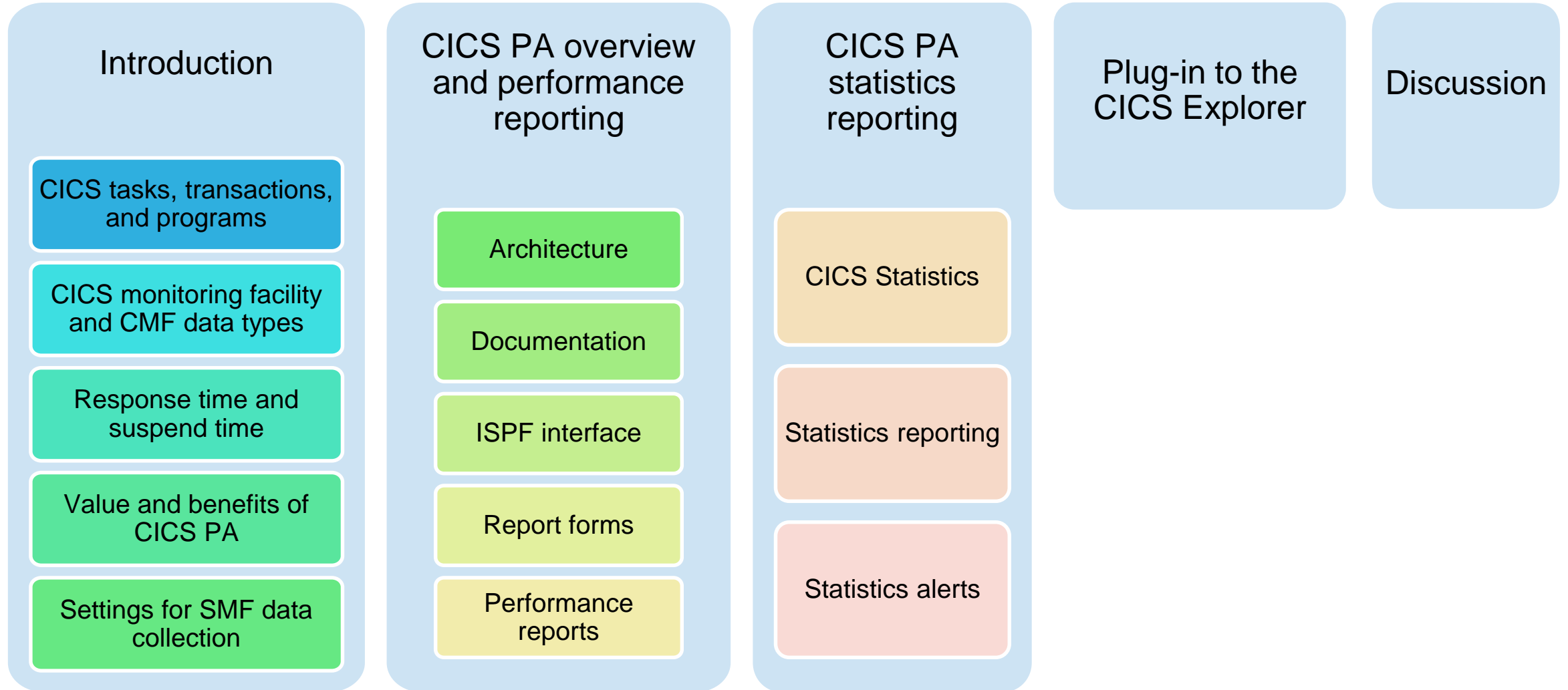
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Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon many factors, including considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve results similar to those stated here.

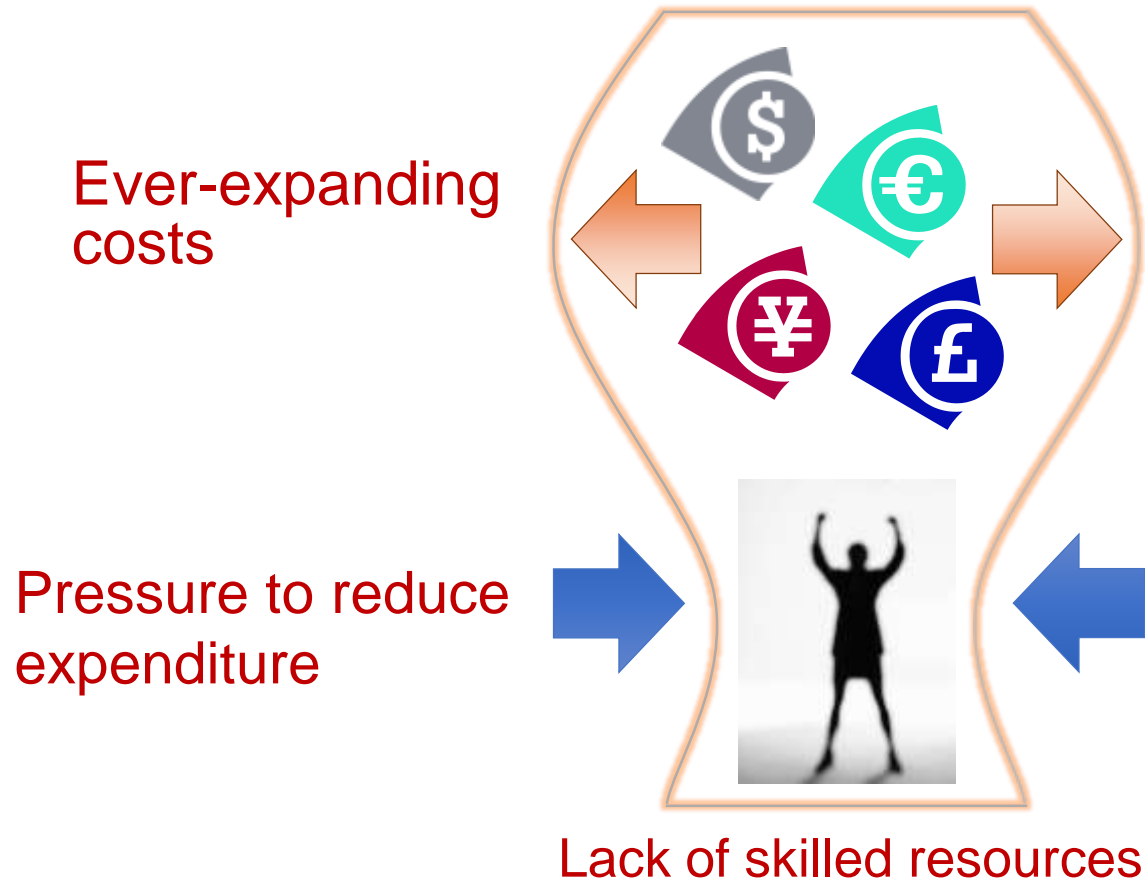
Agenda



Introduction

Introduction

Today's world:

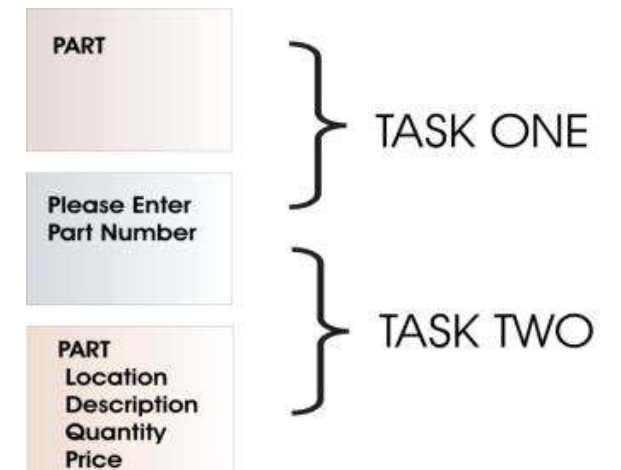
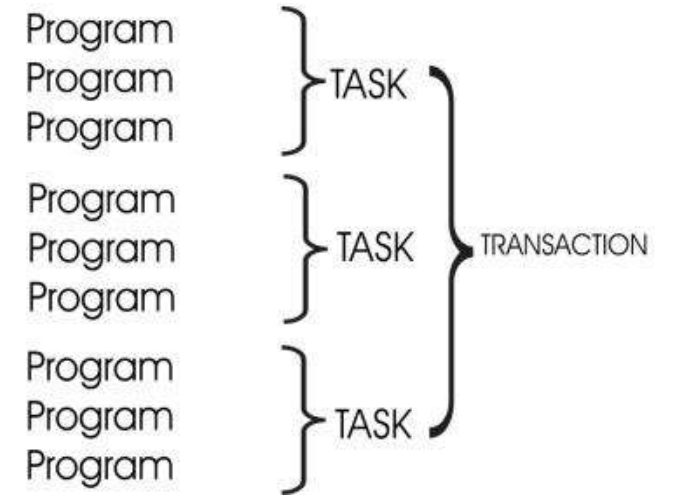


This session introduces IBM's premier CICS tuning product, CICS Performance Analyzer for z/OS

- Functions and features of the product
- Real-world examples of how to resolve performance problems and optimize operations

CICS tasks and programs

- A task is an instance of a transaction started by a user
- When a user types in data and presses Enter or a Function key, CICS begins a task and loads the necessary programs
- Tasks run concurrently, so a user can run multiple instances of the same transaction simultaneously
- CICS multitasks giving fast response times
- CICS runs each task, briefly giving CPU to each one



Relationship: transaction, program, region, task

C:\PROF Application Events
Command ==>

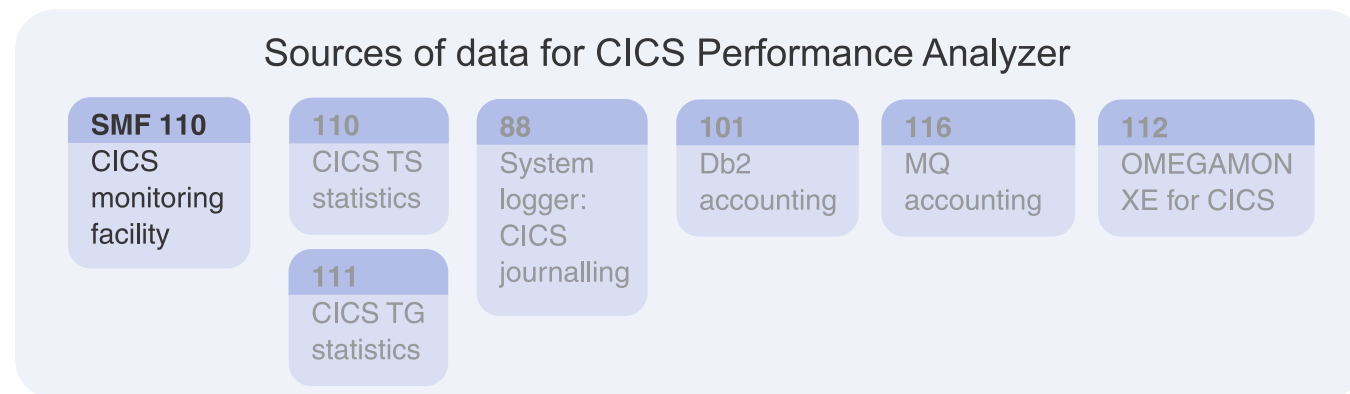
Row 1 of 46 More: >
Scroll ==> PAGE

Tran: BPMT Start: 2017-07-14 10:04:10.102396 Response: 0.010089 Task: 27681

/	Relative	APPLID	Task	Program	Elapsed	Call	Resource	EIBRESP	Command
	+0.000000	PRODMTR	27681			ATTACH TASK			ATTACH/OK TRANSACTION_TOKEN(282F6900 , 0027681C) TRANNUM(0027681C)
	+0.000350	PRODMAR	33023	MBKPSTD1	0.000153	ATTACH TASK			ATTACH/OK TRANSACTION_TOKEN(26107100 , 0033023C) TRANNUM(0033023C)
	+0.000504	PRODMAR	33023	MBKPSTD1		START PROGRAM	MBKPSTD1		START_PROGRAM PROGRAM(MBKPSTD1) CEDF_STATUS(CEDF) EXECUTION_SET(FULLAPI) ENV
	+0.000535	PRODMAR	33023	MBKPSTD1	0.000021	GETMAIN		OK	GETMAIN SET(X'2BB0D828') FLENGTH(4256) SYSEIB ASM STMT_#(00000460)
	+0.000561	PRODMAR	33023	MBKPSTD1	0.000017	LINK	MBKPCOM1	OK	LINK PROGRAM('MBKPCOM1') COMMAREA('BPMT 1234567890 2234567890 000000000000001
	+0.000590	PRODMAR	33023	MBKPCOM1	0.000012	GETMAIN		OK	GETMAIN SET(X'2BB17498') FLENGTH(5080) SYSEIB ASM STMT_#(00000460)
	+0.000607	PRODMAR	33023	MBKPCOM1	0.000012	GETMAIN		OK	GETMAIN SET(X'2BB18888') FLENGTH(8) INITIMG(X'40') COBOLII STMT_#(00141)
	+0.000620	PRODMAR	33023	MBKPCOM1	0.000012	MONITOR		OK	MONITOR POINT(2) DATA1('..hh') DATA2('...') ENTRYNAME('DFHAPPL') COBOLII STM
	+0.000633	PRODMAR	33023	MBKPCOM1	0.000012	MONITOR		OK	MONITOR POINT(1) DATA1('..hh') DATA2('...') ENTRYNAME('DFHAPPL') COBOLII STM
	+0.000646	PRODMAR	33023	MBKPCOM1	0.000012	FREEMAIN		OK	FREEMAIN DATAPOINTER(X'2BB18888') COBOLII STMT_#(00159)
	+0.000680	PRODMAR	33023	MBKPCOM1		LINK	MBKPSEQ1	OK	LINK PROGRAM('MBKPSEQ1') COMMAREA('0000000') LENGTH(7) COBOLII STMT_#(00117)
	+0.001155	PRODMFR	32788	DFHMIRS	0.000204	ATTACH TASK			ATTACH/OK TRANSACTION_TOKEN(2706D900 , 0032788C) TRANNUM(0032788C)
	+0.001360	PRODMFR	32788	DFHMIRS		START PROGRAM	DFHMIRS		START_PROGRAM PROGRAM(DFHMIRS) CEDF_STATUS(CEDF) EXECUTION_SET(FULLAPI) ENVI
	+0.001373	PRODMFR	32788	DFHMIRS	0.000021	LINK	MBKPSEQ1	OK	LINK PROGRAM('MBKPSEQ1') COMMAREA('0000000') LENGTH(7) ASM
	+0.001437	PRODMFR	32788	MBKPSEQ1	0.000025	READQ TD	MBK1	OK	READQ TD QUEUE('MBK1') INTO('0025999') LENGTH(7) NOSUSPEND COBOLII STMT_#(00
	+0.001463	PRODMFR	32788	MBKPSEQ1	0.000020	WRITEQ TD	MBK1	OK	WRITEQ TD QUEUE('MBK1') FROM('0026000') LENGTH(7) COBOLII STMT_#(00070)
	+0.001484	PRODMFR	32788	MBKPSEQ1	0.000038	WRITEQ TS	MINIBANK	OK	WRITEQ TS QUEUE('MINIBANK') FROM('0026000') LENGTH(7) AUXILIARY COBOLII STMT
	+0.001523	PRODMFR	32788	MBKPSEQ1	0.000016	READQ TS	MINIBANK	OK	READQ TS QUEUE('MINIBANK') INTO('0026000') LENGTH(7) ITEM(1) COBOLII STMT_#(
	+0.001540	PRODMFR	32788	MBKPSEQ1	0.000012	DELETEQ TS	MINIBANK	OK	DELETEQ TS QUEUE('MINIBANK') COBOLII STMT_#(00099)
	+0.001552	PRODMFR	32788	MBKPSEQ1	0.000030	RETURN			LINK PROGRAM('MBKPSEQ1') COMMAREA('0026000') LENGTH(7) COBOLII STMT_#(00117)
	+0.001959	PRODMAR	33023	MBKPCOM1	0.000012	LINK	MBKPDEB1	OK	LINK PROGRAM('MBKPDEB1') COMMAREA(' 1234567890 000000000000100{PAYMENT TEST
	+0.001989	PRODMAR	33023	MBKPDEB1	0.000016	GETMAIN		OK	GETMAIN SET(X'2BB21408') FLENGTH(4304) SYSEIB ASM STMT_#(00000460)
	+0.002014	PRODMAR	33023	MBKPDEB1	0.000843	READ	MBKACCT1	OK	READ FILE('MBKACCT1') INTO('1234567890 0999999951597600{') LENGTH(207) RIDFL
	+0.002861	PRODMAR	33023	MBKPDEB1	0.001034	REWRITE	MBKACCT1	OK	REWRITE FILE('MBKACCT1') FROM('1234567890 0999999951597500{') LENGTH(207) CO
	+0.003900	PRODMAR	33023	MBKPDEB1	0.000059	RETURN			RETURN COBOLII STMT_#(00135)
	+0.003922	PRODMAR	33023	MBKPDEB1	0.000016	FREEMAIN		OK	LINK PROGRAM('MBKPDEB1') COMMAREA(' 1234567890 000000000000100{PAYMENT TEST

CICS monitoring facility (CMF)

- CMF collects data about all transactions in CICS
- Records are written to SMF for later offline processing
- CMF collects 4 classes of data: exception, identity, performance, and transaction resource
- CMF can produce a large volume of data, so CICS compresses the data by default
- To exclude monitoring data fields, use a monitoring control table (MCT)
- To process output you can use CICS PA or CICS-supplied sample program DFH\$MOLS



CMF data types

Exception class

- Information about resource shortages encountered
 - Queuing for file strings
 - Wait for temporary storage buffers
- Highlights problems in CICS system operation
- Identifies system constraints that affect performance
- One exception record written for each condition that occurs

Identity class

- Provides enhanced audit information
- Captures identity propagation data from a client system across a network for eligible transactions

CMF data types

Performance class

- Provides detailed transaction information
- Processor and elapsed time
- Time spent waiting for I/O
- One record per transaction

Transaction Resource class

- Additional transaction level information about individual resources accessed by a transaction
- Items such as distributed program links, file and temporary storage queues
- URIMAP and WEBSERVICE usage added in APAR PH02077
- One transaction resource record per transaction monitored
- Record cut only if transaction accesses at least one resource being monitored

Response time

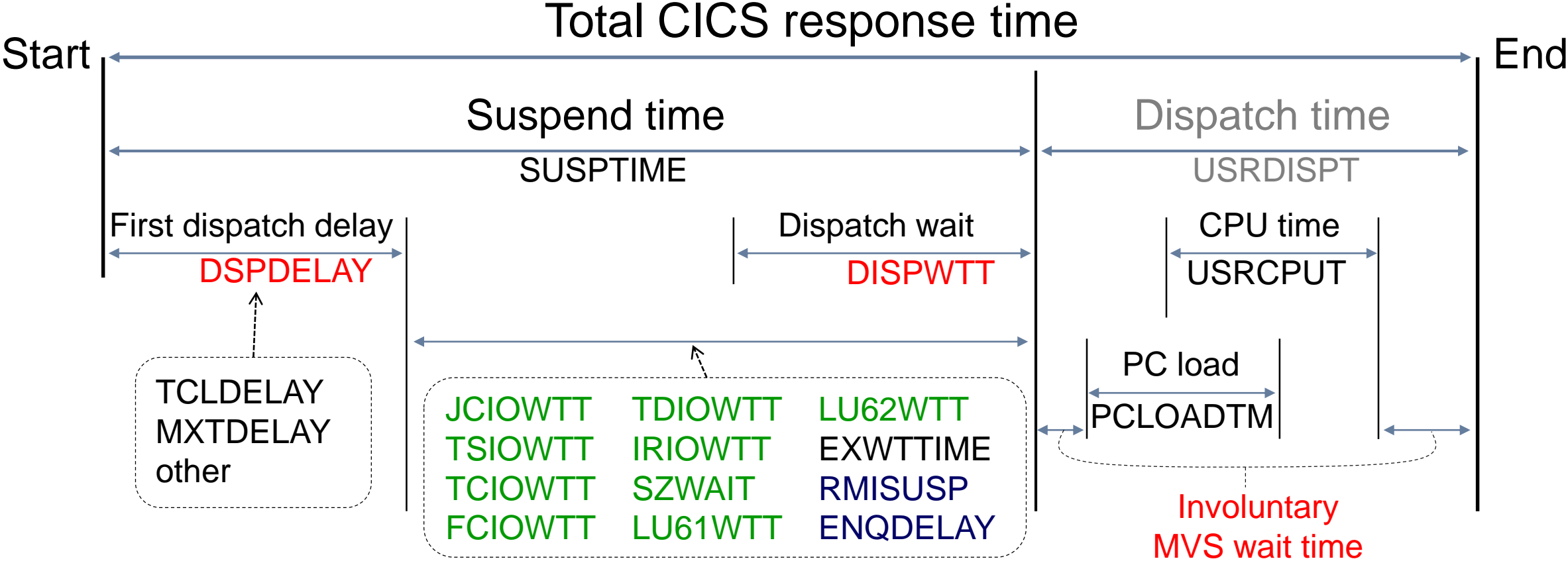
Response time consists of two elements:

1. **Suspend time:** the time a task is not executing (waiting)
2. **Dispatch time:** the time that CICS thinks the task is executing. This time is further divided into:
 - A. **CPU time:** the time the task is executing on CPU
 - B. **Wait time:** the time the CPU has been taken away from the task without the knowledge of CICS

CPU to dispatch ratio:

- Ratio = (CPU time/dispatch time) * 100
- Objective is 80% or higher

Response time structure of CICS transaction



Suspend time breakdown

Suspend time = **First dispatch time** + **I/O wait time** +
Other wait time + **Unaccounted wait time**

First dispatch delay includes
TRANCLASS delay and MXT delay

Total I/O wait time =
(terminal I/O wait time +
temporary storage I/O wait time +
shared temporary storage I/O wait time +
transient data I/O wait time +
journal (MVS Logger) I/O wait time +
file I/O wait time +
RLS file I/O wait time +
Coupling Facility Data Table (CFDT) I/O wait time +
inbound socket I/O wait time +
outbound socket I/O wait time +
inter-region (MRO) I/O wait time +
LU 6.1 I/O wait time +
LU 6.2 I/O wait time +
FEPI I/O wait time)

Total Other wait time =
(CICS OTE TCBS delay time +
CICS change-TCB mode delay time +
TCB mismatch wait time +
ENQ delay time +
IC/WAIT interval control delay time +
Lock Manager (LM) delay time +
RMI suspend time +
BTS delay +
JVM suspend +
request receiver wait time +
request processor wait time +
RRMS/MVS in-doubt wait time +
3270 bridge partner wait time +
CFDT server sync point wait time +
MVS storage constraint wait time +
dispatchable waits wait time)

You can analyze CICS performance yourself!

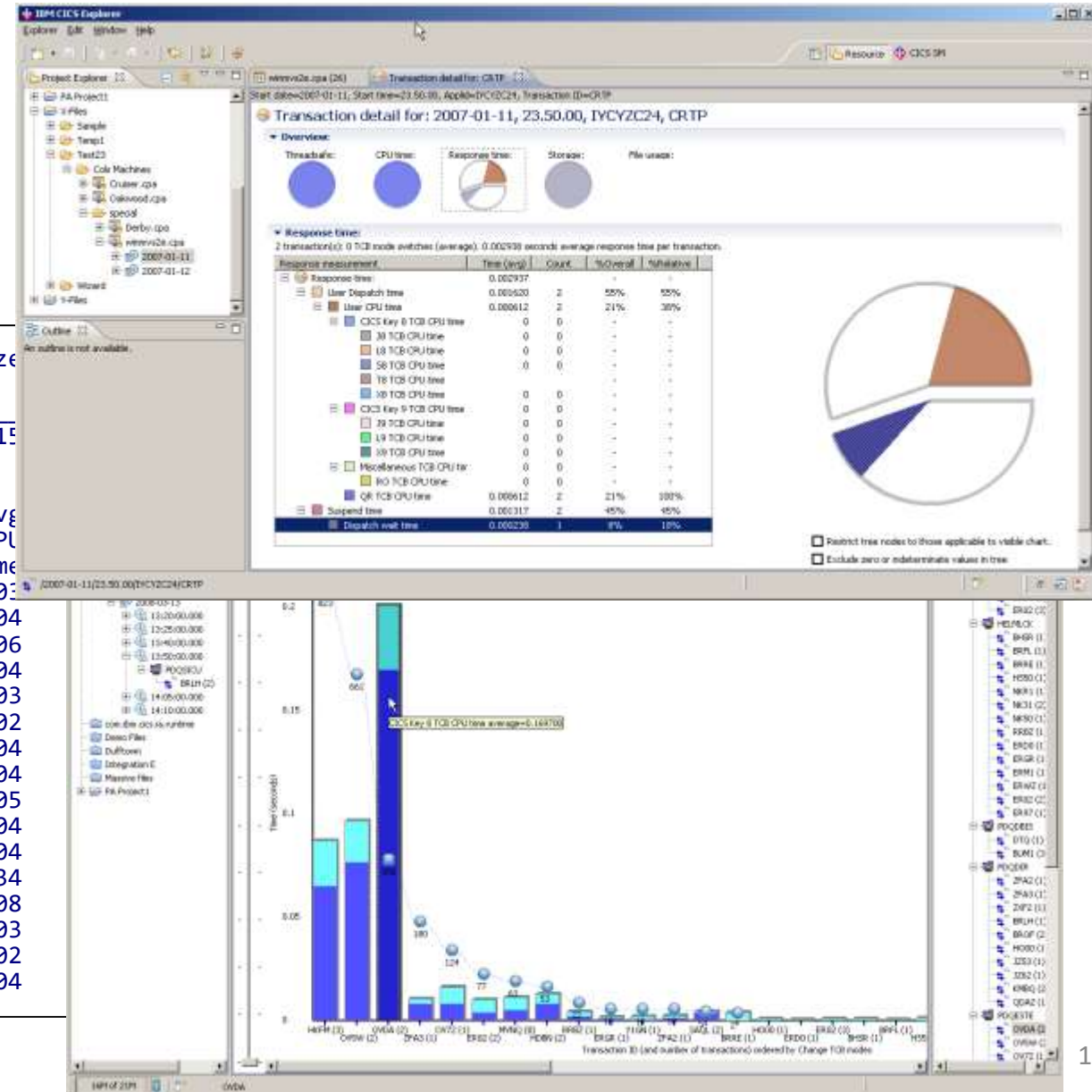
- Various report templates
- Statistics alerts automation
- Graphical reports for sharing
- Most CICS experts are using CICS PA

V5R4M0

CICS Performance Analyzer
Performance Summary

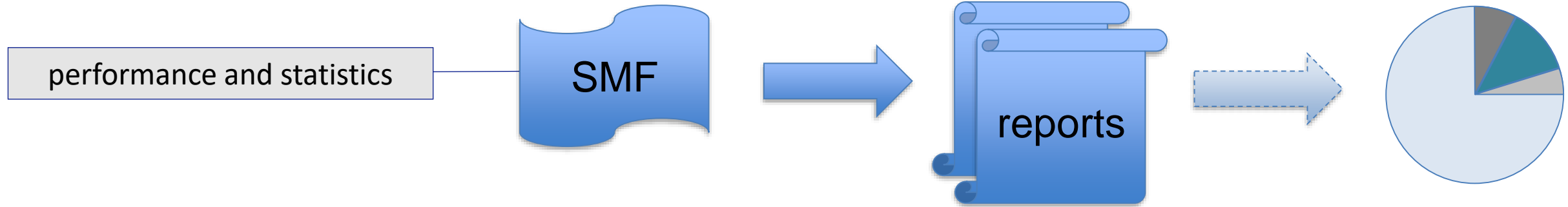
SUMM0001 Printed at 14:14:23 8/23/2018 Data from 22:28:44 4/19/2018 to 23:15:00
Transaction CICS TCB CPU Analysis - Summary

Tran	#Tasks	Avg Response Time	Max Response Time	Avg Dispatch Time	Avg User CPU Time	Avg Suspend Time	Avg DispWait Time	Avg QR CPU Time
AL01	90	.0068	.0588	.0022	.0004	.0046	.0000	.0003
AL17	16	.0036	.0170	.0005	.0004	.0031	.0000	.0004
AM01	21	.0155	.0298	.0009	.0007	.0146	.0005	.0006
AM23	2000	.1446	.5638	.0006	.0004	.1440	.0001	.0004
AM24	174	.0494	.3477	.0004	.0003	.0491	.0000	.0003
AM27	18415	.0006	.0575	.0003	.0002	.0003	.0000	.0002
AN01	1670	.0034	.0205	.0005	.0004	.0029	.0000	.0004
AN54	1705	.0084	.0767	.0005	.0004	.0079	.0000	.0004
AN60	188	.0086	.0299	.0006	.0005	.0081	.0004	.0005
AN76	102	.0060	.0207	.0005	.0004	.0055	.0002	.0004
AR01	86	.0046	.0172	.0004	.0004	.0041	.0000	.0004
ASCT	54	1.0506	4.7819	.0134	.0097	1.0372	.0039	.0034
ASIT	38	.0056	.0409	.0009	.0008	.0047	.0000	.0008
AV11	24416	.0033	.2983	.0004	.0003	.0029	.0001	.0003
AV91	641	.0010	.0114	.0002	.0002	.0007	.0000	.0002
AZBV	321	.0014	.0153	.0006	.0005	.0008	.0001	.0004



What is CICS PA?

- A comprehensive performance reporting and analysis tool for CICS
- Provides ongoing system management and measurement reports on all aspects of CICS application performance



How does it work?

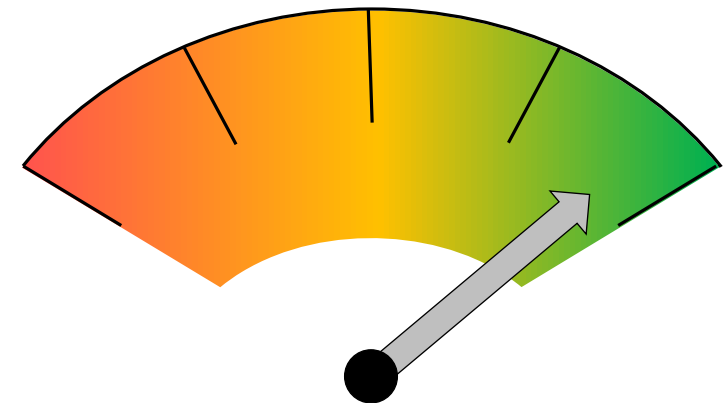
- Uses SMF data as input
- Easy to use interface for report generation (over 250 supplied report forms)
- Performance and statistical analysis
- Graphical performance analysis via CICS Explorer

What is its value?

- Analyze CICS application performance
- Improve CICS resource usage
- Evaluate the effects of CICS tuning efforts
- Improve transaction response time
- Provide ongoing system management and measurement reports
- Increase availability of resources
- Increase the productivity of system and application programmers
- Provide awareness of usage trends

Why is it important?

- Reduce time and resource required to analyze offline performance data
- Enables deep-dive CICS performance analysis and understanding of usage trends
- Aids capacity planning and tuning
- Help quickly identify trends, anticipate and prevent online performance problems



Benefits

- **Ease of use**
 - No additional setup or customization required
 - Familiar CICS terms and concepts
- **ISPF dialog to build, maintain, and submit reports**
 - Tailor your reports easily using report forms
 - Extensive online help available, and field descriptions
- **Extensive tabular reports and graph reports**
 - Summary, Wait Analysis, ...
 - Resource Usage, DB2, WebSphere MQ, z/OS System Logger
- **Extract data sets**
 - Cross-System Work, Export, Record Selection, System Logger

Benefits

- Trend and capacity planning
- Statistics reporting capability
 - Comprehensive reporting and analysis of CICS statistics data
 - Alert processing to highlight potential tuning opportunities
- Transaction profiling
 - Compares transaction performance between two time periods
- Plug-in to the CICS Explorer
 - Graphical interface allows for interactive query analysis of performance data with the ability to create charts and graphs

Settings for SMF data collection

CICS 110 records

1. Turn on Exception and Performance class monitoring:
 - MN=ON
 - MNPER=ON
 - MNEXC=ON
2. Review MCT settings for each region
 - Ensure that RMI is set to YES in the MCT so details are collected for each of the resource managers
3. Ensure the statistics settings are as follows:
 - STATRCD=ON
 - STATINT=010000 (*010000 is for 1 hour. You may choose to set the interval differently*)

DB2 101 records

- Include ACCOUNTREC(TASK) in the DB2CONN resource definition to collect Db2 data at the task level

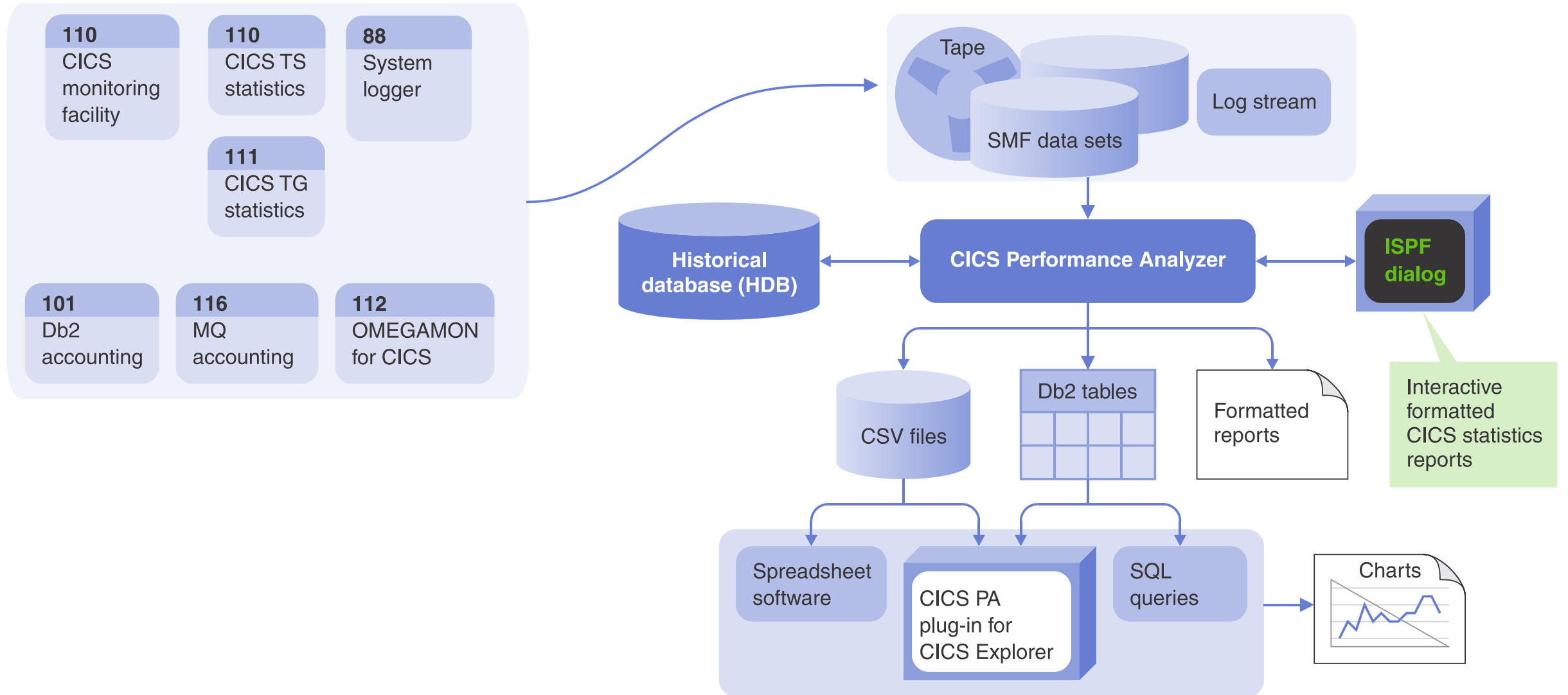
MQ 116 records

- To report IBM MQ details, you must collect SMF 116 records from MQ

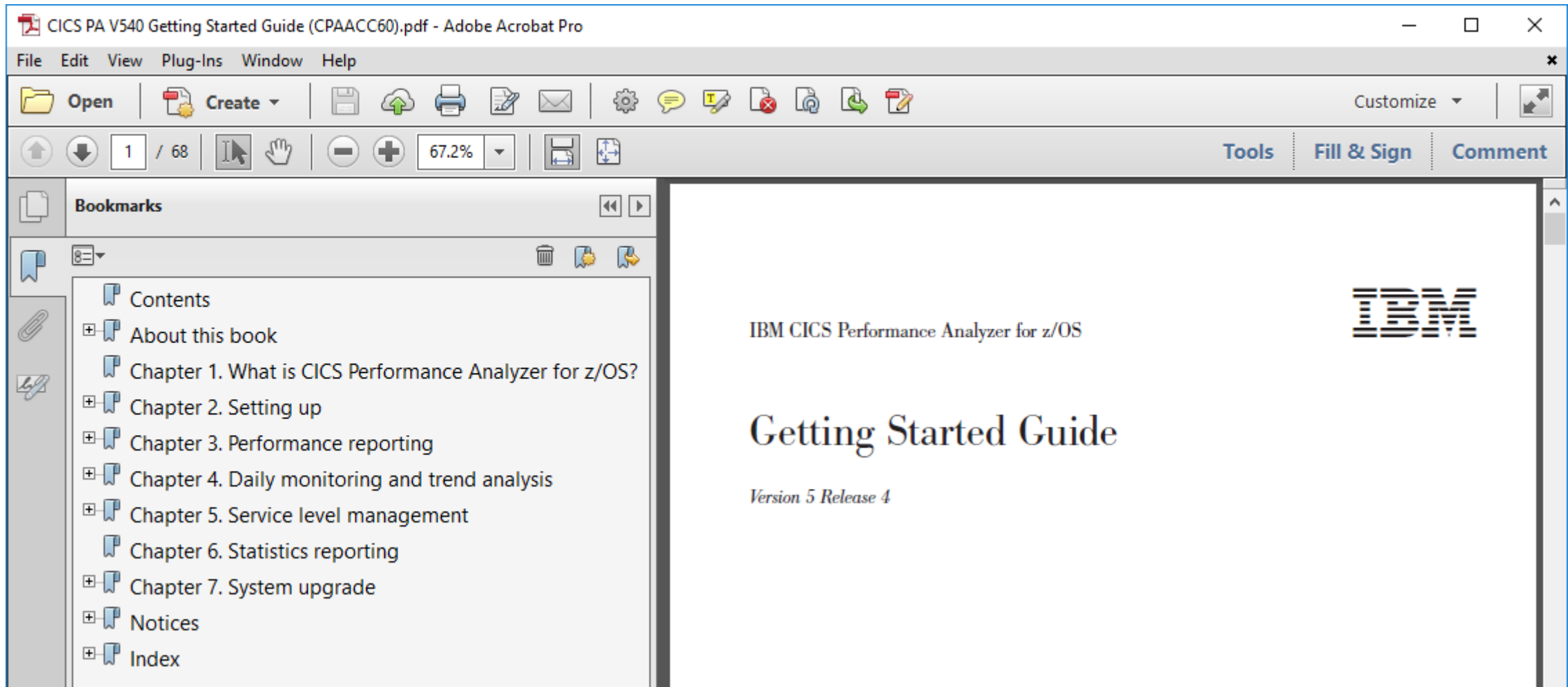
See IBM Knowledge Center for details <https://www-01.ibm.com/support/knowledgecenter/>

CICS PA OVERVIEW AND PERFORMANCE REPORTING

Architecture



Documentation - Getting Started Guide



ISPF interface

Performance reports identify troublesome **transactions**

Report Set - MAXTASK Row 1 of 25
Scroll ==> PAGE

Description . . . MXT exceeded analysis
Enter "/" to select action.

** Reports **		Active
+ ---	Options	Yes
+ ---	Selection Criteria	No
- ---	Performance Reports	Yes
---	List	Yes
---	List Extended	No
---	Summary	Yes
---	Totals	No
---	Wait Analysis	Yes
---	Transaction Profiling	No
---	Cross-System Work	No
---	Transaction Group	No
---	BTS	No
---	Workload Activity	No
---	Transaction Tracking List	No
---	Transaction Tracking Summary	No
+ ---	Exception Reports	No
+ ---	Transaction Resource Usage Reports	No
- ---	Statistics Reports	Yes
---	List	No
---	Summary	Yes
---	Alert	Yes

Statistics reports identify **resources** and **CICS functions** that could be affecting CPU consumption

MAXTASK - Performance List Reports Row 1 from 1
Command ==> _____ Scroll ==> CSR

--- System Selection ---							Selection
/	Exc	APPLID + Image + Group +	Output	Form +	Alert +	Criteria	
-			MXTBYTSK	MXTBYTSK		NO	

MAXTASK - Performance Summary Reports Row 1 from 1
Command ==> _____ Scroll ==> CSR

--- System Selection ---							Selection
/	Exc	APPLID + Image + Group +	Output	Form +	Alert +	Criteria	
-			MXTBYTOD	MXTBYTOD		NO	

MAXTASK - Statistics Summary Reports Row 1 from 3
Command ==> _____ Scroll ==> CSR

--- System Selection ---							
/	Exc	APPLID + Image + Group +	Output	Form +	Alert +		
-			STGOVRV	STGOVRV			
-			VIRTSTG	VIRTSTG			
-			TRANMNGR	TRANMNGR			

Report forms

- Report forms allow you to tailor the output and format of your reports and data extracts
- Over 250 sample report forms provided with CICS PA, covering every aspect of CICS transaction activity and resource usage

```
Sample Form Search
Command ==> _____
Specify searching criteria then press Enter.
Search String:
_____
_____

Performance:
- List
- List Extended
- Summary

Categories:
- Transaction Overview
- Transaction Tracking
- Channels and Containers Usage
- Transaction Storage Usage
- Top Lists and Distributions
- Transaction Resource Usage
- Miscellaneous
- CPU Usage and Analysis
- Platforms, Applications and Policy
- Transaction Communications Activity
- Transaction Data Access
- Web and Web Services
- Java
```


Report forms

Sample Report Forms Row 71 to 84 of 241

Command ==> _____ Scroll ==> CSR

Select one or more Sample Report Forms then press EXIT.

Name	Type	Description	Saved
— EPEC4SUM	SUMMARY	CICS Event Capture Activity (V4)	
— EPEC4SU1	SUMMARY	Event Capture by Time-of-Day(V4)	
— EXPLORE5	SUMMARY	Explorer CSV for CICS TS V5	
— EXWTLST	LIST	Exception Wait Analysis	
— EXWTSUM	SUMMARY	Exception Wait Analysis	
— FCLST	LIST	File Request Activity	
— FCRQRNGC	SUMMARY	File Request Distribution	Yes
— FCRQRNGP	SUMMARY	File Request Distribution (%)	Yes
— FCSUM	SUMMARY	File Request Activity	Yes
— FCTYLST	LIST	Transaction Facility Analysis	

Each sample can be used as it is, or easily customized

Easy to customize sample reports

```

File Edit Confirm Upgrade Options Help
-----
EDIT LIST Report Form - FCLIST          Row 1 of 416 More: >
Command ==> _____ Scroll ==> CSR
Description . . . List Report Form      Version (VRM): 710
Selection Criteria:
  _ Performance                          Page width . . 132

  Field
  / Name +   Type   Fn   Description
  -----
  TRAN      _____  ___  Transaction ident
  D USERID   _____  ___  User ID
  PROGRAM   _____  ___  Program name
  TASKNO    _____  ___  Transaction identification number
  STOP      TIMET   ___  Task stop time
  A RESPONSE _____  ___  Transaction response time
  DISPATCH  TIME     ___  Dispatch time
  CPU       TIME     ___  CPU time
  M SUSPEND  TIME     ___  Suspend time
  D DISPWAIT TIME     ___  Redispatch wait time
  FCWAIT    TIME     ___  File I/O wait time
  FCAMCT    _____  ___  File access-method requests
  EOR       _____  ___  ----- End of Report -----
  EOX       _____  ___  ----- End of Extract -----
  ABCODEC   _____  ___  Current ABEND code
  ABCODEO   _____  ___  Original ABEND Code
  
```

Line command H provides help and expanded description of each field

Move (M) a field after (A) another field to reorder fields. Fields above EOR appear in report.

7 date/time formats are available

Performance List report – File Requests

V5R4M0

CICS Performance Analyzer
Performance List

LIST0001 Printed at 9:31:21 10/14/2018

Data from 22:59:58 4/19/2018

APPLID CJTCNQ2

Tran	Program	TaskNo	Stop Time	Response Time	Suspend Time	Dispatch Time	User CPU Time	FC Wait Time	FCAMRq
QXPE	QXPDC00	71963	22:59:58.735	.0085	.0073	.0011	.0007	.0025	16
QXPE	QXPDC00	71964	22:59:58.744	.0106	.0091	.0015	.0007	.0025	24
QX38	QX37C01	71966	22:59:59.317	.0011	.0000	.0011	.0006	.0000	0
DSMJ	DZ10AAA	71965	22:59:59.317	.0014	.0011	.0002	.0002	.0000	0
QX02	QX00C01	71944	22:59:59.476	2.0111	2.0098	.0013	.0011	.0023	18
DAPB	DZ12ABA	71968	22:59:59.480	.0042	.0035	.0007	.0006	.0000	0
QXPE	QXPDC00	71969	22:59:59.483	.0069	.0054	.0014	.0008	.0018	16
QX02	QX00C01	71953	23:00:00.362	2.0468	2.0449	.0019	.0016	.0052	51
QX38	QX37C01	71972	23:00:00.535	.0005	.0000	.0005	.0004	.0000	0

Performance Summary report

- Sort and summarize the data in your report
- Sorting criteria
 - Up to eight sort fields
 - Ascending or descending sequence (in any combination)
- Statistics functions available include:
 - Avg, Min, Max, Total, Std Deviation, Peak Percentile, Range, ...
- Reporting options:
 - Time Interval
 - Totals Level:
 - blank – suppress totals
 - 0 through 8 – optional sub-totals

Performance Summary report

```

EDIT SUMMARY Report Form - PS1          Row 1 of 401 More: >
Command ===> _____ Scroll ===> CSR

Description . . . Summary Report Form      Version (VRM): 710

Selection Criteria:
  _ Performance                               Page width . . 132

/  Field      Sort
/  Name +     K  O Type      Fn  Description
--  TRAN      K  A _____  ___  Transaction identifier
--  WEBDESC   K  A _____  ___  User field - Web description
--  TASKCNT   -  - _____  ___  Total Task count
--  RESPONSE  -  - _____  AVE Transaction response time
--  RESPONSE  -  - _____  MAX Transaction response time
--  DISPATCH -  - _____  AVE Dispatch time
--  CPU       -  - _____  AVE CPU time
--  SUSPEND   -  - _____  AVE Suspend time
--  SUSPEND   -  - _____  MAX Suspend time
--  DISPWAIT -  - _____  AVE Redispatch wait time
--  FCWAIT    -  - _____  AVE File I/O wait time
--  FCAMCT   -  - _____  AVE File access-method requests
--  IRWAIT    -  - _____  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 -----
--  ABCODEC   K  * _____  ___  Current ABEND code
--  ABCODEO   K  * _____  ___  Original ABEND Code
...

```

Performance Summary report

V5R4M0

CICS Performance Analyzer
Performance Summary

0SUM0001 Printed at 15:29:36 12/06/2018

Data from 00:17:50 11/23/2017 to 23:59:49 11/23/2017

Page 1

Tran	WEBDESC	#Tasks	Avg Response Time	Max Response Time	Avg Dispatch Time	Avg User CPU Time	Avg Suspend Time	Max Suspend Time	Avg DispWait Time	Avg FC Wait Time	Avg FCAMRq Count	Avg IR Wait Time	Avg SC24UHW Count	Avg SC31UHW Count
DSA2	wachinformation	876	.0261	1.2575	.0094	.0067	.0167	1.2470	.0040	.0000	43	.0000	0	8873477
DSA2	wactualdisbursements	130	.0339	.2196	.0196	.0137	.0142	.1928	.0047	.0000	200	.0000	0	9228932
DSA2	waddhistory	44309	.0272	6.2085	.0080	.0061	.0192	6.2001	.0032	.0000	29	.0000	0	8526714
DSA2	wadverseactionhierarchy	5	.0392	.0435	.0303	.0096	.0090	.0164	.0036	.0000	63	.0000	0	8919520
DSA2	wbankersnote	9200	.0326	3.0703	.0147	.0118	.0179	3.0548	.0039	.0000	57	.0000	0	8547006
DSA2	wcchupdate	37083	.0334	5.2381	.0103	.0074	.0231	5.2260	.0040	.0000	58	.0000	0	8918366
DSA2	wchecklist	4823	.3627	4.6495	.1993	.1375	.1635	4.4762	.0351	.0000	2494	.0000	0	9230632
DSA2	wclosingmethodrecommend	37	.1910	.3687	.1514	.0965	.0396	.1822	.0196	.0000	1846	.0000	0	9131641
DSA2	wclosingsupport	3632	.0916	2.3611	.0337	.0236	.0580	2.3270	.0077	.0000	370	.0000	0	9130782
DSA2	wcommunication	27439	.3698	4.5413	.2227	.1542	.1472	4.3050	.0388	.0000	2753	.0000	0	9249514
DSA2	wcontactupdate	5477	.0346	3.1524	.0129	.0093	.0218	3.1350	.0043	.0000	85	.0000	0	8951858
DSA2	wcontractfinancial	8179	.3128	3.7768	.1864	.1274	.1265	3.5585	.0316	.0000	2391	.0000	0	9306619
DSA2	wcontractissuenotificat	1959	.0325	1.0548	.0143	.0104	.0182	1.0395	.0034	.0000	98	.0000	0	9078754
DSA2	wcosignaturestatement	62	.0244	.0969	.0119	.0078	.0125	.0862	.0045	.0000	52	.0000	0	9078769
DSA2	wcreditbureaureports	13790	.1867	6.1528	.1401	.0946	.0466	6.1404	.0207	.0000	1707	.0000	0	9082305
DSA2	wcreditreversal	2	.0367	.0433	.0283	.0092	.0084	.0106	.0011	.0000	35	.0000	0	8591656
DSA2	wdecision	31634	.3303	6.9502	.1807	.1226	.1495	6.6450	.0312	.0000	2217	.0000	0	9142872
DSA2	wdisbursementdetails	2943	.0356	6.0530	.0174	.0134	.0182	6.0456	.0049	.0000	210	.0000	0	9216289
DSA2	wdisclosures	853	.1028	3.1773	.0193	.0132	.0835	3.1549	.0062	.0000	172	.0000	0	8951865
DSA2	wdiscountmaintutility	650	.0573	2.1343	.0215	.0151	.0357	2.1096	.0049	.0000	183	.0000	0	9092450
DSA2	wemploymentandincome	2015	.3116	4.4824	.2051	.1430	.1064	4.2515	.0314	.0000	2398	.0000	0	9244769
DSA2	wexceptions	22007	.2874	6.6658	.1744	.1177	.1130	6.4709	.0292	.0000	2152	.0000	0	9139205
DSA2	wextcontact	1	.0299	.0299	.0297	.0133	.0002	.0002	.0001	.0000	62	.0000	0	8658976
DSA2	wfinancial	1763	.3131	2.3143	.1818	.1252	.1313	2.1094	.0327	.0000	2510	.0000	0	9227588

Performance Wait Analysis report

- Summary of transaction activity by suspend wait time
- Summarized by transaction ID (default), highlights:
 - the resource that cause a transaction to be suspended
 - the CICS system resource bottlenecks that may be causing bad response time
- Enables a detailed analysis to be more easily performed
 - focusing on the problem resources identified

Performance Wait Analysis report

V5R4M0

CICS Performance Analyzer
Wait Analysis Report

WAIT0001 Printed at 7:29:12 8/28/2018

Data from 10:28:44 4/19/2018 to 11:15:00 4/19/2018

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Tran=XWRE

Summary Data

	Time		Count		Ratio
	Total	Average	Total	Average	
# Tasks			4506		
Response Time	641.8387	0.1424			
Dispatch Time	246.4258	0.0547	556991	123.6	38.4% of Response
CPU Time	51.9394	0.0115	556991	123.6	21.1% of Dispatch
Suspend Wait Time	395.4128	0.0878	556991	123.6	61.6% of Response
Dispatch Wait Time	3.4036	0.0008	552485	122.6	0.9% of Suspend
QR TCB Redispach Wait Time	0.3228	0.0001	31911	7.1	9.5% of Dispwait
Resource Manager Interface (RMI) elapsed time	3.0753	0.0007	45060	10.0	0.5% of Response
Resource Manager Interface (RMI) suspend time	0.0000	0.0000	0	0.0	0.0% of Suspend

Suspend Detail

	Suspend Time			Graph	Count	
	Total	Average	%age		Total	Average
SOIOWTT Inbound Socket I/O wait time	357.3830	0.0793	90.4%	*****	17159	3.8
IRIOWTT MRO link wait time	34.8886	0.0077	8.8%	*	9012	2.0
DSCHMDLY Redispach wait time caused by change-TCB mode	3.0295	0.0007	0.8%		521080	115.6
LMDELAY Lock Manager (LM) wait time	0.0690	0.0000	0.0%		5452	1.2
DSPDELAY First dispatch wait time	0.0424	0.0000	0.0%		4506	1.0
N/A Other Wait Time	0.0004	0.0000	0.0%		218	N/C

Cross-System Work report

- Combines CMF records from your connected systems to produce a consolidated unit-of-work report
 - Default report includes only the performance class records that have the same network unit-of-work in multiple records in a single or multiple systems
- Records can be sorted by:
 - Network unit-of-work prefix and suffix
 - Syncpoint count concatenated with descending stop time (default) or ascending start time
 - Generic APPLID
- Report can be tailored using report forms
- Selection criteria by record or unit-of-work

Tran	Userid	SC	TranType	Term	LUName	Request Type	Program	Fcty T/Name	Conn Name	NETName	UOW Seq	APPLID	Task	R T	Stop Time	Response Time	
UOWID=51D469372260																	
TKP0	CICSPRD	SD	U			AP:	P1VCTKP0			EBD1.CICSPSCG	5	CICSPSCG	96308	T	10:01:18.116	.4156	
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	3	CICSPACG	78408	T	10:01:17.780	.0015

TKP0	CICSPRD	SD	U			AP:	P1VCTKP0			EBD1.CICSPSCG	6	CICSPSCG	96361	T	10:01:20.352	.7926	
ISCA	CICSPRD	TO	UMD		<AFK	CICSPSCG	AP:F---	E1VMMSP0	T/<AFK	PSOS	EBD1.CICSPSCG	1	PS05CICG	39411	T	10:01:19.782	.2079

TKP0	CICSPRD	SD	U			AP:	P1VCTKP0			EBD1.CICSPSCG	4	CICSPSCG	96366	T	10:01:19.952	.2975	
ISCA	CICSPRD	TO	UMD		<AFL	CICSPSCG	AP:F---	E1VMMSP0	T/<AFL	PSOS	EBD1.CICSPSCG	1	PS05CICG	39412	T	10:01:19.692	.0352

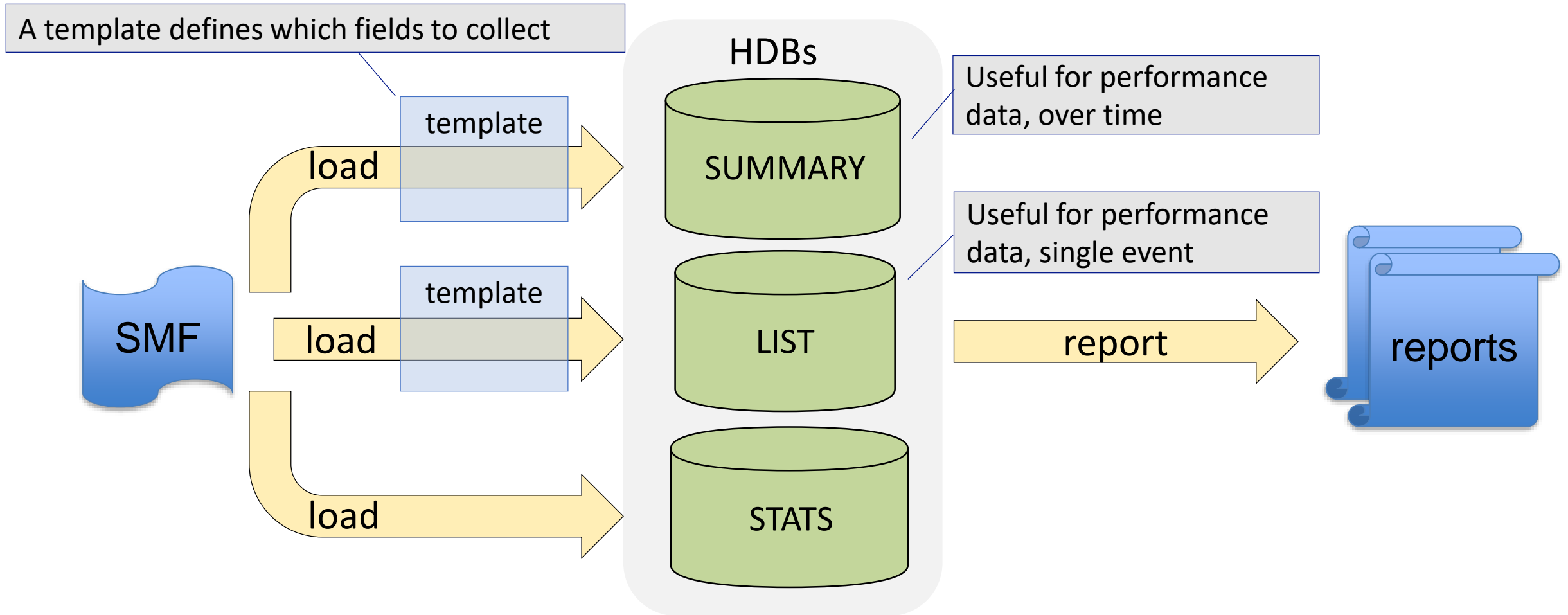
TKP0	CICSPRD	SD	U			AP:	P1VCTKP0			EBD1.CICSPSCG	5	CICSPSCG	96367	T	10:01:19.925	.2671	
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	3	CICSPACG	78418	T	10:01:19.697	.0014

TKP0	CICSPRD	SD	U			AP:	P1VCTKP0			EBD1.CICSPSCG	20	CICSPSCG	96373	T	10:01:22.579	2.8387	
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	18	CICSPACG	78440	T	10:01:22.285	.0025
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	16	CICSPACG	78437	T	10:01:21.895	.0015
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	11	CICSPACG	78432	T	10:01:21.474	.0116
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	9	CICSPACG	78429	T	10:01:21.128	.0020
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	6	CICSPACG	78427	T	10:01:20.794	.0028
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	4	CICSPACG	78422	T	10:01:20.298	.0015
ISCA	CICSPRD	TO	UMD		<AFL	CICSPSCG	AP:F---	E1VMMSP0	T/<AFL	PSOS	EBD1.CICSPSCG	1	PS05CICG	39414	T	10:01:19.855	.1116

TKP0	CICSPRD	SD	U			AP:	P1VCTKP0			EBD1.CICSPSCG	5	CICSPSCG	96378	T	10:01:20.109	.2484	
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	3	CICSPACG	78419	T	10:01:19.905	.0028

TKP0	CICSPRD	SD	U			AP:	P1VCTKP0			EBD1.CICSPSCG	5	CICSPSCG	96394	T	10:01:20.642	.4295	
ISCU	CICSPRD	TO	UMD		<BCC	CICSPSCG	AP:F---	M1VMMFRT	T/<BCC	PSOS	EBD1.CICSPSCG	3	CICSPACG	78423	T	10:01:20.302	.0009

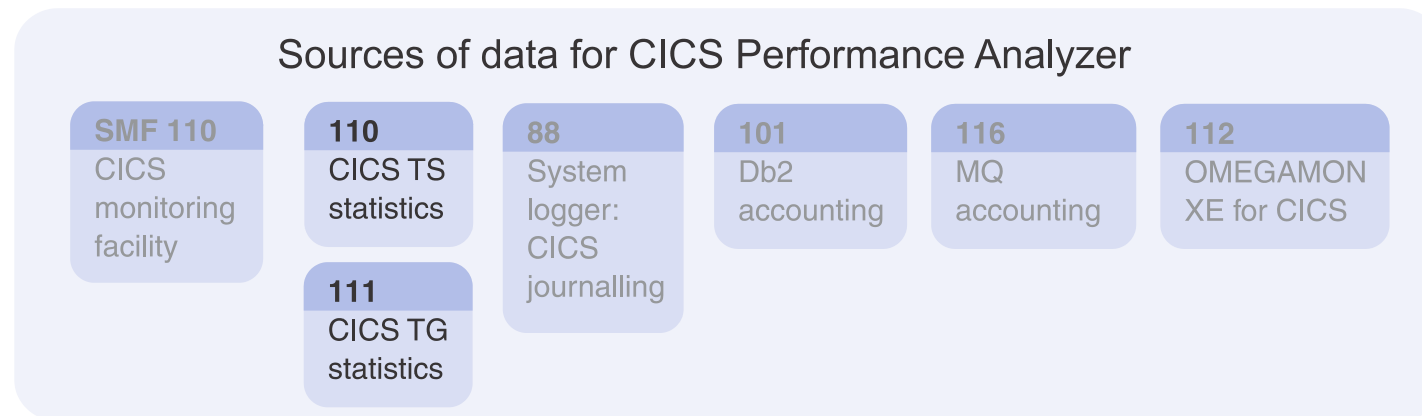
CICS PA historical database (HDB)



CICS PA STATISTICS REPORTING

CICS statistics

- Statistics domain collects a variety of data and writes it to the SMF data set
- Provides information about resources and domains
 - Counts and wait times for resource requests
 - Processor and storage use
- Some statistics counters can be reset when records are cut
- Interval recording can be set on/off using STATRCD (SIT)
- Records can be processed by DFHSTUP, DFH0STAT or CICS PA



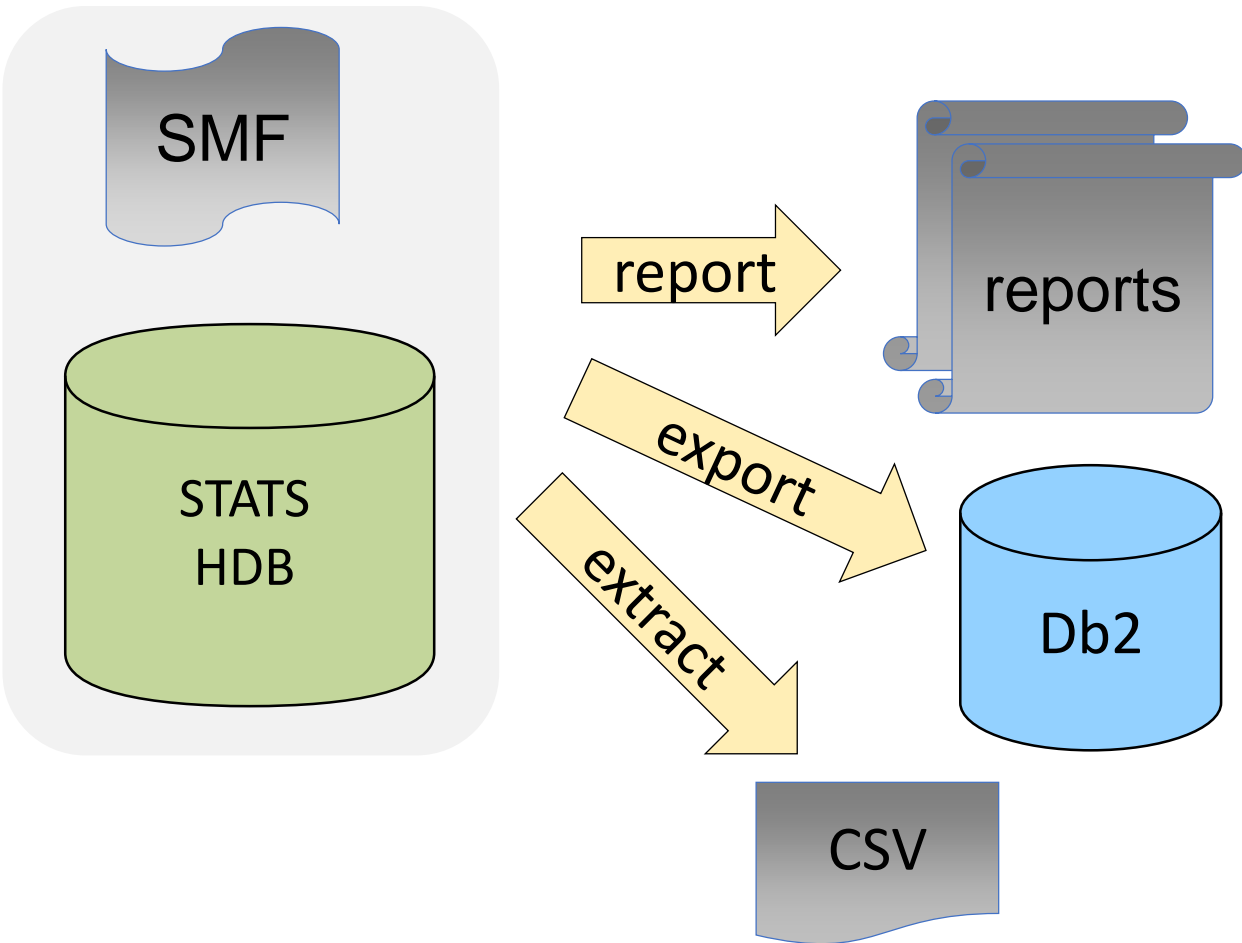
When does CICS collect statistics?

- **Interval statistics**
 - At intervals set: default every hour
 - Requires STATRCD=ON in SIT
 - Can be turned on using SET command (CEMT SET STATISTICS)
- **End-of-day statistics**
 - When CICS shuts down either normal or immediate
 - At midnight (by default) in 24/7 operations
- **Requested statistics**
 - EXEC CICS Perform statistics record
 - EXEC CICS Set statistics RECORDNOW
 - CEMT Perform statistics
 - Can be issued with any combination of resources

When does CICS collect statistics?

- **Requested Reset statistics**
 - EXEC CICS Perform statistics record RESTNOW
 - EXEC CICS Set statistics RECORDNOW RESETNOW
 - CEMT Perform statistics all RESTNOW
 - Differs from Request Statistics as counters are reset
 - Causes loss of data since the last statistics interval
- **Unsolicited statistics**
 - Collected for resources allocated or de-allocated
 - Written to SMF before resource is deleted
 - Produced for resources such as, Atom Feeds, Autoinstalled Terminals, Files, Db2, FEPI, IPCONN, etc.

CICS statistics and CICS server statistics support



- Comprehensive reporting and analysis of CICS **TS** and **TG** statistics
- **Forms** for personalized reports
- **Sorting** by fields in the form
- **Batch** reporting
- **Online** reporting

Statistics reporting

- From an SMF files (option 6 **Statistics** > 4 **Process SMF File**), or
- From a STATS HDB (option 6.3, select a STATS HDB, 1 **Start online reporting**, press Enter)

```
REPORT                               Statistics Intervals                               Row 1 from 77
Command ==> _____ Scroll ==> CSR

Select the required CICS Statistics interval.

/ System Image VRM Type --- Collection Time --- Reset Duration
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:36 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:42 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:44 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:45 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:46 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:47 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:48 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:49 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:51 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:52 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:53 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:02:55 Wed 13:43:46
- IYCUZC01 MV2A 700 TS USS 2015/07/29 14:03:07 Wed 13:23:53
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:04:42 Wed 13:43:46
- IYCUZC31 MV2A 690 TS USS 2015/07/29 14:04:52 Wed 13:43:46
```

Select from the list of statistics collection intervals in the selected SMF files or HDB

Accessing the statistics reports in ISPF

What are the average and peak response times?

Am I hitting the MXT limit?

How was the Response Time affected?

What are the z/OS WLM settings?

What are the CICS Dispatcher settings?

```
REPORT                               Statistics Reports
Command ==> _____

System: IYCYZC20/MV2E                Type: INT  Interval:

___ - ___                             ** Reports **
___ - ___                             Regions
___ - ___                             Transaction Manager
___ - ___                             Monitoring
___ - ___                             CICS Dispatcher
___ - ___                             Dispatcher Overview
___ - ___                             Dispatcher TCB Modes
___ - ___                             Dispatcher TCB Pools
___ - ___                             ...
```

Dispatcher overview

```
REPORT      Dispatcher Overview                               Line 00000001  Col 001 080
Command ==> _____ Scroll ==> PAGE

System: IYCYZC2N/MV2E      Type: INT  Interval: 2015/03/25 16:00:00 Wednesday

Global Statistics Length . . . . . :                128
CICS TCB MODEs . . . . . :                18
CICS TCB POOLs . . . . . :                 4
Current ICV Time . . . . . :             00.00.01.000
Current ICVR Time . . . . . :            00.00.05.000
Current ICVTSD Time . . . . . :          00.00.00.000
Current PRTYAGE Time . . . . . :         00.00.32.768
Concurrent Subtask TCBs . . . . . :                0
Current MRO (QR) Batching . . . . . :                1
Current Tasks . . . . . :                 29
Peak Tasks . . . . . :                   31
Dispatcher Start Time GMT . . . . . : 2015-03-10-13.39.06
Dispatcher Start Time Local . . . . . : 2015-03-10-13.39.06
Address Space CPU Time . . . . . :          00.00.00.056095
Address Space SRB Time . . . . . :          00.00.00.006233
Excess TCB Scans . . . . . :                1
Excess TCB Scans No TCB Detached . . :                1
Excess TCBs Detached . . . . . :                0
```

Batch Summary Statistics Reporting

Summarize statistics metrics by region or interval

V5R4M0

CICS Performance Analyzer
Statistics Summary

SSUM0001 Printed at 14:40:34 10/11/2018

Data from 11:35:00 2015/01/26 to 14:09:42 2015/07/29

APPLID	Collection Time	Tot Transact	Tot Times at MAXTASK	Max Peak Active User Transact	Max Peak Queued User Transact	Tot Total Active User Transact	Tot Total Delayed User Transact	Tot Total Queuing Time for MAXTASK
IYCUZC25	2018/03/29-12:00:00	265	0	44	0	229	0	00.00.00.000000
IYCUZC26	2018/03/29-12:00:00	511	0	6	0	475	0	00.00.00.000000
IYCUZC31	2018/03/29-12:00:00	186190	0	166	0	183806	0	00.00.00.000000
IYCUZC32	2018/03/29-12:00:00	204670	0	165	0	202088	0	00.00.00.000000
IYCUZC33	2018/03/29-12:00:00	192264	0	192	0	189205	0	00.00.00.000000
IYCUZC34	2018/03/29-12:00:00	420673	0	407	0	417557	0	00.00.00.000000
IYCUZC41	2018/03/29-12:00:00	566589	0	472	0	566159	0	00.00.00.000000
IYCUZC42	2018/03/29-12:00:00	432849	0	473	0	432474	0	00.00.00.000000
IYCYZC2G	2018/03/29-12:00:00	22	0	4	0	1	0	00.00.00.000000
IYCYZC2L	2018/03/29-12:00:00	22	0	5	0	1	0	00.00.00.000000
IYCYZC2M	2018/03/29-12:00:00	22	0	4	0	1	0	00.00.00.000000
IYCYZC2N	2018/03/29-12:00:00	23	0	4	0	1	0	00.00.00.000000
IYCYZC2O	2018/03/29-12:00:00	132038	13	500	50	131737	140	00.02.56.232918

Statistics alerts

- Help you find potential **tuning opportunities**
- Identify **trends** that could lead to poor CICS performance or even unnecessary CICS system outages
- Can help you focus your analysis efforts on:
 - specific CICS regions
 - a time of day
 - specific types of CICS resources

Statistics alerts

EDIT Statistics Alert Definition - SAMP1 Row 4 of 226 More: >
Command ==> _____ Scroll ==> CSR

Description . . . CICS TS Sample Alerts

Specify the Conditions for this Alert Definition.

- Alert	<u>System dumps requested</u>					
Formula	<u>SYS DUMPS TAKEN</u>					
						+
Critical	<u>>5</u>	Warning	<u>>0</u>	Info	<u></u>	
- Res					List	<u></u>
- APPLID	<u></u>					+

- Alert	<u>Maximum tasks reached</u>					
Formula	<u>XMGAMXT</u>					
						+
Critical	<u>>10</u>	Warning	<u>>0</u>	Info	<u></u>	
- Res					List	<u></u>
- APPLID	<u></u>					+

- Alert	<u>Peak tasks (% of maximum tasks)</u>					
Formula	<u>XMGPAT / XMGAMXT * 100</u>					
						+
Critical	<u></u>	Warning	<u>>=90</u>	Info	<u>>=80</u>	
- Res					List	<u></u>
- APPLID	<u></u>					+

Statistics alerts

V5R4M0

CICS Performance Analyzer Statistics Alerts - List by APPLID

STAL0001 Printed at 14:20:12 8/15/2018

Data from 16:15:00 7/27/2018 to 16:55:00 7/27/2018

System: IYCYZC20 Image: MV2E VRM: 710 Type: TS

Sev	Alert	Threshold	Actual	Collection Time	Type
C	File string waits File Name = TRMNALDB	>10	37	2018-07-27 16.15.00	INT
C	File buffer waits LSR Pool Number = 5	>10	280	2018-07-27 16.15.00	INT
C	Maximum tasks reached	>10	12	2018-07-27 16.15.00	INT
C	Temporary storage: buffer waits on DFHTEMP	>10	1233	2018-07-27 16.15.00	INT
C	File string waits File Name = INVENTOR	>10	462	2018-07-27 16.20.00	INT
C	File string waits File Name = PARTS	>10	264	2018-07-27 16.20.00	INT
C	File string waits File Name = TRMNALDB	>10	16	2018-07-27 16.20.00	INT
C	File buffer waits LSR Pool Number = 5	>10	65	2018-07-27 16.20.00	INT

Statistics alerts via the Explorer

- Critical, warning, information
- Opening a stat provides its individual stats record if available

Alert Description	Start Date	Start Time	Applid	MVS ID	Resource ...	Resource ...	Actual	Threshold	Type	Version Re...	Interval ...	Interval ...
Critical												
Maximum active transactions in class reached	2009-06-11	01.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	1	01.00.00
Maximum active transactions in class reached	2009-06-11	10.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	10	01.00.00
Maximum active transactions in class reached	2009-06-11	09.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	9	01.00.00
Maximum active transactions in class reached	2009-06-11	08.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	8	01.00.00
Maximum active transactions in class reached	2009-06-11	07.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	7	01.00.00
Maximum active transactions in class reached	2009-06-11	06.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	6	01.00.00
Maximum active transactions in class reached	2009-06-11	05.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	5	01.00.00
Maximum active transactions in class reached	2009-06-11	04.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	4	01.00.00
Maximum active transactions in class reached	2009-06-11	03.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	3	01.00.00
Maximum active transactions in class reached	2009-06-11	02.00.00	IYDZEJ01	MV2F	Tclass Nam...	DFHTCLO2 ...	30	>10	INT	660	2	01.00.00
Warnings												
Writes greater than DFHTEMP CI size	2009-06-11	10.00.00	IYDZEJ01	MV2F	...	...	60	>0	INT	660	10	01.00.00
Writes greater than DFHTEMP CI size	2009-06-11	09.00.00	IYDZEJ01	MV2F	...	...	60	>0	INT	660	9	01.00.00
Writes greater than DFHTEMP CI size	2009-06-11	08.00.00	IYDZEJ01	MV2F	...	...	60	>0	INT	660	8	01.00.00
Writes greater than DFHTEMP CI size	2009-06-11	07.00.00	IYDZEJ01	MV2F	...	...	60	>0	INT	660	7	01.00.00
Writes greater than DFHTEMP CI size	2009-06-11	06.00.00	IYDZEJ01	MV2F	...	...	60	>0	INT	660	6	01.00.00
Writes greater than DFHTEMP CI size	2009-06-11	05.00.00	IYDZEJ01	MV2F	...	...	60	>0	INT	660	5	01.00.00
Writes greater than DFHTEMP CI size	2009-06-11	04.00.00	IYDZEJ01	MV2F	...	...	60	>0	INT	660	4	01.00.00
Writes greater than DFHTEMP CI size	2009-06-11	03.00.00	IYDZEJ01	MV2F	...	...	60	>0	INT	660	3	01.00.00
Writes greater than DFHTEMP CI size	2009-06-11	02.00.00	IYDZEJ01	MV2F	...	...	60	>0	INT	660	2	01.00.00
Writes greater than DFHTEMP CI size	2009-06-11	01.00.00	IYDZEJ01	MV2F	...	...	67	>0	INT	660	1	01.00.00
Information												
EDSA peak	2009-06-11	02.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	2	01.00.00
EDSA peak	2009-06-11	04.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	4	01.00.00
EDSA peak	2009-06-11	03.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	3	01.00.00
EDSA peak	2009-06-11	05.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	5	01.00.00
EDSA peak	2009-06-11	06.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	6	01.00.00
EDSA peak	2009-06-11	08.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	8	01.00.00
EDSA peak	2009-06-11	07.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	7	01.00.00
EDSA peak	2009-06-11	09.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	9	01.00.00
EDSA peak	2009-06-11	10.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	10	01.00.00
EDSA peak	2009-06-11	01.00.00	IYDZEJ01	MV2F	...	...	188416K	>0K	INT	660	1	01.00.00

Start Date	Start Time	Applid	MVS ID	Version R...	Type	Interval ...	Interval ...	Transacti...	Attac...
2009-06-11	10.00.00	IYDZEJ01	MV2F	660	INT	01.00.00	10	DFHTCLO2	

PLUG-IN TO THE CICS EXPLORER

CICS PA plug-in to the CICS Explorer

- Graphical representation of performance and statistics data
- View statistics and performance alerts
- View data from CSV files or loaded from an HDB into Db2
- Customizable sheet view
- Bar charts, pie charts, and other graphs

CICS PA plug-in to the CICS Explorer

The screenshot displays the IBM CICS Explorer interface with several key components:

- Explorer View (Left):** A tree view showing the file structure, including folders like 'com.ibm.cics.ia.runtime' and 'PA Data', and files like 'XPLR_C.csv'.
- Threadsafte Table (Top Center):** A table showing transaction details. A callout box points to this table with the text: "See extracts of the file in a raw data form".
- Threadsafte Bar Chart (Middle):** A bar chart showing 'Time (seconds)' on the y-axis and 'Transaction ID (and number of transactions)' on the x-axis. A callout box points to this chart with the text: "... or follow analysis scenarios like Threadsafte to highlight issues".
- Threadsafte Analysis Summary (Bottom):** A summary view for a specific transaction (KWO1) showing metrics like 'CPU time average' and 'User Dispatch time average'. A callout box points to this summary with the text: "Flexibility with what you want to see".
- Outline View (Right):** A hierarchical view of the CICS program structure, showing various programs like 'BRLH', 'BROF', 'HO00', etc. A callout box points to this view with the text: "Powerful active outline view speeds selection".

'Drill' into data files using the Explorer view

See extracts of the file in a raw data form

Powerful active outline view speeds selection

... or follow analysis scenarios like Threadsafte to highlight issues

Flexibility with what you want to see

CICS PA plug-in to the CICS Explorer

The screenshot displays the CICS PA plug-in interface within IBM Explorer for z/OS. The interface is divided into several panels:

- Transaction summary (106/106 rows):** A table showing transaction details for Applid IVDZEJ02.

Start Date	Start time	Applid	Transacti...	Task ter...	Respons...	User Disp...	User Disp...	User CPU...	User CPU...	Suspend ...	Suspend ...	Dispat	
2010-12-10	12:00.00	IVDZEJ02	DES		2	4.277492	72.500000	0.125923	72.500000	0.081853	72.500000	4.151569	71.50
2010-12-10	12:20.00	IVDZEJ02	/FOR		2794	0.001981	1.017180	0.001265	1.017180	0.000429	1.017180	0.000717	0.01
- Alerts:** A table listing alerts such as "Maximum active transactions in class reached" and "Enqueues waited in ENQ pool - local".
- XMR TRANSACTION:** A line chart showing XMR transaction statistics for Applid IVDZEJ02, Transaction /FOR, with data points from 13:45:00 to 13:53:00.
- XMC TRANCLASS:** A line chart showing XMC classes statistics for Applid IVDZEJ02, Transaction class TCLSDSW1, with data points from 13:42:00 to 13:53:00.
- Performance averages at a glance:** Four circular gauges showing CICS Response time, Suspend time detail, CPU time, and CICS TCB usage.
- Response measurement:** A large pie chart showing the breakdown of response time into User Dispatch time, User CPU time, Suspend time, and Dispatch wait time.

IBM CICS Explorer - C:\Users\IBM_ADMIN\cicsexplorer

Transaction summary (196/196 rows) DE28

Start date=2014-01-29, Start time=15.15.00, Applid=IYCYZC2Q, Transaction ID=DE28

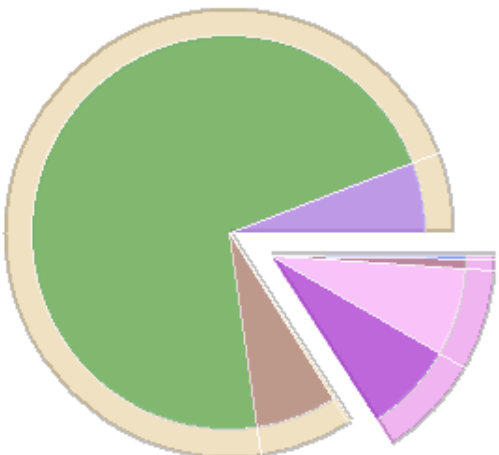
Start date=2014-01-29, Start time=15.15.00, Applid=IYCYZC2Q, Transaction ID=DE28

Transaction response time

Average Response time of 0.026566 seconds.

Suspend time

2,525 transaction(s): 0.026566 seconds response time. 0.001041 seconds user dispatch time. 0.025525 seconds suspend time per transaction.



- Restrict tree nodes to those applicable to visible chart.
- Include available non-zero values only

Suspend time component	Time (average)	Count (average)	%Suspend time	%Relative
▲ Suspend time	0.025525	8.317228	-	-
▲ Total I/O wait time	0.021466	0	84.10%	84.10%
TC I/O wait time	0	0	-	-
TS I/O wait time	0	0	-	-
Shared TS I/O wait time	0	0	-	-
TD I/O wait time	0.001483	2.039604	5.81%	6.91%
JC I/O wait time	0.018256	2.439208	71.52%	85.05%
File I/O wait time	0.001726	2.459406	6.76%	8.04%
RLS File I/O wait time	0	0	-	-
CFDT wait time	0	0	-	-
Inbound socket I/O wait time	0	0	-	-
IPCONN I/O wait time	0	0	-	-
Outbound socket I/O wait time	0	0	-	-
Inter-Region I/O wait time	0	0	-	-
LU61 I/O wait time	0	0	-	-
LU62 I/O wait time	0	0	-	-
FEPI I/O wait time	0	0	-	-
▲ Other wait time	0.004059	0	15.90%	15.90%
First dispatch delay time	0.001892	1	7.42%	46.64%

Statistics Alerts Transaction Performance Alerts

Records from: 2013-04-29 13:02:56 (Last twelve months)

Start Timestamp	Stop Timestamp	Applid	Trans...	Task nu...	Alert fiel...	Alert fiel...	Threshold	Resourc...	Resourc...	Resourc...	Resourc...	Resourc...	Resourc...	Sequen...	Alert de...
2014-01-29 15:44:53.456889	2014-01-29 15:45:06.686118	IYCYZC2Q	CEMT	13340	SUSPEND	13.225562	> +4.0	TRAN	CEMT					1	SUSPALR1
2014-01-29 15:44:15.891568	2014-01-29 15:44:20.09438	IYCYZC2Q	CEMT	1789	SUSPEND	4.201263	> +4.0	TRAN	CEMT					1	SUSPALR1

Summary

What is CICS Performance Analyzer?

- A tool providing reports for ongoing system management and measurement of all aspects of CICS application performance

What's its value?

- Reduces time and resources needed to analyze offline performance data for tuning and capacity planning
- CICS PA is IBM's strategic SMF reporter for CICS. It complements Omegamon XE for CICS (on-line tool)

How does it enhance the management of CICS?

- CICS Performance Analyzer allows 'offline' analysis
- Provides ongoing system management and measurement reports for CICS application performance
- Enables deep-dive CICS performance analysis and understanding of usage trends
- Aids capacity planning and tuning
- Helps quickly identify trends, anticipate and prevent online performance problems

We want your feedback!

- Please submit your feedback online at
 - <http://conferences.gse.org.uk/2018/feedback/GI>
- Paper feedback forms are also available from the Chair person
- This session is **GI**
- Ezriel Gross, CICS Consultant

