



IBM Software Group

CICS Performance Analyzer for z/OS Version 1 Release 3

Technical Overview



CICS Tools | IBM UK Laboratories, Hursley Park

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- ▶ Introduce yourself and the topic
- ▶ CICS Performance Analyzer for z/OS Version 1 Release 3 was announced on the 5th August, 2003 and generally available on 29th August, 2003.
- ▶ It supports CICS Transaction Server for z/OS Version 2 (all releases), CICS Transaction Server for OS/390 Version 1 (all releases) and CICS for MVS/ESA Version 4.1.
- ▶ Purpose of today's session is to introduce you to the latest release of the CICS PA product, show you the ISPF interface as well as some of the reports and data extracts.

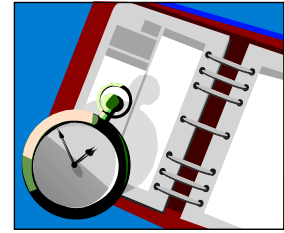
Preface

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 - ▶ DB2, QMF
 - ▶ DFSMS/MVS, TotalStorage
 - ▶ IBM
 - ▶ MQSeries
 - ▶ OS/390, S/390, z/OS
 - ▶ RMF, Resource Measurement Facility
 - ▶ WebSphere
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Presentation Overview

- CICS PA Overview
- CICS PA Benefits
- CICS PA Dialog ...
 - ▶ Defining your CICS Systems, DB2 Subsystems, ...
 - ▶ Requesting Reports and Extracts
 - ▶ Tailoring ...
 - Report Forms, Selection Criteria, Object Lists, ...
- CICS PA Reports and Extracts
- CICS PA Historical Database
- Summary



- ▶ Overview of the presentation..... includes an overview of the CICS PA product, it's potential benefits to customers, a comprehensive look at the ISPF dialog interface, requesting reports, tailoring and examples of some of the CICS PA reports, data extracts and the Historical Database (HDB) facility. The presentation finishes with a summary of the CICS PA product.

What is CICS PA ?

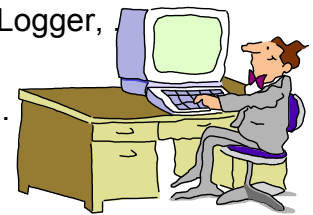
- CICS Performance Analyzer for OS/390
 - ▶ Comprehensive Performance Reporting for CICS
 - It is **NOT** an Online Monitor - Batch Reporting Only!
 - ▶ CICS Monitoring Facility (CMF) data (SMF 110)
 - Performance, Resource and Exception
 - ▶ DB2 Accounting records (SMF 101)
 - ▶ WebSphere MQ Accounting records (SMF 116)
 - ▶ MVS System Logger records (SMF 88)
- Program Product - 5655-F38
 - ▶ Not part of CICS Transaction Server for z/OS
- Complements the standard CICS utilities ...
 - ▶ DFH\$MOLS, DFHSTUP and DFH0STAT



- ▶ CICS Performance Analyzer (CICS PA) is a batch performance reporting tool. It is NOT an online performance monitoring tool. It uses the CICS SMF 110 data collected by the CICS Monitoring Facility (CMF), DB2 Accounting data (SMF 101), WebSphere MQ Accounting data (SMF 116), and MVS System Logger data (SMF 88), to produce a wide range of batch reports and data extracts that can be utilized to analyze CICS system and application performance.
- ▶ CICS PA is not part of CICS Transaction Server for z/OS but is a separately orderable product.
- ▶ CICS PA is designed to complement and add value over the standard CICS TS monitoring and statistics utilities and sample programs.

CICS PA Benefits

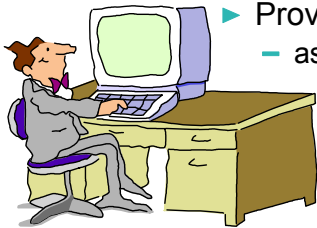
- **Ease of use ...**
 - ▶ No additional setup or customization required
 - ▶ Familiar CICS terms and concepts
- **ISPF Dialog to build, maintain, submit reports**
 - ▶ Tailor your reports easily using Report Forms
 - ▶ Extensive online help available, field descriptions, ...
- **Extensive Tabular Reports and Graph Reports**
 - ▶ List, List Extended, Summary, Wait Analysis, Totals, ...
 - ▶ Resource Usage, Cross-System, MVS Workload Manager, ...
 - ▶ CICS BTS, DB2, WebSphere MQ, MVS System Logger, ...
- **Extract Data Sets**
 - ▶ Cross-System Work, Export, Record Selection, ...
- **Historical Database Capability**
 - ▶ Trending and Capacity Planning



- ▶ CICS PA has an easy to use ISPF dialog interface that can be used to create the command language and JCL that is used to run the reporting program in batch.
- ▶ It has extensive online help facilities and a powerful command language that is used to select, sort and customize the report formats and data extracts.

CICS PA Benefits ...

- CICS PA can help
 - ▶ Analyze CICS application performance
 - ▶ Improve CICS resource usage
 - ▶ Evaluate the effects of CICS system 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
 - assisting future growth estimates



- ▶ Here are some of the benefits that can be realized using the CICS Performance Analyzer:-
 - ▶ Analyze CICS application performance
 - ▶ Improve transaction response times
 - ▶ Analyze and improve CICS transaction resource usage
 - ▶ Provides information on usage trends for capacity planning activities.

CICS PA Benefits - Notes

CICS PA reports on all aspects of your CICS system activity and resource usage. You can use the CICS PA Interactive System Productivity Facility (ISPF) dialog to generate your report and extract requests. The dialog assists you in building the reports and extracts specific to your requirements without you having to understand the complexity of the CICS Monitoring Facility (CMF) data, and the DB2 and WebSphere MQ Accounting data.

CICS PA provides a comprehensive suite of reports and data extracts for use by:-

- System Programmers - to track overall CICS system performance, evaluate the effects of CICS system tuning efforts.
- Applications Programmers - to analyze the performance of their applications and the resources they use.
- DBAs - to analyze the usage and performance of CICS Resource Managers and database systems such as DB2 and IMS (DBCTL).
- Managers - to ensure transactions are meeting their required Service Levels and measure trends to help plan future requirements and strategies.



► This is a notes page for the audience.

CICS PA Reports and Extracts

- CICS PA reports and data extracts analyze all aspects of your CICS systems, including ...
 - ▶ CICS application performance
 - ▶ CICS system resource usage
 - ▶ Cross-System performance ...
 - including MRO, ISC and DB2 Subsystems
 - ▶ Transaction Resource Usage
 - File and Tsqueue resource usage
 - ▶ External Subsystems used by your CICS applications ...
 - including WebSphere MQ, DB2 and IMS (DBCTL)
 - ▶ MVS Workload Manager (WLM)
 - ▶ CICS Business Transaction Services (BTS)
 - ▶ Exception events that cause performance degradation



- ▶ Here are some of the extensive range of reports and extracts that can be produced using CICS PA.
- ▶
- ▶ More information on the reports and extracts is provided on the following notes pages.

CICS PA Reports and Extracts - Notes

The flexibility of CICS PA allows you to easily tailor your report and extract requests to meet your specific performance reporting and analysis requirements. CICS PA allows you to keep pace with the ever-changing nature of CICS by providing a flexible and easy to use dialog that allows you to report on all aspects of your CICS system's performance.

CICS Transaction Server for z/OS Version 2.2 collects over 239 specific performance data fields in 17 groups. Also, if the monitoring MCT options APPLNAME=YES and RMI=YES are specified, an additional 10 performance data fields in 2 groups are collected. And, if used, DBCTL adds a further 32 specialized fields. With the advent of CICS Transaction Server Version 2 and EJB support, the number of groups and data fields within existing groups continues to grow.

CICS PA can process CMF data from a single CICS system, or from multiple CICS systems that share the transaction workload by using MRO or ISC. Using the **Cross-System report** provides a consolidated report showing the complete transaction activity across connected CICS systems.

The **Transaction Resource Usage reports** provide a detailed analysis of the Resource class records collected by the CICS Monitoring Facility (CMF).

The **Workload Activity report** provides a detailed and/or summary report highlighting the MVS Workload Manager (WLM) Service Class and Report Class, and reporting phase for each transaction.

The **CICS Business Transaction Services (BTS) report** is a detailed report that shows the correlation of the transactions performed by the same or different CICS systems on behalf of a single CICS Business Transaction Services (BTS) process.



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CICS PA Reports and Extracts ...

- ▶ DB2 reports using DB2 Accounting records
 - List, Short Summary, Long Summary, ...
- ▶ MQ reports using WebSphere MQ Accounting records
 - List, Summary, ...
- ▶ MVS Logger reports using System Logger records
 - List, Logstream Summary, Structure Summary, ...
- ▶ Performance Data Extracts ...
 - Export (Detail or Summary)
 - Import into PC Spreadsheet and Database Tools
- ▶ Record Selection Extract ...
 - Creates a new SMF Data Set - data volume reduction
 - CICS SMF 110 CMF Performance Records
 - DB2 SMF 101 Accounting Records
 - WebSphere MQ SMF 116 Accounting Records
- ▶ Historical Database
 - Trending and Capacity Planning

- ▶ This visual continues with the reports and extracts that can be produced in CICS PA Version 1.3.
- ▶ Some of the new reports and extracts in CICS PA V1.3, include WebSphere MQ Reports, enhancements to the Record Selection Extract, along with a new Historical Database (HDB) capability which provides a flexible and easy-to-use facility for collecting and managing historical performance data for your CICS systems.

CICS PA Reports and Extracts - Notes

The **Exception List** and **Summary reports** provide a detailed analysis of the exception events recorded by the CICS Monitoring Facility (CMF).

The **DB2 reports** combine the CICS CMF performance class records (SMF 110) with the DB2 Accounting records (SMF 101) belonging to the same network unit-of-work that includes some DB2 activity to produce detail and/or summary reports showing DB2 usage for your CICS systems.

The **WebSphere MQ reports** process WebSphere MQ Accounting (SMF 116) records to produce detail and/or summary reports of the MQ usage by your CICS systems.

The **MVS Logger reports** process the MVS System Logger (SMF 88) records in order to provide information on the System Logger logstreams and coupling facility structures that are used by CICS Transaction Server for logging, recovery and backout operations.

The **Exported Performance Data Extract** creates a delimited text file of CMF performance class data which can then be imported by database or spreadsheet tools for further processing and analysis.

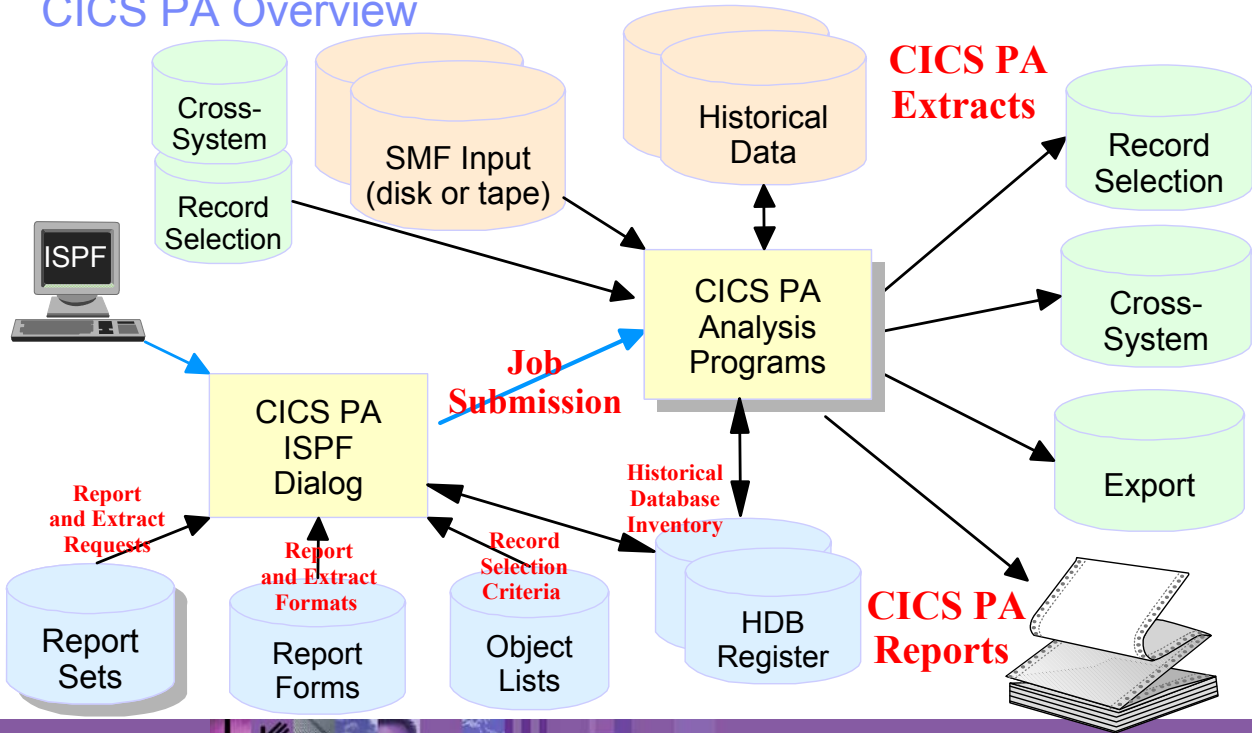
The **Record Selection Extract** provides a facility that allows you to create a smaller extract file containing only the CMF performance (and optionally DB2 Accounting and/or WebSphere MQ Accounting) records that are of interest to you. The Record Selection Extract can be used to filter large SMF files, that can then be used as input to CICS PA, allowing more efficient reporting and analysis.

The **Historical Database (HDB)** facility provides a flexible and easy-to-use facility for managing and reporting historical performance data for your CICS systems.



► This is a notes page for the audience.

CICS PA Overview



- This foil shows the main components of CICS PA; including the TSO Interactive System Productivity Facility (ISPF) dialog, it's related data sets and the CICS PA batch analysis and reporting programs.

CICS PA Overview - Notes

The CICS PA analysis programs use the performance and accounting data written to MVS System Management Facility (SMF) data sets. This includes the data collected by the CICS Monitoring Facility (CMF) and written as SMF type 110 records, DB2 Accounting data written as SMF type 101 records, WebSphere MQ Accounting data written as SMF type 116 records, and the MVS System Logger data written as SMF type 88 records.

You can produce all the CICS PA reports and extracts by simply defining your CICS Systems (APPLIDs), MVS Images, DB2 Subsystems, MQ Subsystems (WebSphere MQ Queue Managers), and MVS System Logger along with their associated unloaded SMF data sets.

Other CICS PA data sets include:-

1. Report Sets define your report and data extract requests.
2. Report Forms enable you to tailor your reports and extracts to include the information that you want to see.
3. Object Lists enable you to group objects for reporting purposes, e.g. Analyze the resource usage of a particular group of transactions or users.
4. HDB Register is the inventory of all information associated with the CICS PA Historical Database Manager.

More on the CICS PA data sets later in the presentation.

► This is a notes page for the audience.

CICS PA - ISPF Dialog

- CICS PA Main Menu ...
 - ▶ CICS PA Profile and Settings
 - CICS PA Data Sets
 - ▶ System Definitions
 - ▶ Report Sets
 - Specify the reports and extracts
 - Specify the record selection criteria (optional)
 - Submit Report Sets
 - ▶ Define Report Forms
 - Tailor the report format and content (optional)
 - ▶ Define Object Lists
 - Enable record selection by a group of objects (fields)
 - ▶ Historical Database
 - Definition and maintenance of Historical Databases (HDBs)
 - Submit HDB report requests, Export HDB data sets to DB2, ...



▶ The first part of this presentation takes you through some of the main functions of the CICS PA ISPF Dialog.

CICS PA Main Menu

```

File  Options  Help
V1R3M0          CICS Performance Analyzer 1.3 - Primary Option Menu
Option ==>>

0  CICS PA Profile           Customize your CICS PA dialog profile
1  System Definitions        Specify CICS Systems, 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
X  Exit                       Terminate CICS PA

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```

- ▶ This is the CICS PA Main Menu screen. It can be invoked by entering:-
- ▶
- ▶ ex 'CICSPA13.SCPAEXEC(CPAOREXX)' 'CICSPA13 E'
- ▶
- ▶ into the ISPF Command Shell panel (option 6) command line.
- ▶
- ▶ It can also be defined as a standard selection on ISPF dialogs, examples of how to set this up are documented in the CICS PA User's Guide manual.
- ▶
- ▶ We will look at some of the menu options in a little more detail during the presentation.

CICS PA Main Menu - Notes

The CICS PA Interactive System Productivity Facility (ISPF) dialog allows you to request and submit your report and data extract requests easily. For the more experienced user, a batch command interface is also available to request the reports and extracts.

Follow the dialog to meet your reporting and analysis requirements:-

1. Customize your CICS PA dialog profile (optional). CICS PA will use default settings and prompt you to allocate data sets (with default allocation attributes) when required.
2. Define your CICS Systems (APPLIDs), MVS Images, DB2 Subsystems, MQ Subsystems (MQ Queue Managers), MVS System Logger and their associated unloaded SMF data sets.
3. Report Sets define your report and data extract requests. Here you request and tailor the required reports and extracts, then submit them for batch processing.
4. Report Forms enable you to tailor your reports and extracts to include the information that you want to see. You simply edit the report or extract format and content to meet your specific requirements. Comprehensive online help is available for every CMF field, so you never need to reference a manual.
5. Object Lists enable you to group objects for reporting purposes, e.g. Analyze the resource usage of a particular group of transactions or users.
6. Historical Database enables you to collect, process and manage historical performance data for your CICS systems.

► This is a notes page for the audience.

Requesting Reports and Extracts ...

```

File  Systems  Confirm  Options  Help
EDIT                                     Report Set - TEST1          Row 1 of 20
Command ==> _____ Scroll ==> CSR

Description . . . CICS PA Report Set

Enter "/" to select action.

___      ** Reports **
+ ___    Options                               No
+ ___    Selection Criteria                     No
- ___    Performance Reports                   No
        List                                   No
        List Extended                           No
        Summary                               No
        Totals                                 No
        Wait Analysis                           No
        Cross-System Work                       No
        Transaction Group                       No
        BTS                                    No
        Workload Activity                       No
+ ___    Exception Reports                     No
+ ___    Transaction Resource Usage Reports     No
- ___    Subsystem Reports                     No
        DB2                                    No
        WebSphere MQ                           No
+ ___    System Reports                       No
+ ___    Performance Graphs                   No
+ ___    Extracts                             No
        ** End of Reports **

```



Select the reports that you wish to run

- ▶ This is an example of the Report Sets panel. Reports Sets are where you specify, save and run your report and extract requests.
- ▶ More information on the reports and extracts is provided over the notes pages that follow.

Requesting Reports and Extracts - Notes

Report Sets are where you specify, save and run your report requests. A Report Set contains a set of report and extract requests to be submitted and run as a single job. You can define any number of Report Sets and any number of reports and extracts can be included in a single Report Set. CICS PA provides a comprehensive set of reports, graphs, and data extracts:-

The **Performance List, List Extended** and **Summary reports** provide detailed analysis of CICS transaction activity and performance.

The **Performance Totals report** provides a comprehensive resource usage analysis of your entire CICS system, or an individual transaction.

The **Performance Wait Analysis report** provides a detailed analysis of transaction activity by wait time. This report summarizes, by transaction ID, the resources that cause a transaction to be suspended and highlights the CICS system resource bottlenecks that may be causing bad response time.

The **Cross-System Work report** combines the CICS CMF performance class records from connected CICS (via MRO or ISC) systems to produce a consolidated network unit-of-work (UOW) report.

The **Transaction Group report** accumulates data from one or more CICS systems, as long as the performance data is part of the same Transaction Group ID.



► This is a notes page for the audience.

Requesting Reports and Extracts - Notes ...

The **CICS Business Transaction Services (BTS) report** combines CMF performance records from a single or multiple CICS systems to produce a consolidated BTS process (root activity id) report.

The **Workload Activity (WLM) report** provides a detailed listing and/or summary of the segments of work (transactions) performed on behalf of a single network unit-of-work id. The report highlights the MVS Workload Manager (WLM) Service Class and Report Class, and the WLM reporting and completion phase used for each transaction.

The **Exception List** and **Summary reports** provide a detailed analysis of the exception events recorded by the CICS Monitoring Facility (CMF).

The **Transaction Resource Usage reports** provide detailed analysis of the transaction resource records collected by the CICS Monitoring Facility (CMF). The Transaction Resource Usage List report shows a detailed analysis of the file and temporary storage resources used by each transaction ID.

The Transaction File Usage Summary report shows the File Resource Usage summarized for each Transaction ID and the File Usage Summary report summarizes by Filename the file resource usage by Transaction ID.

The Transaction Temporary Storage Usage Summary report shows the Temporary Storage Queue Resource Usage summarized for each Transaction ID and the Temporary Storage Usage Summary report summarizes by Tsqname the temporary storage resource usage by Transaction ID.



► This is a notes page for the audience.

Requesting Reports and Extracts - Notes ...

For the **DB2 reports**, CICS PA processes CICS CMF (SMF 110) performance class records and DB2 Accounting (SMF 101) records to produce detail and/or summary reports of the DB2 usage by your CICS systems. The DB2 List report shows the DB2 activity of each transaction and the DB2 Summary report (Short or Long) summarizes the DB2 activity by transaction and program within APPLID. The information provided in the CICS PA DB2 Reports can be used to assist in further analysis using DB2 performance reporting tools such as IBM DB2 Performance Expert (DB2 PE).

For the **WebSphere MQ reports**, CICS PA processes WebSphere MQ Accounting (SMF 116) records to produce detail and/or summary reports of the MQ usage by your CICS systems. The MQ List reports provide a detailed analysis of the comprehensive data contained in the Class 1 (Subtype 0) and Class 3 (Subtypes 1 and 2) accounting records. The MQ Summary reports provide, summarized by either CICS Transaction ID and/or MQ queue name, an analysis of the MQ system and queue resources used and the transactions they service.

The **System Logger reports** process MVS System Logger (SMF 88) records to provide information on the MVS System Logger logstreams and coupling facility structures that are used by CICS Transaction Server for logging, recovery and backout operations. These reports, when used in conjunction with the CICS Logger reports produced by the standard CICS statistics reporting utilities, provide a comprehensive analysis of the logstream activity for all your CICS systems and provide a more extensive and flexible performance reporting solution than the IXGRPT1 sample program.



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Requesting Reports and Extracts - Notes ...

The **Cross-System Work Performance Data Extract** combines the CMF performance class records belonging to the same network unit-of-work into a single CMF record in order to provide a complete view of a transaction's CICS resource usage. The Cross-System Work Extract can then be used as input to other CICS PA reports or extracts for further analysis.

The **Export data extract** is a performance data extract formatted as a delimited text file which can be then imported into PC spreadsheet or database tools for further processing and analysis. Detail and/or Summary Data Extracts can be created and the record format can be tailored using Report Forms to include information to meet your specific reporting and analysis requirements.

The **Record Selection Extract** is a facility that allows you to create a smaller extract file containing only the CMF performance (and optionally DB2 Accounting and/or WebSphere MQ Accounting) records that are of interest to you. The Record Selection Extract filters large SMF files, that can then be used as input to CICS PA, allowing more efficient reporting and analysis.

Selection Criteria enables you to filter the CMF data for your reports and extracts using any field or combinations of fields. e.g. to include data only for a particular transaction id, user id, or only for a specific period of time.



► This is a notes page for the audience.

Requesting a Performance List Report - Default Format

VIR2M0 CICS Performance Analyzer
Performance List

LIST0001 Printed at 15:17:27 1/21/2002 Data from 11:10:29 2/04/1999 APPLID IYK221V1 Page 1

Tran	SC	Term	Userid	RSID	Program	TaskNo	Stop Time	Response Time	Dispatch Time	User CPU Time	Suspend Time	DispWait Time	FC Wait Time	FCAMRq	IR Wait Time
CSSY	U		CBAKER	DFHAPATT	16	11:10:29.803	.0139	.0007	.0006	.0133	.0000	.0000	.0000	0	.0000
CSSY	U		CBAKER	DFHAPATT	17	11:10:29.809	.0185	.0010	.0014	.0175	.0001	.0000	.0000	0	.0000
CSSY	U		CBAKER	DFHAPATT	18	11:10:29.861	.0674	.0196	.0027	.0479	.0269	.0000	.0000	0	.0000
CGRF	U		CBAKER	DFHZCGRF	12	11:10:30.194	.4123	.0420	.0074	.3702	.3223	.0000	.0000	0	.0000
CSSY	U		CBAKER	DFHAPATT	15	11:10:30.207	.4204	.0568	.0100	.3636	.1744	.0000	.0000	0	.0000
CSSY	U		CBAKER	DFHAPATT	13	11:10:30.456	.6743	.0728	.0134	.6015	.4000	.0000	.0000	0	.0000
CSSY	U		CBAKER	DFHAPATT	10	11:10:30.531	.7498	.1910	.0228	.5588	.1997	.0000	.0000	0	.0000
CSSY	U		CBAKER	DFHAPATT	14	11:10:31.121	1.3344	.3202	.0378	1.0142	.2626	.0000	.0000	1	.0000
CSSY	U		CBAKER	DFHAPATT	11	11:10:31.211	1.4292	.1497	.0313	1.2794	.3461	.0000	.0000	0	.0000
CPLT	U		CBAKER	DFHSIPLT	7	11:10:45.642	15.9915	.3383	.0369	15.6532	.0155	.0000	.0000	0	.0000
CSSY	U		CBAKER	DFHAPATT	III	11:10:45.856	16.0761	9.3488	2.3435	6.7273	1.1645	.9522	.0000	2059	.0000
CWBG	S		CBAKER	DFHWBGB	24	11:10:46.196	.0262	.0248	.0041	.0013	.0012	.0000	.0000	0	.0000
CRSQ	S		CBAKER	DFHCRQ	25	11:10:46.856	.0818	.0449	.0040	.0369	.0367	.0000	.0000	0	.0000
CXRE	S		CBAKER	DFHZXRE	27	11:10:47.134	.2255	.0243	.0049	.2011	.2009	.0000	.0000	0	.0000
CLR2	TO R11		CBAKER	DFHLUP	29	11:10:48.317	.0263	.0030	.0020	.0232	.0000	.0000	.0000	0	.0232
CSSF	S		CBAKER	DFHFCU	26	11:10:48.471	1.6968	1.5899	.1136	.1069	.0294	.0000	.0000	0	.0000
CSAC	TO SAMA		CBAKER	DFHACP	31	11:10:51.227	.5217	.0028	.0011	.5189	.0002	.0000	.0000	0	.0000
CLQ2	U		CBAKER	DFHLUP	28	11:10:51.840	3.8259	.0818	.0068	3.7441	.0035	.0000	.0000	0	3.7344
CEMT	TO SAMA		CBAKER	DFHEMTP	32	11:10:51.942	.1877	.1842	.0264	.0035	.0030	.0000	.0000	0	.0000
CEMT	TO SAMA		CBAKER	DFHEMTP	33	11:10:52.549	.0091	.0068	.0026	.0023	.0001	.0000	.0000	0	.0000
CEMT	TO SAMA		CBAKER	DFHEMTP	34	11:10:53.074	.0092	.0068	.0025	.0024	.0000	.0000	.0000	0	.0000
CSAC	TO SAMA		CBAKER	DFHACP	35	11:10:54.113	.5109	.0042	.0012	.5067	.0001	.0000	.0000	0	.0000
CSAC	TO SAMA		CBAKER	DFHACP	36	11:10:55.159	.5150	.0011	.0011	.5139	.0001	.0000	.0000	0	.0000
.....															

- ▶ The Performance List Report provides a detailed list of the CMF performance class records. The default report format (shown on the previous slide) details the performance related information for each transaction.
- ▶ The report format can be tailored using Report Forms to include information more specific to your requirements.
- ▶ Any CMF data field (including User-Defined EMPs) can be included in the Performance List Report.
- ▶ Report Forms are discussed in a little more detail later in the presentation.

Filtering the Report

```
File Edit Object Lists Options Help
----- WEBRPT1 - Performance Select Statement Row 1 of 9 More: >
Command ==> _____ Scroll ==> CSR

Active ----- Report Interval -----
Inc Start ----- From ----- To -----
Exc Stop YYYY/MM/DD HH:MM:SS.TH YYYY/MM/DD HH:MM:SS.TH
_ INC ACTIVE _____ 09:00:00.00 _____ 16:00:00.00

-----

Inc Field ----- Value or Range ----- Object
/ Exc Name + Type + Value/From To List +
_ INC TRAN _____ WB* _____
_ S EXC WBTOTAL 0 _____
_ _____
_ *** *****
```



```
File Edit Object Lists Options Help
----- WEBRPT1 - Performance Select Statement -----
File Help
----- Select a Performance Field -----
C | File Help
|
| Row 258 String found
N | Command ==> find wbrepwct Scroll ==> CSR
C |
D | Field
/ | Name Description
- |-----
- | WBREPWCT Shared TS Repository write requests
- | WBSEND Web SEND requests
* | S WBTOTAL Web Total requests
- | WBWRITE Web WRITE requests
- | ***** End of list *****
```



- ▶ This visual shows an example of specifying Performance Selection Criteria. The panels are edited in order to demonstrate the power of the Selectoin Criteria available with CICS PA.
- ▶ For character fields, the masking characters % and * are allowed as well as the ability to select null fields by specifying two single quotes. Not knowing the field names is never a problem. Simply select from a pop-up list of the CMF field names, which includes a description, the CMF ID, and optional extended information. You can also use the FIND command to help locate the field in the list.

Filtering the Report - Notes

All the CICS PA reports and extracts can be filtered using Selection Criteria. You can specify:-

- Global Selection Criteria that applies to all the reports and extracts in a report set
- Local Selection Criteria that applies to a single report or extract.

You can also specify Selection Criteria in a Report Form in order to apply filtering that is applicable to the resources being reported.

The example shown on the visual demonstrates the power of the Selection Criteria. In this example, the transactions are only considered for reporting if:-

1. They were active between 9am and 4pm
2. Transaction ID names match the mask WB*
3. They performed at least 1 CICS Web request.

For character fields, the masking characters % and * are allowed as well as the ability to select null fields by specifying two single quotes.

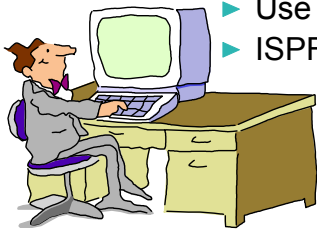
Most of the CMF fields can be specified in Selection Criteria. Not knowing the field names is never a problem. Simply select from a pop-up list of the CMF field names, which includes a description, the CMF ID, and optional extended information. You can use the FIND command to help locate the field in the list.



► This is a notes page for the audience.

Job Submission

- Use the CICS PA ISPF dialog ...
 - ▶ Select from Report Sets (menu option 2)
 - ▶ Select the option to build the JCL
 - ▶ Review the JCL, modify, SUBMIT the job stream for execution
 - Store the job stream(s) in a JCL library (optional)
 - Submit them from there or ...
 - As part of any job scheduling or automation process
- To view the output ...
 - ▶ Use SDSF (System Display Search Facility), or ...
 - ▶ ISPF option 3.8, Outlist Utility



- ▶ To submit a CICS PA Report Set for execution; select option 2 from the Main Menu, select the option to build the JCL, you can review and modify the JCL if required and then use the TSO SUBMIT command to submit the job stream for execution. After the job has been executed you can then use either the SDSF (System Display Search Facility) or ISPF option 3.8, Outlist Utility, to view the reports.
- ▶ You can also capture the job streams created by CICS PA and store them in your JCL library and submit them from there or as part of any job scheduling or automation process.

Report Forms

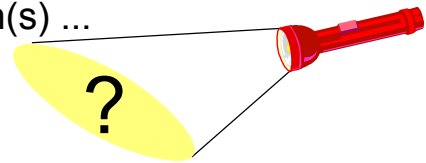
- Report Forms allow you to ..
 - ▶ Tailor the content and format of your Reports and Data Extracts
 - Report Titles and Selection Criteria may also be specified
 - ▶ Over 90 sample Report Forms provided with CICS PA
 - Every aspect of CICS transaction activity and resource usage
 - ▶ Supported on ..
 - Performance List, List eXtended, and Summary Reports
 - Cross-System Work Report
 - Performance Data Extract



- ▶ Report Forms allow you to tailor your reports and extracts to include the information that you want to see. You simply edit the report and/or extract format and content to meet your specific reporting or analysis requirements. In CICS PA Version 1 Release 3 the Report Forms capability has been extended to allow the inclusion of Selection Criteria to apply filtering that is applicable to the resources being reported by the Report Form.
- ▶ Over 90 sample Report Forms are provided with CICS PA. These include LIST, LISTX, and SUMMARY Report Forms that you can use as-is or tailor to meet your reporting and extract requirements.
- ▶ Comprehensive online help is available for every CMF field, so that you never need to reference a manual.

Performance List Extended Report

- Similar to the Performance List Report
 - ▶ But allows you to Sort the data for your report
- Sorting Criteria ...
 - ▶ Up to three sort fields - ascending or descending
 - Subset of the CMF data fields can be sorted upon
 - ▶ Any CMF data field can be included in the report
- For Example which Transaction(s) ...
 - ▶ have the longest Response time
 - ▶ have the longest Suspend time
 - ▶ used the most CPU time
 - ▶ did the most File or Temporary Storage requests



- ▶ The Performance List Extended Report also provides a detailed list of the CMF performance class records.
- ▶ But it differs from the Performance List Report in that you can specify the sorting criteria for the performance records.
- ▶ The default report format (shown on the slide) details performance related information for each transaction, sorted by Transaction ID.
- ▶ The report format can be tailored using Report Forms to include information to meet your specific reporting and analysis requirements.

Performance List Extended Report ...

VIR3M0 CICS Performance Analyzer
Performance List Extended

LSTX0001 Printed at 10:40:11 7/24/2003 Data from 11:10:29 2/04/1999 to 11:33:51 2/04/1999 Page 1

Tran	SC	Userid	RSID	Program	TaskNo	Stop Time	Response Time	Dispatch Time	User CPU Time	Suspend Time	DispWait Time	FC Wait Time	FCAMRq	IR Wait Time
AADD	TO	GBURGES		DFHÚAALL	136	11:19:42.186	.0011	.0010	.0010	.0001	.0000	.0000	0	.0000
AADD	TO	GBURGES		DFHÚAALL	137	11:19:46.796	.0022	.0021	.0012	.0001	.0000	.0000	0	.0000
AADD	TP	GBURGES		DFHÚAALL	138	11:19:53.578	.0023	.0022	.0013	.0001	.0000	.0000	0	.0000
AADD	TO	GBURGES		DFHÚAALL	183	11:21:29.153	.0022	.0022	.0012	.0001	.0000	.0000	0	.0000
AADD	TP	GBURGES		DFHÚAALL	184	11:21:36.124	.0023	.0022	.0013	.0001	.0000	.0000	0	.0000
ABRW	TO	BRENNER		DFHÚABRW	53	11:11:57.251	.5819	.0783	.0121	.5037	.0127	.0000	0	.4908
ABRW	TP	BRENNER		DFHÚABRW	59	11:12:55.460	.0070	.0034	.0029	.0036	.0000	.0000	0	.0036
ABRW	TP	BRENNER		DFHÚABRW	61	11:12:58.275	.0080	.0028	.0024	.0052	.0000	.0000	0	.0051
ABRW	TP	BRENNER		DFHÚABRW	62	11:12:59.332	.0064	.0027	.0023	.0036	.0000	.0000	0	.0036
ABRW	TP	BRENNER		DFHÚABRW	63	11:13:02.370	.0018	.0017	.0014	.0001	.0000	.0000	0	.0000
ABRW	TO	GBURGES		DFHÚABRW	109	11:19:22.883	.0071	.0040	.0027	.0030	.0000	.0000	0	.0030
ABRW	TP	GBURGES		DFHÚABRW	110	11:19:27.576	.0064	.0031	.0021	.0033	.0000	.0000	0	.0032
ABRW	TP	GBURGES		DFHÚABRW	111	11:19:28.165	.0065	.0032	.0022	.0033	.0000	.0000	0	.0033
ABRW	TP	GBURGES		DFHÚABRW	112	11:19:28.556	.0071	.0035	.0023	.0036	.0000	.0000	0	.0036
ABRW	TP	GBURGES		DFHÚABRW	113	11:19:28.933	.0066	.0032	.0022	.0034	.0000	.0000	0	.0034
ABRW	TP	GBURGES		DFHÚABRW	114	11:19:29.287	.0022	.0021	.0012	.0001	.0000	.0000	0	.0000
ABRW	TP	GBURGES		DFHÚABRW	115	11:19:29.629	.0070	.0034	.0023	.0036	.0000	.0000	0	.0035
ABRW	TP	GBURGES		DFHÚABRW	116	11:19:29.976	.0068	.0032	.0022	.0036	.0000	.0000	0	.0035
ABRW	TP	GBURGES		DFHÚABRW	117	11:19:30.358	.0094	.0036	.0024	.0058	.0000	.0000	0	.0057
ABRW	TP	GBURGES		DFHÚABRW	118	11:19:30.698	.0064	.0031	.0021	.0033	.0000	.0000	0	.0032
ABRW	TP	GBURGES		DFHÚABRW	119	11:19:31.083	.0084	.0032	.0024	.0052	.0000	.0000	0	.0051
ABRW	TP	GBURGES		DFHÚABRW	120	11:19:31.425	.0070	.0033	.0022	.0036	.0000	.0000	0	.0036
ABRW	TP	GBURGES		DFHÚABRW	121	11:19:31.729	.0053	.0028	.0018	.0024	.0000	.0000	0	.0024
ABRW	TP	GBURGES		DFHÚABRW	122	11:19:34.394	.0065	.0034	.0021	.0030	.0000	.0000	0	.0030

► This visual shows an example of the default format (sorted by Transactoin ID) of the Performance List Extended Report.



Performance Summary Report

V1R3M0 CICS Performance Analyzer Performance Summary

SUMM0001 Printed at 12:46:48 7/23/2003 Data from 11:10:29 2/04/1999 to 08:10:06 2/16/1999 Page 1

Tran	#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	Avg IR Wait Time	Avg SC24UHW	Avg SC31UHW
AADD	18	.0115	.0945	.0099	.0020	.0016	.0114	.0008	.0003	1	.0000	949	0
ABRW	1033	.0789	36.6088	.0027	.0015	.0762	36.6061	.0000	.0000	6	.0007	1008	0
ADDD	1	.0482	.0482	.0350	.0049	.0132	.0132	.0125	.0000	0	.0000	0	0
AINQ	11	.0021	.0040	.0017	.0014	.0004	.0021	.0000	.0000	1	.0001	928	0
AMNU	15	.0245	.1724	.0223	.0027	.0022	.0194	.0010	.0000	0	.0000	422	177
AUPD	17	.0183	.0665	.0118	.0032	.0065	.0505	.0010	.0017	0	.0007	968	0
B	2	.0028	.0031	.0027	.0015	.0001	.0001	.0000	.0000	0	.0000	0	0
BING	1	.0024	.0024	.0023	.0016	.0001	.0001	.0000	.0000	0	.0000	0	0
BINQ	1	.0027	.0027	.0027	.0015	.0001	.0001	.0000	.0000	0	.0000	0	0
CALL	25	2.3633	8.2455	.0074	.0021	2.3559	8.2300	.0013	.0000	0	.0000	0	1056
CATA	17	.0285	.0882	.0119	.0055	.0167	.0828	.0002	.0000	0	.0000	0	0
CATD	6	.0372	.0590	.0159	.0056	.0213	.0306	.0024	.0000	0	.0000	0	0
CATR	2	.0290	.0296	.0283	.0047	.0006	.0009	.0006	.0000	0	.0000	0	0
CBAM	11	11.2041	51.3803	.0147	.0054	11.1894	51.3196	.0016	.0000	3	.0000	0	1865
CBTR	2	.0179	.0334	.0176	.0029	.0003	.0006	.0003	.0000	0	.0000	0	0
CEBR	1	575.916	575.916	.0061	.0046	575.910	575.910	.0003	.0000	0	.0000	0	0
CECI	61	1.7234	72.8971	.0194	.0043	1.7039	72.8839	.0004	.0000	0	.0000	3	21295
CEDA	98	1.9304	51.4018	.0602	.0218	1.8702	50.2257	.0008	.0086	53	.0000	0	0
CEMT	137	19.1960	592.514	.0154	.0062	19.1806	592.359	.0043	.0000	0	.0000	0	0
CESD	12	.1128	1.2902	.0211	.0021	.0917	1.0858	.0916	.0000	0	.0000	0	0
CESF	6	.0180	.0468	.0175	.0042	.0004	.0009	.0004	.0000	0	.0000	0	0
CESN	36	.0242	.2046	.0233	.0081	.0008	.0060	.0006	.0000	0	.0000	0	0
CETR	1	.8982	.8982	.1132	.0132	.7850	.7850	.0068	.0000	0	.0000	0	0
CGRP	2	.5862	.7601	.0571	.0076	.5291	.6880	.4134	.0000	0	.0000	0	0
CITS	5	.0111	.0153	.0058	.0035	.0053	.0091	.0001	.0000	0	.0000	0	0
CLQ2	2	2.0731	3.8259	.0628	.0068	2.0103	3.7441	.0820	.0000	0	1.9054	0	0
CLR2	2	.0604	.0946	.0030	.0020	.0574	.0915	.0000	.0000	0	.0135	0	0

► This visual shows an example of the default format of the Performance Summary Report.

Performance Summary Report - Notes

The Performance Summary Report provides a summary of the CMF performance class records.

The default report format (shown on the previous slide) summarizes the performance class records by Transaction ID. The Task Count (#Tasks) shows the number of performance class records processed during the reporting period.

This report can be easily changed to display other performance related data. Many sample Report Forms are provided with CICS PA for this purpose. Any CMF field (including fields from User-Defined EMPs) can be included in the Performance Summary Report.


You can also write your Performance Summary report data to an extract data set. This is done using the Export facility with a SUMMARY Report Form to define the record layout and summarization criteria. An example of using the Export facility in this way will be shown later in the presentation.



► This is a notes page for the audience.

Performance Wait Analysis Report

- Summary of transaction activity by wait (suspend) time
- Summarized by transaction ID (default), highlights ...
 - ▶ the resources 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



Transaction
Wait Time

- ▶ The Performance Wait Analysis Report provides a summary of the transaction activity by wait (suspend) time. This report summarizes, by transaction ID, the resources that cause a transaction to be suspended and highlights the CICS system resource bottlenecks that may be causing bad response time. This report enables a more detailed analysis, focusing on the problem resources identified, to be more easily performed.
- ▶ You can specify up to three sort fields and you can also specify the time interval anywhere from 1 second to 24 hours (rounded down to align to the hour or day).
- ▶ The Performance Wait Analysis Report Report is supported for CMF performance class data from CICS Transaction Server for OS/390 Version 1.3 or later.



Performance Wait Analysis Report

V1R3M0 CICS Performance Analyzer
Wait Analysis Report

WAIT0001 Printed at 14:01:01 7/24/2003 Data from 19:26:39 7/14/2003 to 19:38:16 7/14/2003 Page 1

Tran=CBM1

Summary Data	Time		Count		Ratio
	Total	Average	Total	Average	
# Tasks			3962		
Response Time	39174.1585	9.8875			
Dispatch Time	4860.6282	1.2268	347472	87.7	12.4% of Response
CPU Time	179.7728	0.0454	347472	87.7	3.7% of Dispatch
Suspend Wait Time	34313.4642	8.6606	347472	87.7	87.6% of Response
Dispatch Wait Time	26770.4022	6.7568	343510	86.7	78.0% of Suspend
Resource Manager Interface (RMI) elapsed time	4302.4135	1.0859	191768	48.4	11.0% of Response
Resource Manager Interface (RMI) suspend time	2641.0973	0.6666	19211	4.8	7.7% of Suspend

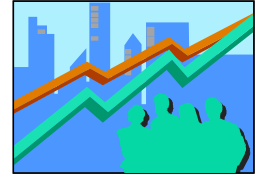
Suspend Detail	Suspend Time				Count	
	Total	Average	%age	Graph	Total	Average
N/A Other Wait Time	21836.2138	5.5114	63.6%	*****	332847	84.0
MAXOTDLY MAXOPENTCBS wait time	4094.5942	1.0335	11.9%	**	639	0.2
LU62WTT LU6.2 wait time	3035.7758	0.7662	8.8%	+	5238	1.3
DSPDELAY First dispatch wait time	2398.0299	0.6053	7.0%	+	3962	1.0
MXTDELAY > First dispatch MXT wait time	374.7682	0.0946	1.1%		87	0.0
LMDELAY Lock Manager (LM) wait time	2206.6980	0.5570	6.4%	+	2621	0.7
GVUPWAIT Give up control wait time	437.0868	0.1103	1.3%		277	0.1
JCIOWTT Journal I/O wait time	305.0656	0.0770	0.9%		1888	0.5

Tran=CBPB

Summary Data	Time		Count		Ratio
	Total	Average	Total	Average	
# Tasks			13		
....					

► This visual shows an example of the format of the Performance Wait Analysis Report.

Cross-System Work Report



- Provides a report that correlates the CMF data by Network Unit-of-Work id ...
 - ▶ 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
- Report can be tailored using Report Forms
- Records sorted by ...
 - ▶ Network Unit-of-Work Prefix
 - ▶ Network Unit-of-Work Suffix
 - ▶ Syncpoint count concatenated with the task stop time (descending order)
 - ▶ Generic APPLID



- ▶ The Cross-System Work Report processes CMF performance class data from a single or multiple CICS systems and correlates the data by network unit-of-work id. Each line is printed from a single CMF performance class record. Records that are part of the same network unit-of-work are printed sequentially in groups separated by blank lines.

Cross-System Work Report - Default ...

V1R2M0 CICS Performance Analyzer
Cross-System Work

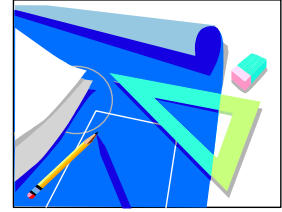
CROS0001 Printed at 12:09:28 1/24/2002 Data from 11:10:51 2/04/1999 to 08:10:28 2/16/1999 Page 3

Tran	Userid	SC	TranType	Term	LUName	Request Type	Program	T/Name	Conn Name	NETName	UOW Seq	APPLID	Task	R T	Stop Time	Response Time	A B
ABRW	BRENNER	TP	U	S23D	IGCS23D	AP:	DFH0ABRW	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	61	T	11:13:20.275	.0080	
CSMI	CBAKER	TO	UM	R11	IYK2Z1V1	FS:F---	DFHMIRS	T/R11	CJB1	GBIBMIYA.IGCS23D	1	IYK2Z1V3	57	T	11:13:20.274	.0044	
ABRW	BRENNER	TP	U	S23D	IGCS23D	AP:	DFH0ABRW	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	62	T	11:13:21.332	.0064	
CSMI	CBAKER	TO	UM	R11	IYK2Z1V1	FS:F---	DFHMIRS	T/R11	CJB1	GBIBMIYA.IGCS23D	1	IYK2Z1V3	58	T	11:13:21.331	.0039	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	3	IYK2Z1V1	72	T	11:16:28.284	1.1025	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	72	C	11:16:27.181	3.0046	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	72	C	11:16:24.177	2.2127	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	72	C	11:16:21.964	46.5125	
CEDA	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEDAP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	72	C	11:15:35.451	.6794	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	140	T	11:21:24.062	51.3442	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	140	C	11:20:32.718	8.3481	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	140	C	11:20:24.370	.0042	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	174	T	11:21:28.662	1.1930	
CEMT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFHEMTP	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	174	C	11:21:27.469	.0041	
RMST	BRENNER	TO	U	S23D	IGCS23D	TR:CJB3		T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	178	T	11:22:38.447	48.9210	
STAT	CBAKER	TO	U	R11	IYK2Z1V1	AP:	DFH0STAT	S/S23D	CJB1	GBIBMIYA.IGCS23D	1	IYK2Z1V3	349	T	11:22:38.433	66.7720	
RMST	BRENNER	TO	U	S23D	IGCS23D	TR:CJB3		T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	178	C	11:21:49.526	10.0524	
RMST	BRENNER	TO	U	S23D	IGCS23D	TR:CJB3		T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	178	C	11:21:39.473	7.8027	
RMST	BRENNER	TO	U	S23D	IGCS23D	TR:CJB3		T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	178	C	11:21:31.671	.0110	
STAT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFH0STAT	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	195	T	11:22:52.663	2.0203	
STAT	BRENNER	TO	U	S23D	IGCS23D	AP:	DFH0STAT	T/S23D		GBIBMIYA.IGCS23D	1	IYK2Z1V1	195	C	11:22:50.642	8.9745	

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- ▶ This visual shows an example of the Cross-System Work Report. It includes correlation examples of transaction routing and function shipping...
- ▶ The report content includes a transaction Request Type field which gives an indication of the type function performed by the transaction:-
 - ▶ AP: Application program request, including Distributed Program Link (DPL)
 - ▶ FS:---- Function shipping request
 - ▶ TR:xxxx Transaction routing request from a Terminal-Owning Region (TOR), where "xxxx" is the connection name of the system to which the transaction was routed.

MVS Workload Activity Reports



- Provides a List Report that correlates the CMF performance class data by Network Unit-of-Work id, highlighting ...
 - ▶ MVS WLM Service Class and Report Class
 - ▶ WLM Reporting and completion phase (BTE or EXE)
- Summary Report ...
 - ▶ by MVS WLM Service Class and Report Class
 - average response time, peak percentile, ...
- Tailoring Workload Activity Reports
 - ▶ List, Summary, ...
 - ▶ Include EXEcution phase records, peak percentile, ...



- ▶ The MVS Workload Activity Report provides a detailed List and/or Summary of the segments of work (transactions) performed by the same or different CICS systems via transaction routing, function shipping, or distributed transaction processing on behalf of a single network unit-of-work id.
- ▶ The report highlights the MVS Workload Manager (WLM) Service Class and Report Class, and the WLM reporting and completion phase used for each transaction.
- ▶ The Workload Activity Summary report summarizes response time by WLM service and report classes.

MVS Workload Activity Reports - Summary

```

V1R3M0
CICS Performance Analyzer
Workload Manager Activity Summary by Service Class

WKLD0001 Printed at 16:43:42 6/18/2003 Data from 14:18:57 11/05/2002 to 15:04:59 11/05/2002 Page 1920

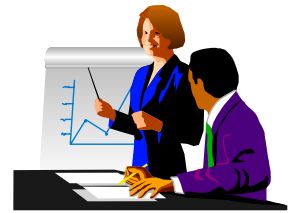
Service
Class  APPLID  Phase  #Tasks  Average  Std Dev  90% Peak  Maximum
-----
CICSDFLT SCSCPAA1 BTE      51    .0377    .1073    .1753    .5600
          SCSCPAA1 EXE     1533   .0316    .0781    .1316    1.1133
          SCSCPAA4 BTE      17    111.043  457.767  697.900  1887.44
          SCSCPAA4 EXE     8239   .0204    .0569    .0934    1.2754
          SCSCPJA7 EXE      810    .0035    .0043    .0090    .0297
          SCSCPLA1 BTE     8816   .3441    20.0989  26.1108  1887.18
          SCSCPLA2 BTE     6954   .4033    22.6318  29.4172  1887.33
          SCSCPTA1 BTE     6624   .0356    .0792    .1371    1.2963
          SCSCPTA2 BTE     4680   .0412    .0891    .1555    1.1289
CICSDFLT *Total*  BTE    27142   .3005    19.8410  25.7367  1887.44
          *Total*  EXE    10582   .0207    .0587    .0960    1.2754
CICSWORK SCSCPJA7 BTE      32    58.9871  333.661  486.741  1887.47
* Grand Total * BTE    27174   .3696    22.8968  29.7233  1887.47
* Grand Total * EXE    10582   .0207    .0587    .0960    1.2754
  
```

- by MVS WLM Service Class and Report Class
 - ▶ Applid, WLM Completion phase, Number of tasks, ...
 - ▶ Response time ...
 - Average, Std Deviation, Peak percentile, Maximum, ...



▶ This visual shows an example of the format of the Workload Manager (WLM) Detail Report.

Extract Data Sets - Performance Data Export

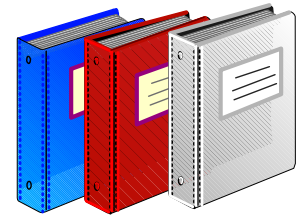


- Extract of the CMF Performance Class data formatted as a delimited text file that can be imported into PC spreadsheet or database tools for further analysis or reporting ...
 - ▶ Detail and/or Summary Data Extracts
 - Format can be tailored using Report Forms
 - ▶ CICS PA supplies the column headings (optional)
 - ▶ Each field separated by a delimiter character
 - Field delimiter defaults to a semi-colon (;)
 - ▶ Import examples in CICS PA Report Reference
 - Lotus 123, Lotus Approach, ...



- ▶ An Exported Performance Data Extract is created as a delimited text file for the purpose of importing the CMF performance class data into PC spreadsheet or database tools for further analysis and reporting.
- ▶ The Extract record format can be tailored using Report Forms to include information to meet your specific reporting and analysis requirements. CICS PA supplies the column headings (optional) and each field is separated by a delimiter character which can be specified to override the default semi-colon (;).

Extract Data Sets - Record Selection Extract

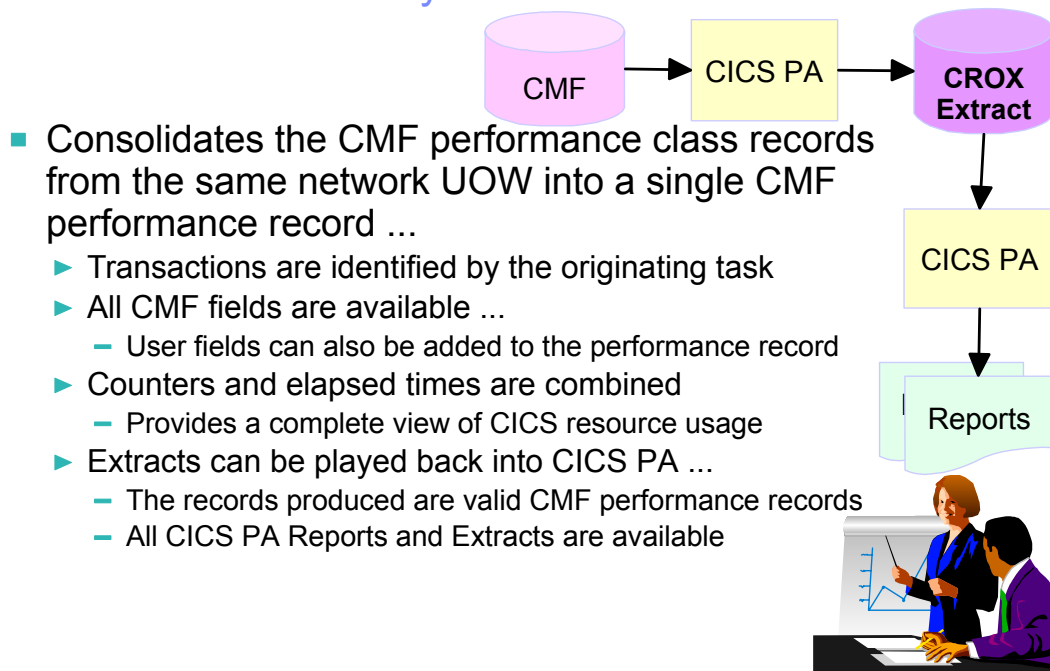


- Creates a new SMF Data Set
 - ▶ CICS SMF 110 Performance Records
 - ▶ DB2 SMF 101 Accounting Records
 - ▶ WebSphere MQ SMF 116 Accounting Records
- SMF Data volume reduction
 - ▶ Filter large SMF files, ...
- Record selection ...
 - ▶ CICS, DB2 and MQ System Selection
 - ▶ Performance Selection Criteria
 - ▶ Run-time SMF reporting interval
- Extracts can be played back into CICS PA
 - ▶ All CICS PA Reports and Extracts are available



- ▶ The Record Selection Extract is a facility that allows you to create a smaller extract file containing only the CMF performance (and optionally DB2 Accounting and/or WebSphere MQ Accounting) records that are of interest to you.
- ▶ The Record Selection Extract can be used to filter large SMF files, that can then be used as input to CICS PA, allowing more efficient reporting and analysis.

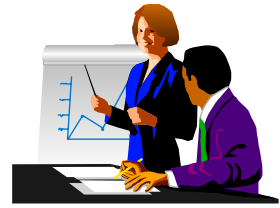
Extract Data Sets - Cross-System Work Extract



- ▶ The Cross-System Work Extract combines the CMF performance class records belonging to the same network unit-of-work into a single CMF record in order to provide a complete view of a transaction's CICS resource usage. The Cross-System Work Extract can then be used as input to other CICS PA reports or extracts such as a Performance List report or a Performance Data Extract.
- ▶ User fields can also be specified for inclusion in the Cross-System Work Extract records.

Transaction Resource Usage Reports

- Transaction Resource Usage Reports ...
 - ▶ Transaction Resource Usage List
 - File and Temporary Storage Queue
 - ▶ Transaction File Usage Summary
 - ▶ Transaction Temporary Storage Usage Summary
 - ▶ File Usage Summary
 - File Usage by Transaction ID
 - ▶ Temporary Storage Usage Summary
 - Tsqueue Usage by Transaction ID



- ▶ The new CMF Resource Class was introduced and enhanced in CICS Transaction Server for z/OS Version 2.2 with PTFs UQ68396, UQ71829 and UQ79266 (for APARs PQ63143, PQ67561 and PQ76703) and in CICS Transaction Server for OS/390 Version 1.3 with PTF UQ70905 and UQ79397 (for APARs PQ63141 and PQ76698).

Transaction Resource Usage Reports - Notes

The CICS PA Transaction Resource Usage Reports provide a detailed analysis of the Resource Class records collected by the CICS Monitoring Facility (CMF). The reports include:-

- > Transaction Resource Usage List
- > Transaction File Usage Summary and Transaction Temporary Storage Usage Summary
- > File Usage Summary and Temporary Storage Usage Summary

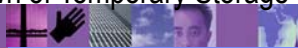
The Transaction Resource Usage List report provides a list of all Transaction resource class records in the sequence that they appear in the SMF file. It gives Transaction Information, detailing their individual File and Temporary Storage Queue usage.

The Transaction File Usage Summary report summarizes File usage by Transaction ID. For each Transaction ID, it gives Transaction information and File Control statistics followed by a breakdown of File usage for each File used.

The Transaction Temporary Storage Usage Summary report summarizes Temporary Storage Queue usage by Transaction ID. For each Transaction ID, it gives Transaction information and Temporary Storage statistics followed by a breakdown of Tsqname usage for each Temporary Storage Queue used.

The File Usage Summary report summarizes File activity. For each File, it gives a breakdown of File usage by Transaction ID.

The Temporary Storage Usage Summary report summarizes Tsqueue activity. For each Tsqueue, it gives a breakdown of Temporary Storage Queue usage by Transaction ID.



► This is a notes page for the audience.

Transaction Resource Usage Reports - Usage List

CICS Performance Analyzer															
Transaction Resource Usage List															
RESU0001 Printed at 15:18:36 6/19/2003 Data from 14:49:42 6/19/2003											Page		7		
Tran	Userid	SC	TranType	Term	LUName	Request Type	Program	Fcty T/Name	Conn Name	NETName	APPLID	UOW Task	R Seq	Stop Time	Response Time
AUPD	CBAKER	TP	U	TC28	IYCWTC28	AP:	DFHGALL	T/TC28		GBIBMIYA.IYCWTC28	IYK2Z1V1	91	1 T	15:13:39.474	.0072
***** FC Calls *****															
File		Get	Put	Browse	Add	Delete	Total	File	I/O RLS	Wait	CFDT	AccMeth			
FILEA	Elapse	.0001	.0047	.0000	.0000	.0000	.0048	.0032	.0000	.0000					
	Count	1	1	0	0	0	2	1	0	0					

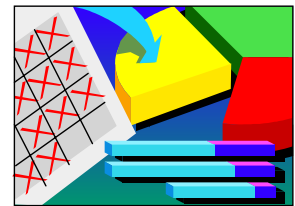
CECI	CBAKER	TO	U	TC05	IYCWTC05	AP:	DFHECIP	T/TC05		GBIBMIYA.IYCWTC05	IYK2Z1V1	69	1 T	15:14:26.435	266.7346
***** FC Calls *****															
File		Get	Put	Browse	Add	Delete	Total	File	I/O RLS	Wait	CFDT	AccMeth			
FILEA	Elapse	.0000	.0000	.0001	.0000	.0000	.0002	.0000	.0000	.0000					
	Count	0	0	5	0	0	6	0	0	0					

***** TS Calls *****															
TSQueue		Get	Put_Aux	Put_Main	Total	TS	Shr_TS	I/O Waits		TS Item					
TESTQ1	Elapse	.0000	.0000	.0017	.0017	.0000	.0000	Length		Get Put_Aux Put_Main					
	Count	0	0	3	3	0	0	0 0		0 0 360					
TESTQ2	Elapse	.0000	.0000	.0000	.0000	.0000	.0000	Length		0 120 0					
	Count	0	2	0	2	0	0	0 0		0 120 0					
Total	Elapse	.0000	.0000	.0017	.0017	.0000	.0000	Length		0 120 360					
	Count	0	2	3	5	0	0	0 0		0 120 360					

- ▶ This visual shows an example of the format of the Transaction Resource Usage List Report.
- ▶ This report provides a list of all Transaction resource class records in the sequence that they appear in the SMF file. It gives Transaction Information, detailing their individual File and Temporary Storage Queue usage.

DB2 Reports

- **DB2 Reports ...**
 - ▶ CMF Performance Data - SMF 110
 - ▶ DB2 Accounting Data - SMF 101
 - ▶ List, Long Summary, Short Summary, Recap
 - ▶ Class 1, Class 2 and Class 3 Timing, ...
 - ▶ Buffer Manager Summary, Locking Summary, ...
 - ▶ SQL Data Manipulation Language (DML), ...
 - ▶ Provide a 'link' to DB2 PE or DB2 PM Reports ...
 - Timestamps, Thread Correlation, ...
 - UOWID, UOWSEQ, LUWID, LUWSEQ
- **Tailoring DB2 Reports**
 - ▶ List, Summary (Short or Long)



DB2 Reports - Notes

The CICS PA DB2 Reports combine the CICS CMF performance class records (SMF 110) with the DB2 Accounting records (SMF 101) belonging to the same network unit-of-work that includes some DB2 activity to produce detail and/or summary reports showing DB2 usage for your CICS systems.

The CICS PA DB2 Reports are:-

- List
- Summary (Long or Short)
- Recap (record processing statistics).

To produce the DB2 Reports, you need to accumulate DB2 Accounting statistics (SMF 101 records) and define your CICS-DB2 resources with **ACCOUNTREC(TASK)** or **ACCOUNTREC(UOW)**. CICS PA Version 1 Release 3 supports the DB2 Accounting statistics data from DB2 Version 5, Version 6, Version 7 and Version 8.

The information provided in the CICS PA DB2 Reports can be used to assist in further analysis using DB2 performance reporting tools such as the IBM DB2 Performance Expert (DB2 PE) or DB2 Performance Monitor (DB2 PM).

The CICS PA DB2 List report is at its most effective when used in conjunction with the CICS PA Cross-System Work report.



► This is a notes page for the audience.

DB2 Reports - List

VIR2M0 CICS Performance Analyzer
DB2 - List

DB2R0001 Printed at 10:14:46 2/13/2002 Data from 13:31:17 1/24/2002 to 13:32:08 1/24/2002 Page 1

Tran/SSID	Userid/Authid	Program/Planname	APPLID	UOW Task	R Seq	T Term	LUName	..DB2 Connect	Wait Thread	Time	DB2 ReqCnt	User CPU Time	Start Time	Stop Time	Response Time	A B
WR0S	RAIMAN	CRWWPP0S	STM4IRA1	34695	1	T	<ADQ STM4IRT1	.0000	.0000		18	.3112	13:31:23.053	13:31:34.349	11.2956	
CH1G	STM4IRA1	CRWWPP0S	STM4IRA1	34695	Thread Identification ID=ENTRWROS0037 NETName=USIBMSY.LE000081 UOWID=16372A6C7E14 Begin Time: 13:31:23.056 1/24/02 End Time: 13:31:35.378 1/24/02											
<div style="border: 1px solid red; padding: 5px;"> <p><i>CMF performance data</i></p> <p>Class1: Thread Time Elapsed= 12.3218 CPU= .310480 Class2: In-DB2 Time Elapsed= 11.2359 CPU= .309914 Class3: Suspend Time Total = 6.5988 I/O= 2.3726 Lock/Latch= 4.2262 Other= .0000 Buffer Manager Summary GtPgRq= 8120 SyPgUp= 8 Locking Summary Suspnd= 11 DeadLk= 0 TmeOut= 0 MxPgLk= 1 SQL DML Query/Update Sel= 2 Ins= 0 Upd= 0 Del= 0 SQL DML 'Other' Des= 0 Pre= 0 Ope= 3 Fet= 13 Clo= 0</p> </div>																
WRNO	RAIMAN	CRWWPPNO	STM4IRA1	34869	1	T	<ACY STM4IRT1	.0000	.0000		67	.0114	13:31:38.853	13:31:45.875	7.0220	
CH1G	STM4IRA1	CRWWPPNO	STM4IRA1	34869	Thread Identification ID=ENTRWRO0051 NETName=USIBMSY.LE000081 UOWID=1637397E8927 Begin Time: 13:31:38.854 1/24/02 End Time: 13:31:45.808 1/24/02											
<div style="border: 1px solid red; padding: 5px;"> <p><i>Associated DB2 Accounting data</i></p> <p>Class1: Thread Time Elapsed= 6.9534 CPU= .010208 Class2: In-DB2 Time Elapsed= 6.8909 CPU= .008283 Class3: Suspend Time Total = 6.3783 I/O= .0000 Lock/Latch= 6.3783 Other= .0000 Buffer Manager Summary GtPgRq= 173 SyPgUp= 36 Locking Summary Suspnd= 2 DeadLk= 0 TmeOut= 0 MxPgLk= 15 SQL DML Query/Update Sel= 1 Ins= 12 Upd= 11 Del= 0 SQL DML 'Other' Des= 0 Pre= 0 Ope= 12 Fet= 21 Clo= 10</p> </div>																

► This visual shows an example of the format of the DB2 List Report.

DB2 Reports - List - Notes

The DB2 List report provides a detailed list by transaction of all network units-of-work with DB2 activity. Records that are part of the same network unit-of-work are printed sequentially in groups with a blank line separator. A data line (column format) is presented for each CMF performance class record, and a block of data lines (row format) is presented for each associated DB2 Accounting record.

The report includes the following DB2 information (depending on the selected options):-

1. DB2 Thread Identification, for easy cross-reference to DB2 PE or DB2 PM reports
2. Class 1 Thread elapsed and CPU times
3. Class 2 In-DB2 elapsed and CPU times
4. Class 3 Suspend times
5. Buffer Manager statistics
6. Locking statistics
7. SQL DML statistics.

The DB2 Short Summary report (shown on the next slide) is an abridged version of the Long Summary report. It provides averages only (no maximums). Both the CMF performance and DB2 accounting record details are presented in column format.



► This is a notes page for the audience.

DB2 Reports - Short Summary

V1R2M0 CICS Performance Analyzer
DB2 - Short Summary

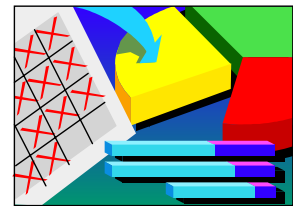
DB2R0001 Printed at 10:14:46 2/13/2002 Data from 13:31:17 1/24/2002 to 13:32:08 1/24/2002 APPLID STM4IRA1 Page 1

Tran/ SSID	Program/ Planname	#Tasks/ #Threads	Average Response	Elapsed Time Thread	In-DB2	DB2ConWt	DB2ThdWt	Average CPU Time User	Thread	In-DB2	Average Count DB2Reqs	GetPage	SysPgUpd	#Abends
WRCI	CRWWPPCI	10	.1085			.0000	.0000	.001112			1.0			0
CH1G	CRWWPPCI	6		5.4859	.0037				.000439	.000327		3.0	.0	
WRDF	CRWWPPDF	9	1.2535			.0000	.0000	.006832			46.0			0
CH1G	CRWWPPDF	5		6.5634	.9419				.006247	.004860		61.2	28.0	
WRDI	CRWWPPDI	3	.3111			.0000	.0000	.001578			4.0			0
CH1G	CRWWPPDI	2		12.1418	.2181				.000811	.000593		8.0	.0	
WRIT	CRWWPPIT	69	.1350			.0000	.0000	.001920			3.0			0
CH1G	CRWWPPIT	61		.9696	.0038				.001297	.001127		6.0	.0	
WRNO	CRWWPPNO	121	3.7267			.0000	.0000	.010867			67.0			0
CH1G	CRWWPPNO	110		4.5374	3.6016				.009893	.007788		149.8	38.3	
WROI	CRWWPPOI	45	3.2526			.0000	.0000	.002918			10.0			0
CH1G	CRWWPPOI	33		4.5092	2.2503				.002029	.001618		18.5	.0	

► This visual shows an example of the format of the DB2 Short Summary Report.

WebSphere MQ Reports

- **WebSphere MQ Reports ...**
 - ▶ **WebSphere MQ Accounting Data - SMF 116**
 - Class 1 and Class 3 records
 - Accounting data for each task, at thread and queue level
 - ▶ **List ...**
 - Class 1, Class 3, ...
 - ▶ **Summary ...**
 - Class 1, Class 3, ...
 - Summarized by ...
 - CICS Transaction ID and/or MQ queue name
- **Tailoring WebSphere MQ Reports**
 - ▶ **Queue Name, ...**
 - Masking characters % and * are supported



- ▶ The CICS PA MQ reports use the WebSphere MQ Accounting data (SMF 116 records) to provide a detailed performance analysis of the CICS transactions that access an MQ queue manager.
- ▶ The CICS PA MQ List reports provide a detailed trace of the WebSphere MQ accounting records, reporting the comprehensive performance data contained in the Class 1 and Class 3 records. The MQ Summary reports provide, summarized by either CICS Transaction ID and/or MQ queue name, an analysis of the MQ system and queue resources used and the transactions they service.
 - ▶ Class 1 (Subtype 0) - Message manager accounting records, records how much CPU was spent processing WebSphere MQ API calls and the number of MQGET and MQPUT calls.
 - ▶ Class 3 (Subtypes 1 and 2) - Accounting data for each task, at thread and queue level.

WebSphere MQ Reports - Notes

The new CICS PA MQ reports use the WebSphere MQ Accounting data (SMF 116 records) to provide a detailed performance analysis of the CICS transactions that access an MQ queue manager.

The CICS PA MQ List reports provide a detailed trace of the WebSphere MQ accounting records, reporting the comprehensive performance data contained in the Class 1 (Subtype 0) and Class 3 (Subtypes 1 and 2) records. The MQ Summary reports provide, summarized by either CICS Transaction ID or by MQ queue name, an analysis of the MQ system and queue resources used and the transactions they service.

To produce the CICS PA MQ Reports, you need to accumulate WebSphere MQ Accounting statistics (SMF 116 records). CICS PA Version 1 Release 3 supports the WebSphere MQ Accounting statistics data from MQSeries for OS/390 Version 5.2, IBM WebSphere MQ for z/OS Version 5.3, and IBM WebSphere MQ for z/OS Version 5.3.1.

The WebSphere MQ SupportPac "MP1B: MQSeries for OS/390 V5.2 - Interpreting accounting and statistics data" provides information on the use and interpretation of the accounting and statistics available in MQSeries for OS/390 Version 5.2 (and later) and also provides information about the layout of the SMF records and suggests ways of analysing the data.



► This is a notes page for the audience.

MQ Reports - Class 1 List

V1R3M0

CICS Performance Analyzer
WebSphere MQ Class 1 List

MQ000001 Printed at 12:06:24 6/18/2003 Data from 10:45:00 1/10/2003 Page 1

APPLID	SSID	Tran	Time	Task	CPU	GET Counts				PUTx Counts			
						<=99	<=999	<=9999	>=10000	<=99	<=999	<=9999	>=10000
CICSPTST	CBA1	CKBP	10:45:00.11	13458	0.001069	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.11	13459	0.000999	0	1	0	0	0	1	0	0
CICSPRD2	CBP1	CKBP	10:45:00.11	37690	0.000518	1	0	0	0	0	0	0	0
CICSPTST	CBA1	CKBP	10:45:00.37	13463	0.001086	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.38	13465	0.000978	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.38	13461	0.000909	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.38	13464	0.000824	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.38	13462	0.000875	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.42	13466	0.000940	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.42	13467	0.001077	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.47	13471	0.001014	0	1	0	0	0	1	0	0
CICSPRD2	CBP1	CKBP	10:45:00.50	37693	0.000492	1	0	0	0	0	0	0	0
CICSPTST	CBA1	CKBP	10:45:00.50	13469	0.000863	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.50	13468	0.000877	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.50	13474	0.000914	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.50	13470	0.000996	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.51	13473	0.000899	0	1	0	0	0	1	0	0
CICSPTST	CBA1	CKBP	10:45:00.51	13472	0.000934	0	1	0	0	0	1	0	0
CICSPRD2	CBP1	Q412	10:45:00.57	37694	0.001148	0	1	0	0	0	1	0	0
CICSPRD2	CBP1	Q431	10:45:00.60	37695	0.001271	0	1	0	0	0	0	0	1
CICSPRD2	CBP1	Q411	10:45:00.61	37696	0.000948	0	1	0	0	0	1	0	0



- ▶ This visual shows an example of the format of the MQ Class 1 List Report.
- ▶ The MQ Class 1 List report provides a detailed trace of the WebSphere accounting records for each task showing how much CPU was spent processing WebSphere MQ API calls and the number of MQGET and MQPUTx calls.

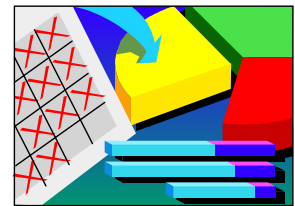
MQ Reports - Class 1 Summary

CICS Performance Analyzer WebSphere MQ Class 1 Summary													
MQ000003 Printed at 12:06:25 6/18/2003 Data from 10:45:00 01/10/2003 to 11:00:59 01/10/2003													Page
1													
----- Key -----			----- Average -----		----- Average GET Counts -----					----- Average PUTx Counts -----			
SSID	APPLID	TRAN	Count	CPU	Calls	<=99	<=999	<=9999	>=10000	<=99	<=999	<=9999	>=10000
CBA1	CICSPTST	CKBP	45319	0.001099	2.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
CBP1	CICSPRD2	CKBP	123	0.000548	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CBP1	CICSPRD2	Q451	8	0.138772	110.6	0.0	0.0	0.0	55.8	54.4	0.1	0.0	0.4
CBP1	CICSPRD2	Q401	79	0.001141	2.0	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0
CBP1	CICSPRD2	Q411	1044	0.001012	2.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
CBP1	CICSPRD2	Q412	1187	0.001206	2.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
CBP1	CICSPRD2	Q413	4	0.000885	2.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
CBP1	CICSPRD2	Q428	284	0.001060	2.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
CBP1	CICSPRD2	Q430	818	0.000976	2.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
CBP1	CICSPRD2	Q431	635	0.001346	2.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0
CBP1	CICSPRD2	Q444	327	0.001068	2.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0
CBT1	CICSTST2	CKBP	4	0.001235	2.0	0.0	0.8	0.3	0.0	0.0	0.8	0.3	0.0

- ▶ This visual shows an example of the format of the MQ Class 1 Summary Report.
- ▶ The MQ Class 1 Summary report summarizes the MQ activity by transaction and/or queue name within MQ Subsystem ID (SSID) and APPLID. Average values are reported for CPU time, MQGET and MQPUTx calls.

MVS System Logger Reports

- MVS System Logger Reports
 - ▶ SMF 88 - Subtype 1 and Subtype 11 (ALTER)
 - ▶ List and Summary by Logstream Name
 - ▶ Summary by Structure Name
 - ▶ List Structure ALTER events
- More extensive and flexible System Logger reporting
 - ▶ Alternative to the IXGRPT1 sample program
- Tailoring MVS System Logger Reports
 - ▶ Logstream Name, Structure Name, ...
 - Masking characters % and * are supported



- ▶ The CICS PA MVS System Logger reports process the System Logger (SMF 88) records to provide information on the System Logger logstreams and coupling facility structures that are used by CICS Transaction Server for logging, recovery and backout operations.
- ▶ The CICS PA MVS System Logger reports, when used in conjunction with the CICS Logger reports produced by the standard CICS statistics reporting utilities, such as DFHSTUP, provide a comprehensive analysis of the logstream activity for all your CICS systems and provide a more extensive and flexible performance reporting solution than the IXGRPT1 sample program.

MVS System Logger Reports - Notes

The CICS PA MVS System Logger reports process the System Logger (SMF 88) records to provide information on the System Logger logstreams and coupling facility structures that are used by CICS Transaction Server for logging, recovery and backout operations.

The CICS PA MVS System Logger reports, when used in conjunction with the CICS Logger reports produced by the standard CICS statistics reporting utilities, such as DFHSTUP, provide a comprehensive analysis of the logstream activity for all your CICS systems and provide a more extensive and flexible performance reporting solution than the IXGRPT1 sample program.

You can request a List report and/or a Summary report. The System Logger List report shows information on Logstream writes, deletes, and events (Subtype 1), as well as Structure Alter events (Subtype 11) for each SMF recording interval. Structure Alter events apply to Structures, not individual Logstreams, and are reported with a Logstream name of *ALTER*. The report is sorted either on Logstream name or Structure name.

The System Logger (SMF 88) records can be filtered by Logstream and/or Structure name patterns; masking characters % and * are also supported.

The System Logger Summary report summarizes Logstream and Structure statistics so that you can measure Logger performance over a longer period of time.



► This is a notes page for the audience.

V1R2M0

CICS Performance Analyzer

MVS System Logger Reports - Logstream Summary

System Logger Logstream Summary

LOGR0001 Printed at 16:10:07 2/13/2002 Data from 22:55:00:00 1/05/2002 to 23:55:00:00 1/05/2002 Page 61

Logstream name	MVSID	Structure name	First interval start	Last interval stop	Total Interval
IYOT1.DFHLOG	SYSD	LOG_JG_20M	23:00:00.00 1/05/2002	23:46:22.38 1/05/2002	0000:46:22

IXGWRITES				DELETIONS			
Count	Total Bytes	Average Bytes	Bytes Writn to Interim Storage	Count With DASD Write	Count Without DASD Write	Bytes After Offload w. DASD	Bytes Int Stor w/o DASD Write
Total	628147	172706K	275 301535K	216244	467717	59484K	128572K
Rate(/Sec)	225	62080	108388	77	168	21382	46216
Minimum	4	4292	4864	0	0	0	0
Maximum	94200	25898K	45218K	32740	71810	9004730	19739K

EVENTS							
Offloads	Staging Threshld	Demand DASD Shifts	Block Length	Staging Full	Entry Full	Struct Full	Demand Init'd Offloads
Total	314	0	78	0	0	0	0
Rate(/Sec)	0	0	0	0	0	0	0
Minimum	0	0	116	0	0	0	0
Maximum	48	0	1427	0	0	0	0

EVENTS					DASD Writes				
Type1	Type2	Type3	Struct Rebuilds Init'd	Struct Rebuilds Compl't'd	Count	Total Bytes	Average	Waits	
Total	612865	15277	5	0	551	68133K	0	315	
Rate(/Sec)	220	5	0	0	0	24491	0	0	
Minimum	4	0	0	0	0	0	0	0	
Maximum	91995	2458	5	0	84	10314K	0	48	

► This visual shows an example of the format of the MVS System Logger - Logstream Summary Report.



IBM Software Group

CICS Performance Analyzer for z/OS Historical Database (HDB)



@business software

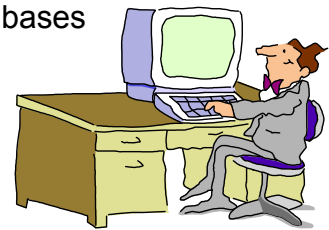
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- ▶ This section of the presentation provides a high-level overview of the new Historical Database (HDB) function introduced in CICS PA Version 1.3.

CICS PA Historical Database (HDB)

- Flexible and easy-to-use facility for collecting and managing historical performance data for your CICS systems
- The CICS PA history database function provides ...
 - ▶ Short term history data detailing individual transaction performance for use in performance problem analysis
 - ▶ Long term history data summarized over time can be used for trend analysis and capacity planning
 - ▶ Powerful and flexible definition facility for historical data repositories based on Report Forms
 - ▶ Definition and management of the historical databases (HDBs) from the CICS PA ISPF dialog
 - ▶ Comprehensive reporting facilities
 - ▶ Optionally load history data into DB2 for further analysis and reporting
 - ▶ Trending and capacity planning



- ▶ The CICS PA Historical Database (HDB) provides a flexible and easy-to-use facility for managing historical performance data for your CICS systems.
- ▶ The CICS PA History Database (HDB) function provides ...
 - ▶ Short term history data detailing individual transaction performance for use in performance problem analysis
 - ▶ Long term history data summarized over time can be used for trend analysis and capacity planning
 - ▶ Powerful and flexible definition facility for historical data repositories
 - ▶ Definition and management of the historical databases (HDBs) from the CICS PA ISPF dialog
 - ▶ Comprehensive reporting facilities
 - ▶ A facility to optionally load history data into DB2 for further analysis and reporting using DB2 reporting tools such as Query Management Facility (QMF)
 - ▶ Trending and Capacity Planning capabilities.

CICS PA Historical Database - Menu ...

```
File Options Help
-----
Historical Database Menu
Option ==> _____

1 Templates      Design HDB Templates
2 Define         Define a new HDB
3 Load          Load data into the HDBs
4 Report         Submit HDB report requests
5 Export        Export HDB data sets to DB2
6 Maintenance    Maintain HDB definitions and data sets
7 Housekeeping   Perform HDB housekeeping

HDB Register . . . TEST.HDB.REGISTER +
```



- The Historical Database Menu contains the functions to manage the Historical Database environment. The menu provides access to the seven major functions of HDB processing.

CICS PA Historical Database - Notes

The Historical Database Menu contains the functions to manage the Historical Database environment. The menu provides access to the seven major functions of HDB processing.

The HDB Register dataset is the inventory of all information associated with the CICS PA Historical Database Manager. The HDB register contains the following information:-

1. HDB definitions
2. Dataset definitions for HDB repositories
3. HDB Templates.

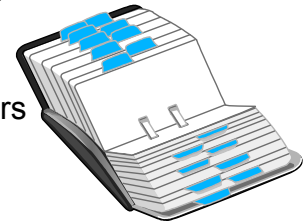
You can define as many HDB Registers as required; however only one Register can be used at a time and each Register acts independently. Information cannot be shared between Registers.



► This is a notes page for the audience.

CICS PA Historical Database - HDB Register

- Inventory of all information associated with the CICS PA Historical Database Manager
- HDB Register contains ...
 - ▶ HDB definitions
 - ▶ Dataset definitions for HDB repositories
 - ▶ HDB Templates
- Define as many HDB Registers as required, but ...
 - ▶ Only one Register can be used at a time
 - ▶ Each Register acts independently ...
 - Information cannot be shared between registers



- ▶ The HDB Register dataset is the inventory of all information associated with the CICS PA Historical Database Manager. The HDB register contains the following information:-
 - ▶ HDB definitions
 - ▶ Dataset definitions for HDB repositories
 - ▶ HDB Templates.
- ▶ You can define as many HDB Registers as required; however only one Register can be used at a time and each Register acts independently. Information cannot be shared between Registers.

CICS PA Historical Database (HDB) - HDB Template ...

- HDB Templates define the type and format of the data in the Historical Databases (HDBs)
- Similar to Report Forms, they provide HDBs with ...
 - ▶ Flexibility ...
 - you decide what and how much information is recorded in the HDB
 - ▶ Ease of use ...
 - the editor provides a simple way of tailoring the template
 - ▶ Transparency ...
 - you can see at a glance what information is recorded in the HDB
- Each Template contains the following definition information about the HDB ...
 - ▶ Type of HDB - List or Summary
 - ▶ Field names and associated attributes



CICS PA Historical Database - HDB Template - Notes

CICS PA HDB Templates define the type and format of the data in the Historical Database (HDB). HDB Templates are similar to Report Forms and provide HDBs with:-

- Flexibility - you decide what and how much information is recorded in the HDB
- Ease of use - the editor provides a simple way of tailoring the template
- Transparency - you can see at a glance what information is recorded in the HDB.

Each Template contains information on the type of HDB (List or Summary), along with the field names and their associated attributes.

When you request a new Template, a table of the CMF fields is presented (shown on the next slide) that you can then edit. The HDB Template initially consists of 2 sections:-

1. The top section of the Template shows the fields in the default HDB template. The 'EOD' marker defines the end of the historical database record, fields below the 'EOD' marker are not included in the records.
2. To include any of these fields in the HDB records, simply move them above the 'EOD' marker, and remove any unwanted fields.



► This is a notes page for the audience.

CICS PA Historical Database - Functions ...

- Load ...
 - ▶ Creates the JCL that builds the HDBs
 - ▶ Recap Report from the HDB Load process
- Report ...
 - ▶ Generates the Report JCL for HDBs
- Export ...
 - ▶ Creates the DDL to define the DB2 Table
 - ▶ Generates the JCL to load a HDB into a DB2 Table
- Maintenance ...
 - ▶ Maintenance functions that can be performed against HDBs ...
 - Display the HDB definition and its associated data sets
- Housekeeping ...
 - ▶ Housekeeping functions that can be performed against HDBs ...
 - Submit HDB Housekeeping JCL ...
 - Delete an entire HDB or individual datasets in the HDB
 - Repair HDB Register using VERIFY command



CICS PA Historical Database - Reporting

```
File  Options  Help
-----
File  Options  Help
-----
Run SUMMARY HDB Report - HDBDAILY
Command ==>> _____

Specify Report request options then press Enter to continue submit.

Reporting Options:
Report Form  . . TRTODSUM  +          ----- Report Interval -----
                                         YYYY/MM/DD  HH:MM:SS.TH
                                         From _____
                                         To   _____

Time Interval  . . 00:05:00  (hh:mm:ss)

Enter "/" to select option
/  Edit JCL before submit

HDB contains data from 1999/02/04 11:10 to 1999/02/04 11:10.
```



CICS PA Historical Database - Reporting - Notes

This visual shows an example of a request to generate the Report JCL for HDBs. Options that can be specified include the Report Form, Report Interval date/time selection and the Summary time interval. You are also presented with the option to edit the JCL before submitting it for execution.

The next visual shows an example of the output for an HDB Performance List Report.



► This is a notes page for the audience.

CICS PA Historical Database - Reporting ...

V1R3M0 CICS Performance Analyzer
Historical Database List

HDBR0001 Printed at 12:16:17 7/22/2003 Data from 11:10:29 02/04/1999 Page 1

Stop Time	Start Time	APPLID	Tran	Term	Userid	Program	TCLSName	SC	TaskNo	Response Time	Dispatch Time	User CPU Time	Suspend Time	DispWait Time
11:10:29.803	11:10:29.789	IYK2Z1V1	CSSY		CBAKER	DFHAPATT		U	16	.0139	.0007	.0006	.0133	.0000
11:10:29.809	11:10:29.791	IYK2Z1V1	CSSY		CBAKER	DFHAPATT		U	17	.0185	.0010	.0014	.0175	.0001
11:10:29.861	11:10:29.793	IYK2Z1V1	CSSY		CBAKER	DFHAPATT		U	18	.0674	.0196	.0027	.0479	.0269
11:10:30.194	11:10:29.782	IYK2Z1V1	CGRP		CBAKER	DFHZCGRP		U	12	.4123	.0420	.0074	.3702	.3223
11:10:30.207	11:10:29.787	IYK2Z1V1	CSSY		CBAKER	DFHAPATT		U	15	.4204	.0568	.0100	.3636	.1744
11:10:30.456	11:10:29.782	IYK2Z1V1	CSSY		CBAKER	DFHAPATT		U	13	.6743	.0728	.0134	.6015	.4000
11:10:30.531	11:10:29.781	IYK2Z1V1	CSSY		CBAKER	DFHAPATT		U	10	.7498	.1910	.0228	.5588	.1997
11:10:31.121	11:10:29.787	IYK2Z1V1	CSSY		CBAKER	DFHAPATT		U	14	1.3344	.3202	.0378	1.0142	.2626
11:10:31.211	11:10:29.781	IYK2Z1V1	CSSY		CBAKER	DFHAPATT		U	11	1.4292	.1497	.0313	1.2794	.3461
11:10:45.642	11:10:29.651	IYK2Z1V1	CPLT		CBAKER	DFHSIPLT		U	7	15.9915	.3383	.0369	15.6532	.0155
11:10:45.856	11:10:29.780	IYK2Z1V1	CSSY		CBAKER	DFHAPATT		U	III	16.0761	9.3488	2.3435	6.7273	1.1645
11:10:46.196	11:10:46.170	IYK2Z1V1	CWBG		CBAKER	DFHWBGB		S	24	.0262	.0248	.0041	.0013	.0012
11:10:46.856	11:10:46.774	IYK2Z1V1	CRSQ		CBAKER	DFHCRQ		S	25	.0818	.0449	.0040	.0369	.0367
11:10:47.134	11:10:46.908	IYK2Z1V1	CXRE		CBAKER	DFHZXRE		S	27	.2255	.0243	.0049	.2011	.2009
11:10:48.317	11:10:48.290	IYK2Z1V1	CLR2	R11	CBAKER	DFHLUP		TO	29	.0263	.0030	.0020	.0232	.0000
11:10:48.471	11:10:46.774	IYK2Z1V1	CSFU		CBAKER	DFHFCU		S	26	1.6968	1.5899	.1136	.1069	.0294
11:10:51.227	11:10:50.706	IYK2Z1V1	CSAC	SAMA	CBAKER	DFHACP		TO	31	.5217	.0028	.0011	.5189	.0002
11:10:51.840	11:10:48.014	IYK2Z1V1	CLQ2		CBAKER	DFHLUP		U	28	3.8259	.0818	.0068	3.7441	.0035
11:10:51.942	11:10:51.755	IYK2Z1V1	CEMT	SAMA	CBAKER	DFHEMTP		TO	32	.1877	.1842	.0264	.0035	.0030
11:10:52.549	11:10:52.540	IYK2Z1V1	CEMT	SAMA	CBAKER	DFHEMTP		TO	33	.0091	.0068	.0026	.0023	.0001
11:10:53.074	11:10:53.065	IYK2Z1V1	CEMT	SAMA	CBAKER	DFHEMTP		TO	34	.0092	.0068	.0025	.0024	.0000
11:10:54.113	11:10:53.602	IYK2Z1V1	CSAC	SAMA	CBAKER	DFHACP		TO	35	.5109	.0042	.0012	.5067	.0001
11:10:55.159	11:10:54.644	IYK2Z1V1	CSAC	SAMA	CBAKER	DFHACP		TO	36	.5150	.0011	.0011	.5139	.0001
11:10:55.884	11:10:55.742	IYK2Z1V1	CSTE		CBAKER	DFHTACP		U	37	.1420	.1381	.0126	.0039	.0037
11:11:05.421	11:11:05.367	IYK2Z1V1	CATA		CBAKER	DFHZATA		U	38	.0537	.0394	.0121	.0143	.0003
11:11:06.055	11:11:05.707	IYK2Z1V1	CQRY	S208	CBAKER	DFHQRY		S	39	.3476	.0451	.0048	.3025	.0038

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► This visual shows an example of the format of the CICS PA Historical Database List Report.

CICS PA Historical Database - Exporting

- Export an HDB data set to DB2 ...
 - ▶ Creates the DDL to define the DB2 Table
 - ▶ Generates the JCL to load an HDB into a DB2 Table
- Access to DB2 Tools, such as ...
 - ▶ Query Management Facility (QMF)
 - Query and Reporting tool
- Access to other DB2 Tools, such as ...
 - ▶ DB2 Web Query Tool ...
 - Complex querying, data comparisons, and customized presentation
 - Convert query results to diverse file formats for use on other desktop apps ...
 - including HTML, XML/XSL, .TXT, and .CSV files



▶ This visual shows an example of Exporting an HDB into a DB2 Table for further analysis and reporting. The Export functions that CICS PA provides include:-

- ▶ an option to create the DDL to define the DB2 Table for an HDB
- ▶ generate (and submit) the JCL to load the HDB into a DB2 Table.

Summary

- CICS Performance Analyzer for z/OS
 - ▶ Comprehensive Performance Reporting for CICS
 - Including DB2, WebSphere MQ, and MVS System Logger
 - ▶ Extensive Tabular Reports and Extract Data Sets
 - ▶ Historical Database
 - Trending and Capacity Planning
 - ▶ ISPF Dialog to build, maintain, and submit reports and extracts
- CICS PA Version 1.3 - Product information ...
 - ▶ Program Product - 5655-F38
 - ▶ Releases Supported ...
 - CICS Transaction Server for z/OS, Version 2
 - CICS Transaction Server for OS/390, Version 1
- More Information

<http://www.ibm.com/cics/>



► So to summarize:-

- ▶ CICS Performance Analyzer for z/OS provides a comprehensive CICS performance analysis and reporting tool using the CICS Monitoring Facility (CMF) data (SMF 110), DB2 Accounting data (SMF 101), WebSphere MQ Accounting data (SMF 116), and MVS System Logger data (SMF 88).
- ▶ CICS Performance Analyzer for z/OS, Version 1 Release 3 was announced on August 5th 2003 and available on August 29th 2003.
- ▶ CICS PA Version 1.3 supports CICS Transaction Server for z/OS Version 2, CICS Transaction Server for OS/390 Version 1, and CICS for MVS/ESA Version 4.1. For the DB2 Reports, CICS PA Version 1.3 supports DB2 Version 5, 6, 7, and 8. For the WebSphere MQ Reports, CICS PA Version 1.3 supports MQSeries for OS/390 Version 5.2, IBM WebSphere MQ for z/OS Version 5.3, and IBM WebSphere MQ for z/OS Version 5.3.1.

Appendix

Bibliography:

CICS Performance Analyzer for z/OS User's Guide, SC34-6307
CICS Performance Analyzer for z/OS Report Reference, SC34-6308

IMS/ESA Performance Analyzer User's Guide, SC27-0912
IMS/ESA Performance Analyzer Report Analysis, SC27-0913

Redbooks:

CICS Tools: CICS Performance Analyzer V1.2, SG24-6882

DB2 for z/OS and OS/390 Tools for Performance Management, SG24-6508
DB2 Performance Expert for z/OS, SG24-6867

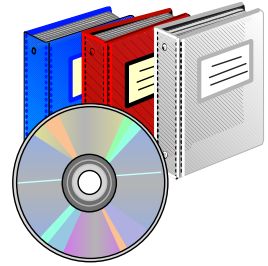
■ WEB Sites ...

<http://www.ibm.com/cics/>

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

<http://www.ibm.com/servers/eserver/zseries/zos/rmf/>

<http://www.ibm.com/software/sort/srtmhome.htm>



► This appendix shows reference material and useful web sites.