IBM Software Group

CICS Performance Analyzer for z/OS Version 1 Release 4

Technical Overview

e business on demand.

Preface

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  - CICS, CICS for MVS/ESA, CICS/ESA, CICSPlex SM
  - DB2, QMF
  - DFSMS/MVS, TotalStorage
  - IBM
  - MQSeries
  - OS/390, S/390, z/OS, zSeries
  - RMF, Resource Measurement Facility
  - Tivoli, Tivoli Enterprise, 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
- CICS PA Shared Systems
- CICS PA Online Statistics Reporting
- Summary

What is CICS PA ?

- CICS Performance Analyzer for z/OS
  - Comprehensive Performance Reporting and Analysis for CICS
  - CICS Monitoring Facility (CMF) data (SMF 110)
    - Performance, Resource and Exception
  - CICS Statistics data (SMF 110)
  - CICS Server Statistics data (SMF 110)
  - DB2 Accounting records (SMF 101)
  - WebSphere MQ Accounting records (SMF 116)
  - z/OS System Logger records (SMF 88)
- Program Product - 5655-F38
- Complements the standard CICS utilities ...
  - DFH$MOLS, DFHSTUP and DFH0STAT

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, Cross-System, ...
  - Resource Usage, DB2, WebSphere MQ, z/OS System Logger, ...
- Extract Data Sets
  - Cross-System Work, Export, Record Selection, HDB Load, ...
- Historical Database Capability
  - Trending and Capacity Planning
- Online Statistics Reporting Capability

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 in future growth estimates

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, CICS Statistics and CICS Server Statistics data, and the DB2 Accounting 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.

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 applica
    - including WebSphere MQ, DB2 and IMS (DBCTL)
  - MVS Workload Manager (WLM)
  - CICS Business Transaction Services (BTS)
  - Transaction Groups …
    - CICS Web Support, ECI over TC/IP, IIOP, …

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 3.1 collects over 282 specific performance data fields in 19 groups. Also, if the monitoring MCT options APPLNAME=YES and RMI=YES are specified, then 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 3 and Web Services 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.

CICS PA Reports and Extracts …

- Exception events that cause performance degradation
- DB2 reports using DB2 Accounting records
  - List, Short Summary, Long Summary, ...
- MQ reports using WebSphere MQ Accounting records
  - List, Summary, ...
- System Logger reports using z/OS System Logger records
  - List, Logstream Summary, Structure Summary, ...

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 **System Logger reports** process the z/OS 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.

CICS PA Reports and Extracts …

- Performance Data Extracts ...
  - Cross-System Work
    - Provides a complete view of a transaction's CICS resource usage
  - 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 and CICS Statistics Records
    - DB2 SMF 101 and WebSphere MQ SMF 116 Accounting Records
    - z/OS System Logger SMF 88 Records
  - HDB Load
    - Load SMF data into a Historical Database (HDB)
- Historical Database
  - Trending and Capacity Planning
- Online Statistics Reporting

CICS PA 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.

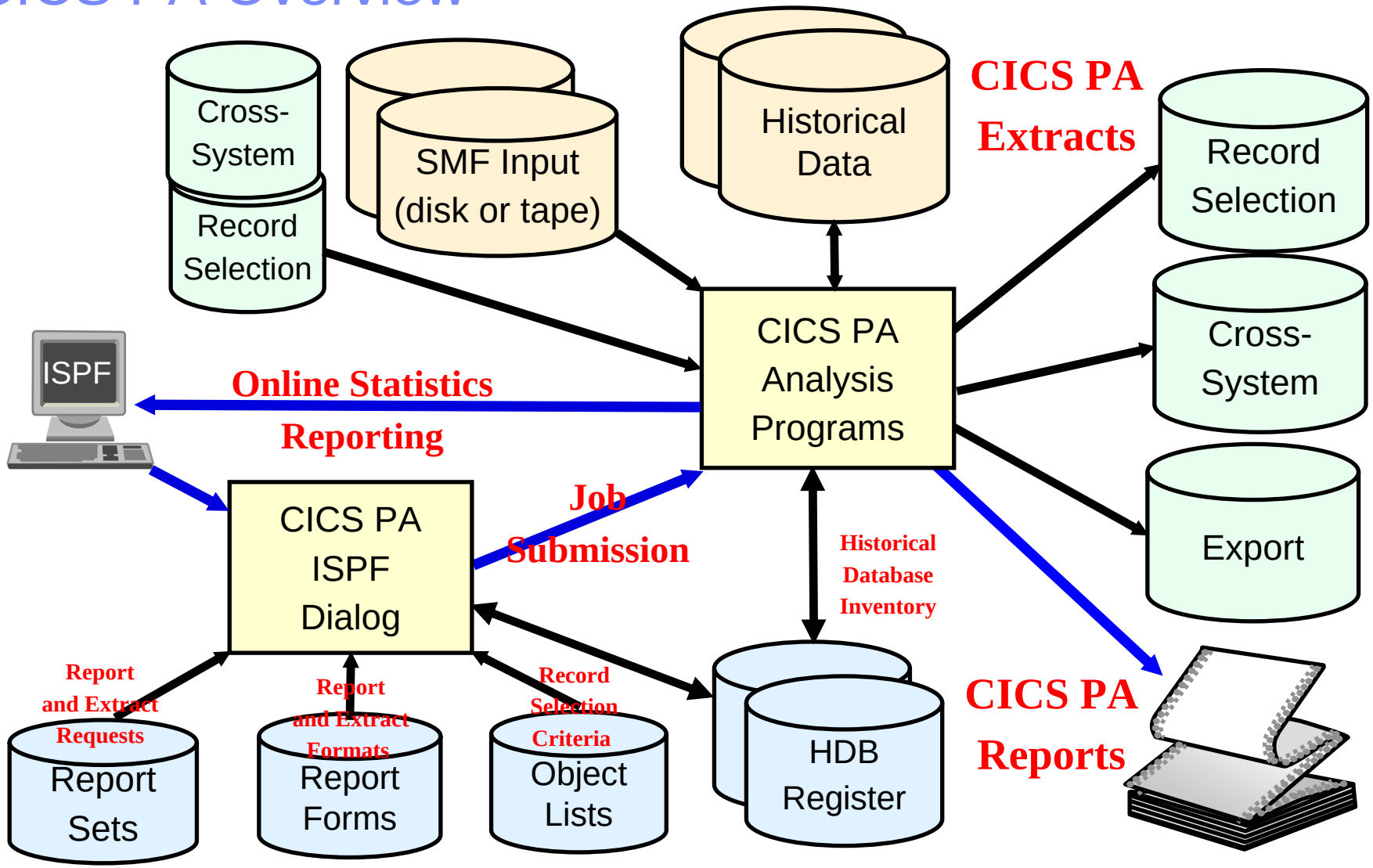
The **Exported Performance Data Extract** creates a delimited text file of CMF performance class data which can then be imported by database or spreadsheet tools for further processing and analysis.

The **Record Selection Extract** provides a facility that allows you to create a smaller extract file containing only the CICS CMF and CICS Statistics (and optionally DB2 Accounting, WebSphere MQ Accounting, and/or z/OS System Logger) 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 **HDB Load** provides a facility that loads SMF data into a Historical Database (HDB). This same facility is available from Primary Menu option 5, Historical Database. However, from Report Sets you have the advantages of allowing you to run your reports, extracts and produce historical performance and statistics data in one job and also in a single pass of the SMF input file.

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

CICS PA Overview



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), CICS Statistics, and CICS Server Statistics 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 z/OS 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 z/OS System Logger along with their associated unloaded SMF data sets.

Other CICS PA data sets include:-

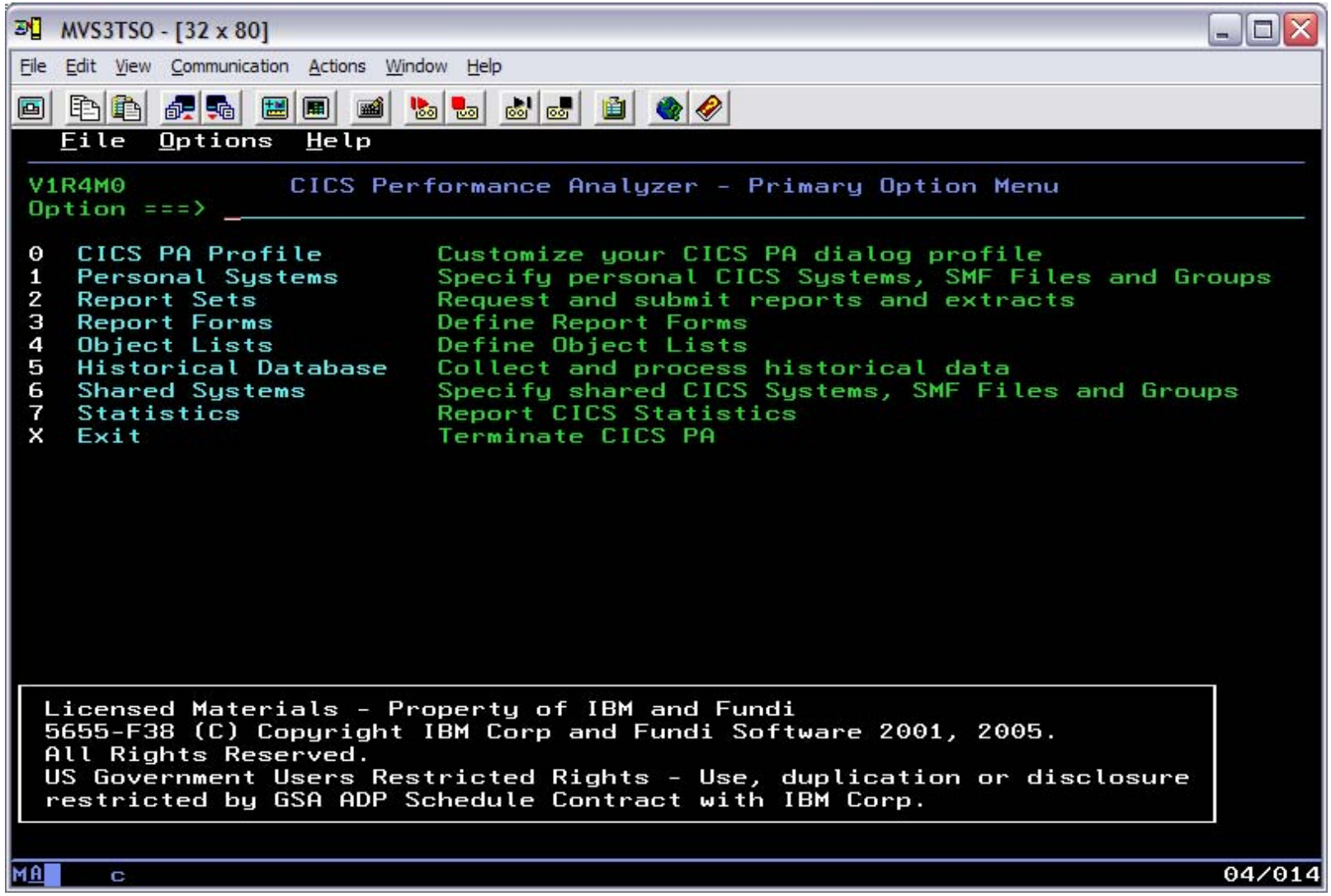
- Report Sets define your report and data extract requests.
- Report Forms enable you to tailor your reports and extracts to include the information that you want to see.
- Object Lists enable you to group objects for reporting purposes, e.g. Analyze the resource usage of a particular group of transactions or users.
- 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.

CICS PA - ISPF Dialog

- CICS PA Primary Option Menu ...
  - CICS PA Profile and Settings, CICS PA Data Sets, …
  - System Definitions
    - Personal Systems, Shared Systems
  - 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 or CSV, ...
  - Online Statistics Reporting

CICS PA Primary Option Menu …



CICS PA Primary Option 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:-

- 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.
- Define your CICS Systems (APPLIDs), MVS Images, DB2 Subsystems, MQ Subsystems (MQ Queue Managers), z/OS System Logger and their associated unloaded SMF data sets.
- 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.
- 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.
- Object Lists enable you to group objects for reporting purposes, e.g. Analyze the resource usage of a particular group of transactions or users.
- Historical Database enables you to collect, process and manage historical performance and statistics data for your CICS systems.
- Report CICS Statistics provides comprehensive reporting of CICS Statistics, either directly from an unloaded SMF data set or from a CICS PA Historical Database.

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 **                                  Active
     +  ___     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

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.

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.

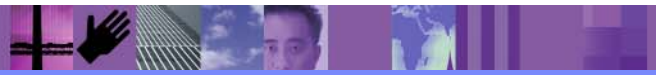
The **Workload Activity (WLM) report** provides a detailed listing and/or summary of the segments of work (transactions) performed on behalf of a single network unit-of-work id. The report highlights the MVS Workload Manager (WLM) Service Class and Report Class, and the WLM reporting and completion phase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

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

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.



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 z/OS System Logger (SMF 88) records to provide information on the z/OS 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.

Requesting Reports and Extracts – Notes …

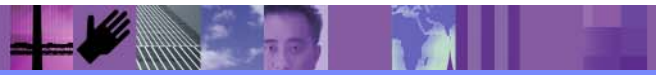
The **Cross-System Work Extract** combines the CMF performance class records belonging to the same network unit-of-work into a single CMF record in order to provide a complete view of a transaction's CICS resource usage. The Cross-System Work Extract can then be used as input to other CICS PA reports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

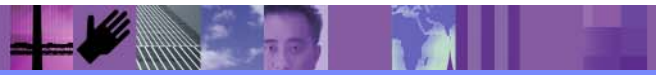
The **HDB Load** provides a facility that loads SMF data into a Historical Database (HDB). This same facility is available from Primary Menu option 5 Historical Database. However, from Report Sets you have the advantages of allowing you to run your reports, extracts and produce historical performance and statistics data in one job and also in a single pass of the SMF input file.

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.



Requesting a Performance List Report - Default

```
 V1R2M0                                              CICS Performance Analyzer
                                                        Performance List

LIST0001 Printed at 15:17:27  1/21/2002    Data from 11:10:29  2/04/1999                    APPLID IYK2Z1V1      Page       1

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

Filtering a 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 ***********************| |
```

Filtering a 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:-

- They were active between 9am and 4pm
- Transaction ID names match the mask WB*
- 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.

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

Report Forms

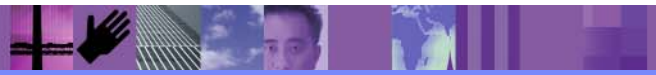
- Report Forms allow you to ..
  - Tailor the content and format of your Reports and Data Extracts
    - Report Titles and Selection Criteria may also be specified
  - Over 130 sample Report Forms provided with CICS PA
    - Every aspect of CICS transaction activity and resource usage ...
      - CPU, Storage Usage, Request Analysis, ...
      - CICS RMI Analysis, Abend Analysis, DBCTL, SOAP for CICS, ...
      - Worst CPU, File, Temporary Storage, Transient Data usage, ...
      - Response Time Distribution, ...
- Supported on ..
  - Performance List, List eXtended, and Summary Reports
  - Cross-System Work Report
  - Performance Data Extract

Report Forms - Notes

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 was extended to allow the inclusion of Selection Criteria to apply filtering that is applicable to the resources being reported by the Report Form. In CICS PA Version 1 Release 4 the Report Forms capability has been extended to allow new forms to be modeled on an HDB template.

Comprehensive online help is available for every CMF field, so that you never need to reference a manual.

When creating a report form you can edit the report or extract format by selecting fields from either a list of all the CMF data fields or just the fields from a specific field category. Some examples of the field categories that are defined in CICS PA are for a terminal-owning or application owning region, or the standard CMF field groups such as DFHCICS, DFHSTOR or DFHTASK.



Tailoring the Performance LIST Report Format

```
  File  Edit  Confirm  Upgrade  Options  Help
                    EDIT LIST Report Form - FCLIST      Row 1 of 276 More: >
Command ===>                                            Scroll ===> CSR

Description  . . . List Report Form                 Version (VRM): 630
Title  . .   Transaction File Control Usage

Enter "/" to select action.

   Field
   Name +    Type     Description
__ TRAN      ________ Transaction identifier
__ USERID    ________ User ID
d_ PROGRAM   ________ Program name
d_ TASKNO    ________ Transaction identification number
__ STOP      TIMET    Task stop time
__ RESPONSE  ________ Transaction response time
__ DISPATCH  TIME     Dispatch time
__ CPU       TIME     CPU time
d_ SUSPEND   TIME     Suspend time
d_ DISPWAIT  TIME     Redispatch wait time
__ FCWAIT    TIME     File I/O wait time
a_ FCAMCT    ________ File access-method requests
__ EOR       ________ ---------------- End of Report ----------------
__ EOX       ________ ---------------- End of Extract ---------------
mm FCADD     ________ File ADD requests
__ FCBROWSE  ________ File Browse requests
__ FCDELETE  ________ File DELETE requests
__ FCGET     ________ File GET requests
__ FCPUT     ________ File PUT requests
mm FCTOTAL   ________ File Control requests
```

7 Date/Time formats are available

Move the required fields above EOR to include in the report

Tailoring Performance LIST Report Format - Notes

When you request a new Report Form, a table of the CMF fields is presented that you can then edit. The Report Form initially consists of 2 sections:-

1. The top section of the Report Form shows the fields in the default report, across the page from left to right.
   The 'EOR' marker defines the page width boundary for the report and the 'EOX' marker defines the end of the record for an extract. Fields below the 'EOR' marker are not included in the report and CICS PA will automatically adjust the 'EOR' marker when you edit your Report Form, so that you are aware of where your report finishes.
2. Fields below the 'EOR' marker will not appear in the report and fields below the 'EOX' marker will not appear in the extract. To include any of these fields in the report or extract, simply move them above the 'EOR' or 'EOX' markers, and remove any unwanted report fields.

The Report Form (shown on the previous slide) shows the edit commands necessary to include File Control requests in the Performance List Report.

The Report Form also allows the inclusion of Selection Criteria to apply filtering that is applicable to the resources being reported by the Report Form.

Tailoring the Performance LIST Report Format …

```
  File  Systems  Options  Help
                    REPORT1 - Performance List Report
Command ===>

System Selection:                        Report Output:
 APPLID . . CICSP1    +                   DDname . . . . . . . . . LIST0001
 Image  . . _____     +                   Print Lines per Page . . ___  (1-255)
 Group  . . _____     +

Report Format:
 Form . . . FCLIST    +
 Title  . . Transactions File Control Usage
            ____________________________________________________________

Selection Criteria:
 _  Performance
```

Specify the report options

Performance List Report - File Requests

V1R2M0 CICS Performance Analyzer
Performance List

LIST0001 Printed at 10:32:09 2/07/2002 Data from 11:17:21 2/04/1999 APPLID IYK2Z1V3 Page 4
Transaction File Control Usage

Tran	Userid	Stop Time	Response Time	Dispatch Time	User CPU Time	FC Wait Time	FCAMRq	FCADD	FCBROWSE	FCDELETE	FCGET	FCPUT	FC Total
TRUE	BRENNER	11:17:23.394	2.0973	.0014	.0010	.0000	0	0	0	0	0	0	0
MENU	BRENNER	11:17:26.064	.0019	.0019	.0015	.0000	0	0	0	0	0	0	0
SAL1	BRENNER	11:17:31.629	.1657	.0074	.0061	.0186	12	2	0	0	4	2	10
RED1	BRENNER	11:17:32.050	.5333	.0055	.0040	.0000	0	0	0	0	0	0	0
STOC	BRENNER	11:17:32.053	.5145	.0033	.0030	.0000	0	0	0	0	0	0	0
SALE	BRENNER	11:17:32.054	.5675	.0263	.0124	.0493	28	6	0	0	8	4	22
INV1	BRENNER	11:17:32.090	.0359	.0059	.0051	.0096	11	1	0	1	3	1	7
CITS	CBAKER	11:17:33.282	.0126	.0036	.0031	.0000	0	0	0	0	0	0	0
DEL1	BRENNER	11:17:33.286	1.2323	.0057	.0051	.0099	15	1	0	1	3	1	7
SALE	BRENNER	11:17:33.309	1.2198	.0086	.0047	.0130	10	0	0	1	4	2	9
SALE	BRENNER	11:17:33.366	.0800	.0091	.0084	.0378	20	1	0	1	6	3	14
SALE	BRENNER	11:17:33.417	.0519	.0083	.0076	.0203	16	1	0	1	6	3	14
STAT	CBAKER	11:17:35.081	1.8129	.0178	.0028	.0000	0	0	0	0	0	0	0
SAL1	BRENNER	11:17:37.764	.0019	.0019	.0015	.0000	0	0	0	0	0	0	0
SALE	BRENNER	11:17:38.653	.0566	.0083	.0069	.0312	18	2	0	1	6	3	15
REM1	BRENNER	11:17:38.677	.0243	.0050	.0047	.0085	9	1	0	1	3	1	7
SALE	BRENNER	11:17:38.716	.0389	.0067	.0062	.0157	16	1	0	1	6	3	14
SAL1	BRENNER	11:17:39.265	.0015	.0014	.0013	.0000	0	0	0	0	0	0	0
PAYM	BRENNER	11:17:42.168	.0014	.0014	.0013	.0000	0	0	0	0	0	0	0
SALE	BRENNER	11:17:43.924	.0826	.0082	.0073	.0563	16	1	0	1	6	3	14
REM1	BRENNER	11:17:43.960	.0367	.0054	.0052	.0181	9	1	0	1	3	1	7
SALE	BRENNER	11:17:44.042	.0824	.0072	.0069	.0561	16	1	0	1	6	3	14
SALE	BRENNER	11:17:49.129	.0463	.0074	.0068	.0189	16	1	0	1	6	3	14

Performance List Report - DBCTL

```
 V1R2M0                                          CICS Performance Analyzer
                                                     Performance List

LIST0001 Printed at 11:33:27  9/11/2001    Data from 12:17:43  2/04/1999                    APPLID IYK2Z1V3      Page       9
                                        Analysis of Transaction IMS DBCTL Usage
 Tran PSB      Response User CPU IMS Reqs IMS Wait IMS Wait SchedElp   PoolWt    IC WT   DBIOEl PILockEl ThredCPU      DLI     DBIO
                   Time     Time             Time    Count     Time     Time     Time     Time     Time     Time    Calls    Calls
 DLI1 PSB001     5.9288   1.5556        3   1.5556        5   1.0004   .0000   .0000   .0023   .0000   .0041        2        1
 DLI2 PSB001     3.5302    .2359        3    .2359        5    .0010   .0000   .0000   .0017   .0000   .0289        2        1
 DLI3 PSB001     3.4382    .5010        3    .5010        5    .0010   .0000   .0000   .0018   .0000   .0289        2        1
 DLI4 PSB001     1.0711    .7553        2    .7553        4    .0024   .0000   .0000   .0000   .0000   .0299        1        0
 DLI5 PSB001      .2516    .2319        2    .2319        4    .0010   .0000   .0000   .0000   .0000   .0318        1        0
 DLI6 PSB001      .3658    .3658        2    .3478        4    .0011   .0000   .0000   .0000   .0000   .0327        1        0
 DLI2 PSB001    91.8213   1.8717        2  14.8960        4    .0010   .0000   .0000   .0000   .0000   .0286        1        0
 DLI3 PSB001    156.501   1.9866        2  18.3825        4    .0055   .0000   .0000   .0019   .0000   .0298        1        1
 DLI5 PSB001    233.355   1.9771        2  21.3535        4    .0049   .0000   .0000   .0000   .0000   .0293        1        0
 DLI1 PSB001    95.2870   1.9511        2  21.4463        4    .0050   .0000   .0000   .0018   .0000   .0288        1        1
 . . . .
 . . . .
```

Performance List Report – DBCTL - Notes

The Performance List Report (shown on the previous slide) has been tailored to show the IMS DBCTL activity for each transaction.

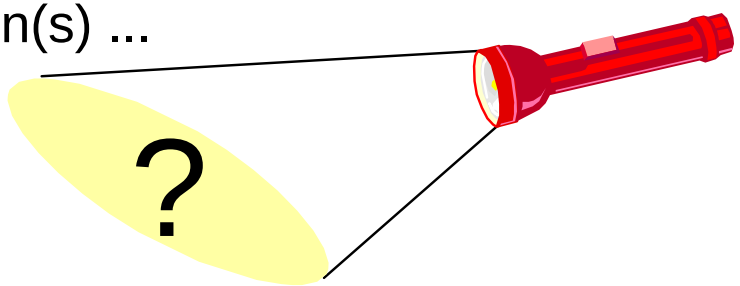
IMS DBCTL users can collect DBCTL statistics in the CMF performance class records by including the DFH$MCTD copy member in the MCT definition.

The DBCTL User Field is 256 bytes long and contains a wealth of IMS information that can be requested in your reports.

This information includes:-
- PSB name
- various IMS DBCTL internal elapsed times
- various IMS DBCTL CPU times
- DLI and database call counts, include DEDB statistics
- Enqueue statistics.

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



Performance List Extended Report …

```
 V1R3M0                                          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         Response Dispatch User CPU  Suspend DispWait  FC Wait   FCAMRq  IR Wait
                                         Time         Time     Time     Time      Time     Time                 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
```

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, ...
- Reporting Options ...
  - Time Interval
  - Totals Level ...
    - blank - Suppress totals
    - 0 through 8 - Optional Grand Totals

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 SC24UHWM	Avg SC31UHWM
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

Performance Summary Report - Notes

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

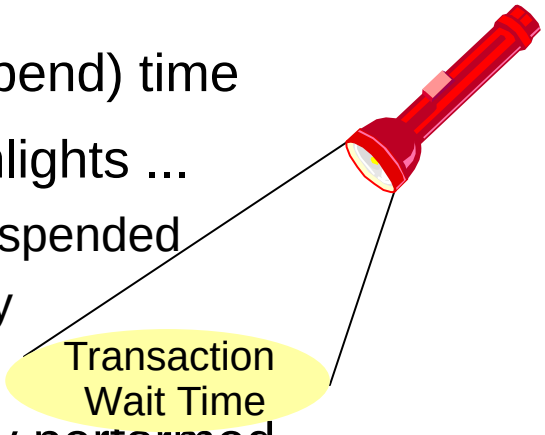
The default report format (shown on the previous slide) summarizes the performance class records by Transaction ID. The Task Count (#Tasks) shows the number of performance class records processed during the reporting period.

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.

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



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
      ....
```

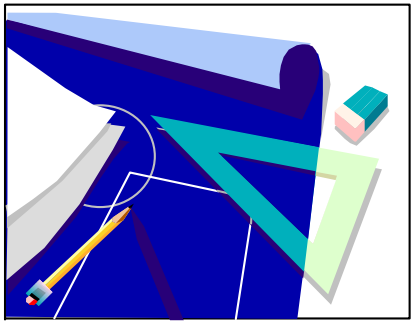
Cross-System Work Report

- 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
- 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
- Report can be tailored using Report Forms
- Selection Criteria ...
  - Record and/or Unit-of-Work

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

                                         Request         Fcty  Conn                      UOW                   R                Response A
Tran Userid    SC TranType Term  LUName   Type   Program  T/Name Name NETName               Seq APPLID         Task T  Stop Time     Time   B

ABRW BRENNER   TP U        S23D IGCS23D  AP:     DFHúABRW 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:     DFHúABRW 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
```

MVS Workload Activity Reports

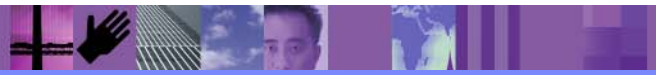


- Provides a List Report that correlates the CMF performance class data by Network Unit-of-Work id, highlighting ...
  - MVS WLM Service Class and Report Class
  - WLM Reporting and completion phase (BTE or EXE)
- Summary Report ...
  - by MVS WLM Service Class and Report Class
    - average response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

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                                          ------------- Response Time -------------
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, ...



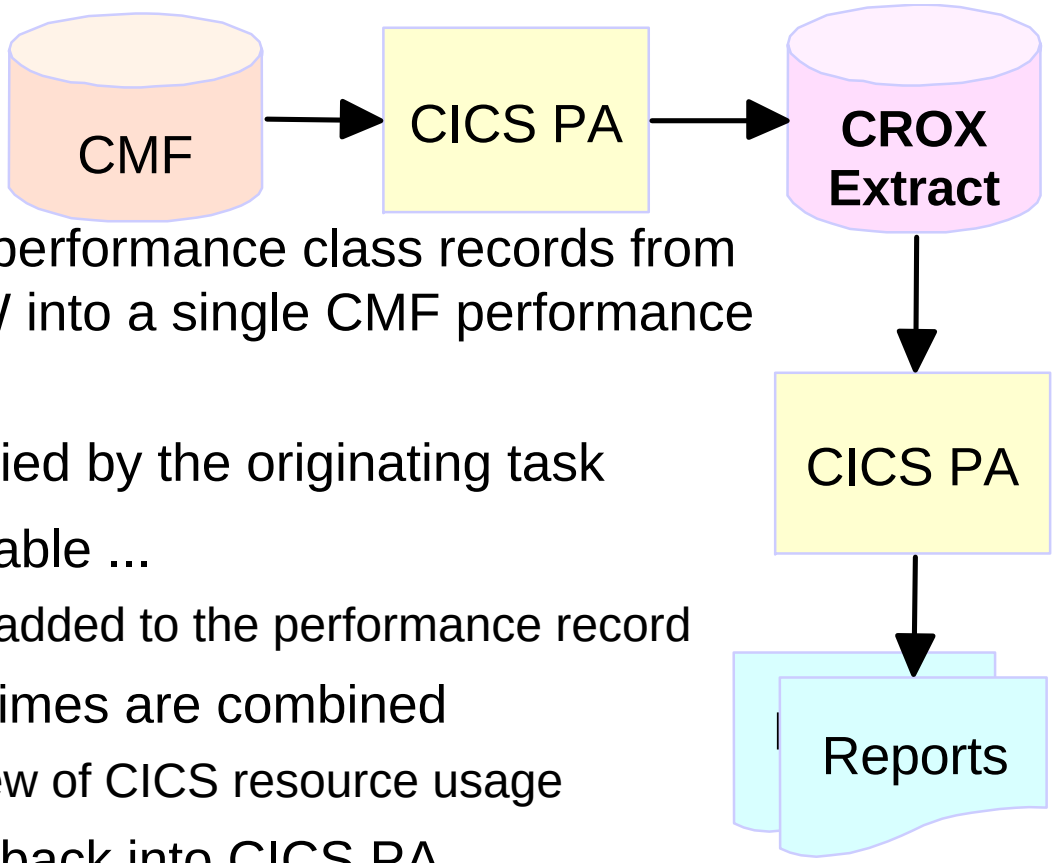
Extract Data Sets - Performance Data Export

- 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, ...

Extract Data Sets - Record Selection Extract

- Creates a new SMF Data Set
  - CICS SMF 110 CMF and Statistics Records
  - DB2 SMF 101 Accounting Records
  - WebSphere MQ SMF 116 Accounting Records
  - z/OS System Logger SMF 88 Records
- SMF Data volume reduction
  - Filter large SMF files, ...
- Record selection ...
  - CICS, DB2, MQ and Logger System Selection
  - Performance and Exception Record Selection Criteria
  - Run-time SMF reporting interval
- Extracts can be played back into CICS PA
  - All CICS PA Reports and Extracts are available

Extract Data Sets - Cross-System Work Extract



- Consolidates the CMF performance class records from the same network UOW into a single CMF performance record ...
- Transactions are identified by the originating task
- All CMF fields are available ...
  - User fields can also be added to the performance record
- Counters and elapsed times are combined
  - Provides a complete view of CICS resource usage
- Extracts can be played back into CICS PA ...
  - The records produced are valid CMF performance records
  - All CICS PA Reports and Extracts are available

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

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.

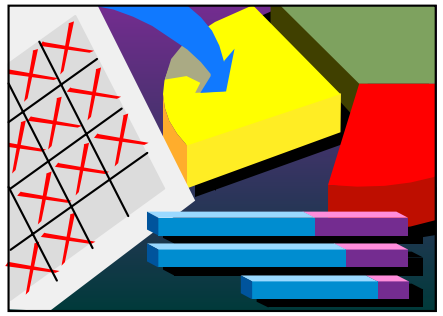
The Transaction Resource Usage List report provides a list of all Transaction resource class records in the sequence that they appear in the SMF file. It gives Transaction Information, detailing their individual File and Temporary Storage Queue usage.
The Transaction File Usage Summary report summarizes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

Transaction Resource Usage Reports – Usage List

```
 V1R3M0                                                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

                                         Request           Fcty  Conn                                           UOW R               Response
Tran  Userid   SC TranType Term   LUName  Type   Program  T/Name Name       NETName        APPLID    Task Seq T   Stop Time     Time
---- -------- -- -------- ----  -------- ------- -------- ------ ---- ----------------- --------   ---- --- - ------------ --------
AUPD CBAKER   TP U        TC28  IYCWTC28 AP:     DFHúAALL T/TC28      GBIBMIYA.IYCWTC28 IYK2Z1V1     91   1 T 15:13:39.474    .0072

                             ********************** FC Calls ********************* ******* I/O Waits ********  AccMeth
   File                        Get      Put     Browse     Add    Delete    Total     File     RLS      CFDT   Requests
  --------                   -------- -------- -------- -------- -------- -------- -------- -------- -------- --------
  FILEA              Elapse    .0001    .0047    .0000    .0000    .0000    .0048    .0032    .0000    .0000
                     Count         1        1        0        0        0        2        1        0        0        4

---- -------- -- -------- ----  -------- ------- -------- ------ ---- ----------------- --------   ---- --- - ------------ --------
CECI CBAKER   TO U        TC05  IYCWTC05 AP:     DFHECIP  T/TC05      GBIBMIYA.IYCWTC05 IYK2Z1V1     69   1 T 15:14:26.435 266.7346

                             ********************** FC Calls ********************* ******* I/O Waits ********  AccMeth
   File                        Get      Put     Browse     Add    Delete    Total     File     RLS      CFDT   Requests
  --------                   -------- -------- -------- -------- -------- -------- -------- -------- -------- --------
  FILEA              Elapse    .0000    .0000    .0001    .0000    .0000    .0002    .0000    .0000    .0000
                     Count         0        0        5        0        0        6        0        0        0        7

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

  TESTQ2             Elapse    .0000    .0000    .0000    .0000    .0000    .0000
                     Count         0        2        0        2        0        0  Length         0      120        0

  Total              Elapse    .0000    .0000    .0017    .0017    .0000    .0000
                     Count         0        2        3        5        0        0  Length         0      120      360
```

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 4 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.

DB2 Reports – List

```
 V1R2M0                                              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/ Userid/ Program/                UOW R              ..DB2 Wait Time..   DB2    User CPU                              Response A
SSID  Authid  Planname  APPLID    Task Seq T Term  LUName   Connect  Thread   ReqCnt    Time     Start Time    Stop Time    Time   B

WROS RAIMAN   CRWWPPOS STM4IRA1  34695   1 T <ADQ STM4IRT1    .0000    .0000       18    .3112  13:31:23.053 13:31:34.349  11.2956

CH1G STM4IRA1 CRWWPPOS 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
                                       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

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=ENTRWRNO0051  NETName=USIBMSY.LE000081   UOWID=1637397E8927
                                                               Begin Time: 13:31:38.854  1/24/02  End Time: 13:31:45.808  1/24/02
                                       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
```

CMF performance data

Associated DB2 Accounting data

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):-
- DB2 Thread Identification, for easy cross-reference to DB2 PE or DB2 PM reports
- Class 1 Thread elapsed and CPU times
- Class 2 In-DB2 elapsed and CPU times
- Class 3 Suspend times
- Buffer Manager statistics
- Locking statistics
- 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.

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/ Program/ #Tasks/  ............Average Elapsed Time............  .....Average CPU Time.....  .....Average Count....... #Abends
SSID  Planname #Threads Response  Thread   In-DB2  DB2ConWt DB2ThdWt    User    Thread   In-DB2   DB2Reqs  GetPage SysPgUpd
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
```

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

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.

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

MQ Reports - Class 1 Summary

V1R3M0 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

z/OS System Logger Reports

- 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 System Logger Reports
  - Logstream Name, Structure Name, ...
    - Masking characters % and * are supported

z/OS System Logger Reports - Notes

The CICS PA System Logger reports process the z/OS 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 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 z/OS 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.

z/OS System Logger Reports - Logstream Summary

V1R2M0 CICS Performance Analyzer
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	0	116	0	0	0	0
Maximum	48	0	12	1427	0	0	0	0

	EVENTS					DASD Writes			
	Type1	Type2	Type3	Struct Rebuilds Init'd	Struct Rebuilds Complt'd	Count	Total Bytes	Average	Waits
Total	612865	15277	5	0	0	551	68133K	0	315
Rate(/Sec)	220	5	0	0	0	0	24491		0
Minimum	4	0	0	0	0	0	0		0
Maximum	91995	2458	5	0	0	84	10314K		48

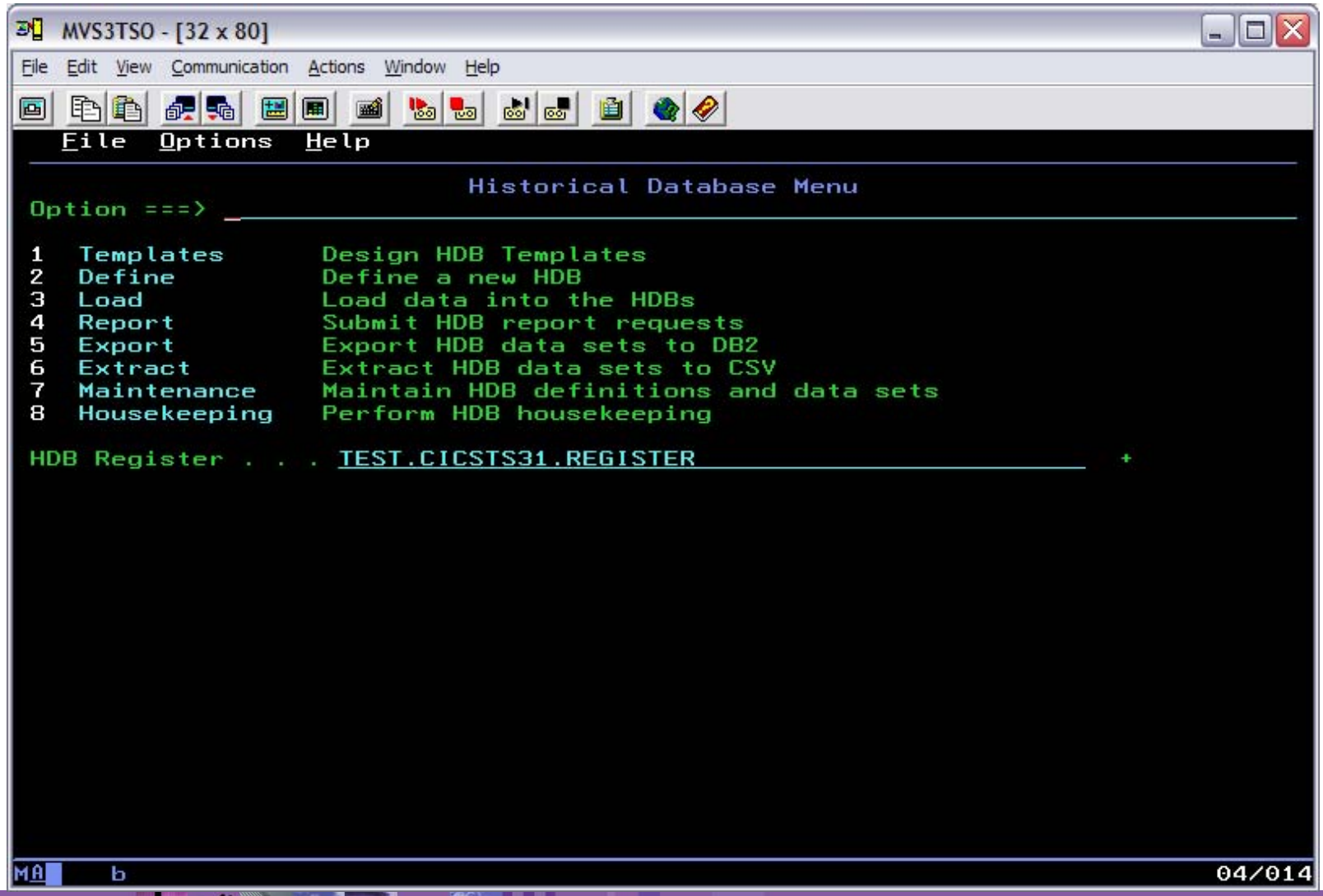
CICS Performance Analyzer for z/OS

Historical Database (HDB)

CICS PA Historical Database (HDB)

- Flexible and easy-to-use facility for collecting and managing historical performance and statistics 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 that can be used for trend analysis, capacity planning and accounting purposes
  - Statistics history data for performance analysis and reporting purposes
  - Powerful and flexible definition facility for historical data repositories based on Report Forms
  - Comprehensive reporting facilities
  - Export history data to a DB2 table for further analysis and reporting
  - Extract history data into a CSV format data set
  - Definition and management of the historical databases (HDBs) from the CICS PA ISPF dialog
- Performance analysis, trending, capacity planning and accounting

CICS PA Historical Database - Menu



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.

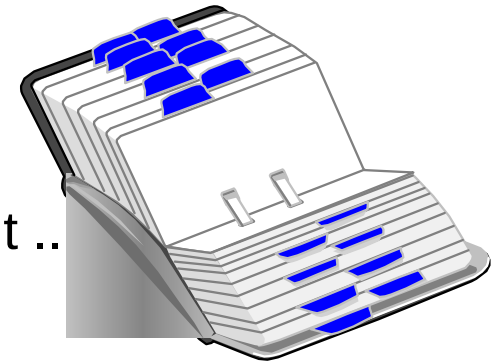
The HDB Register dataset is the inventory of all information associated with the CICS PA Historical Database Manager. The HDB register contains the following information:-

- HDB Templates
- HDB Definitions, including the dataset definitions for HDB repositories (containers)
- Selection Criteria
- Object Lists
- Container data set information
- Load audit records
- Shared System definitions.

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 Register

- Inventory of all information associated with the CICS PA Historical Database Manager and Shared System Definitions
- HDB Register contains ...
  - HDB Templates
  - HDB Definitions
  - Dataset definitions for the HDB repositories (containers)
  - Container data set information
  - Load Audit records
  - Shared System Definitions
- 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



CICS PA Historical Database – HDB Template

- HDB Templates define the type and format of the performance 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

CICS PA HDB Templates define the type and format of the performance data in the Historical Database (HDB). HDB Templates apply to List and Summary type HDBs and 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.

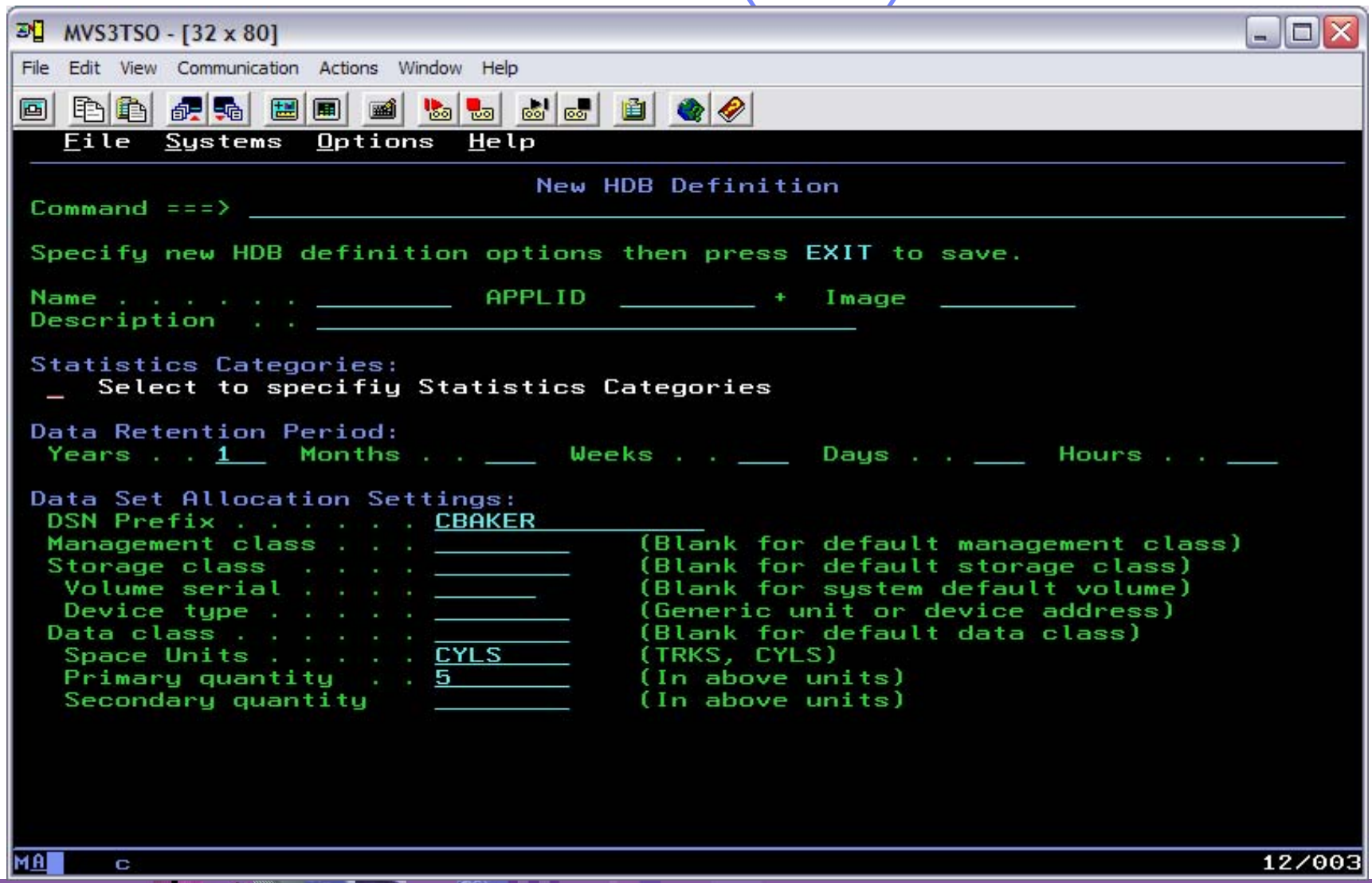
When you request a new Template, a table of the CMF fields is presented (shown on the next slide) that you can then edit. The HDB Template initially consists of 2 sections:-

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.

CICS PA Historical Database (HDB) - Functions

- Define …
  - Allows you to collect and report historical performance or statistics data
  - HDB Definition …
    - HDB Name, APPLID/Image, Description, …
    - For a List or Summary HDB …
      - Template, Selection Criteria, …
    - For a Statistics HDB …
      - Specify the data to be collected for the statistics reports
  - HDB Data Retention Period
  - HDB Data Set Allocation Settings ...
    - DSN Prefix, Management Class, Storage Class, …
    - Data Class, Space Units and Space Quantities, …

CICS PA Historical Database (HDB) - Define



CICS PA Historical Database (HDB) – Define …

CICS PA Historical Database (HDB) - Functions

- Load ...
  - Creates the JCL that builds the HDBs
  - Recap Report from the HDB Load process
  - HDB Load Audit
    - Verify that all load requests have completed, Highlight gaps in the data, …
  - HDB Load requests can also be requested in a Report Set
- Report ...
  - Generates the Report JCL for HDBs
- Export to DB2 ...
  - Creates the DDL to define the DB2 Table
  - Generates the JCL to load an HDB into a DB2 Table
- Extract to CSV …
  - Generates the JCL to extract an HDB into CSV format data set

CICS PA Historical Database (HDB) – Functions …

- Maintenance ...
  - Maintenance functions that can be performed against HDBs ...
    - Display the HDB definition and its associated data sets
    - Display the HDB Load Audit Trail
- 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 (HDB) - 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 Interval ------   │
 │  Report Form  . . TRTODSUM  +                  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.

CICS PA Historical Database (HDB) - 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

CICS PA Historical Database – Export to DB2

- 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
  - More Information …

    http://www.ibm.com/software/data/qmf/
- 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

CICS PA Historical Database – Extract to CSV

- Extract to CSV data set
  - This facility is provided to extract HDB List, Summary and Statistics data into a CSV (comma-separated variable) format data set
    - Allows the user to analyze both CICS Monitoring and CICS Statistics historical data off-host using PC spreadsheet or database tools

CICS PA Shared System Definitions

- Alternative to Personal System Definitions
- Advantages are …
  - All CICS PA users can share the same definitions
    - Simplifies maintenance, avoids duplication, …
  - SMF File selection for batch reporting requests is automated
    - Daily SMF files span a period of time for the current day
    - Cyclic SMF files cover a continuously recurring period of time
  - One or more Personal System Definitions can be consolidated into a single Shared System Definition repository by using Take-up
- Use of Personal or Shared System Definitions can be selected at Report Set or HDB run time

CICS PA Shared System Definitions …

```
  File  Options  Help
                    Shared System Definitions Menu
Command ===>

Select an option then press Enter.

1  1. Define Systems and their SMF Files
   2. Maintain Group definitions
   3. Take-up from personal System Definitions
   4. Take-up from SMF File

Enter "/" to select option
_  Always go directly to Systems View

HDB Register . . . CICSPA.SAMPLE.REGISTER                    +
```

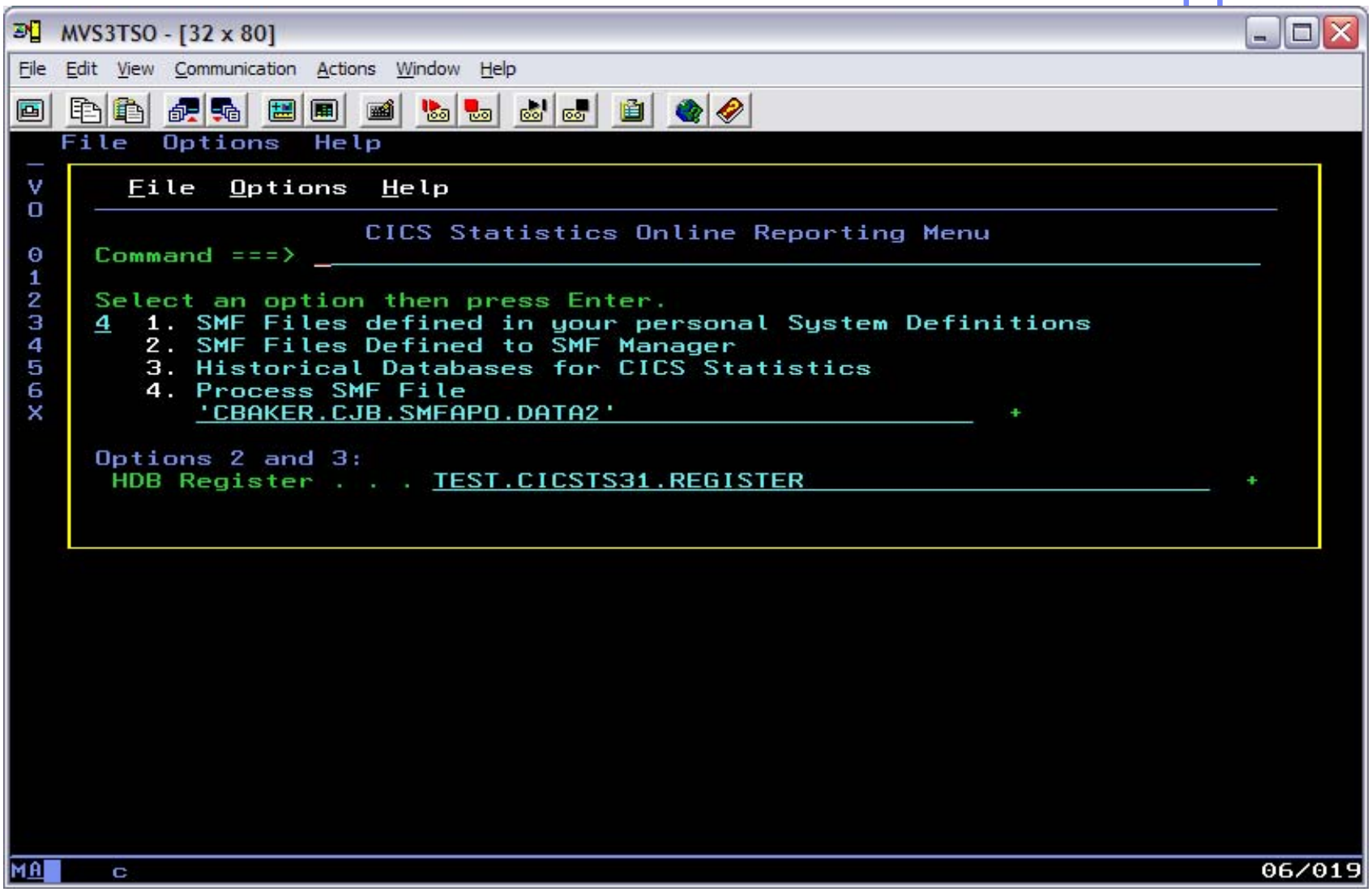
CICS PA Historical Database (HDB) - Review

- Flexible and easy-to-use facility for collecting and managing historical performance and statistics 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 that can be used for trend analysis, capacity planning and accounting purposes
  - Statistics history data for performance analysis and reporting purposes
  - Powerful and flexible definition facility for historical data repositories based on Report Forms
  - Comprehensive reporting facilities
  - Export history data to a DB2 table for further analysis and reporting
  - Extract history data into a CSV format data set
  - Definition and management of the historical databases (HDBs) from the CICS PA ISPF dialog
- Performance analysis, trending, capacity planning and accounting

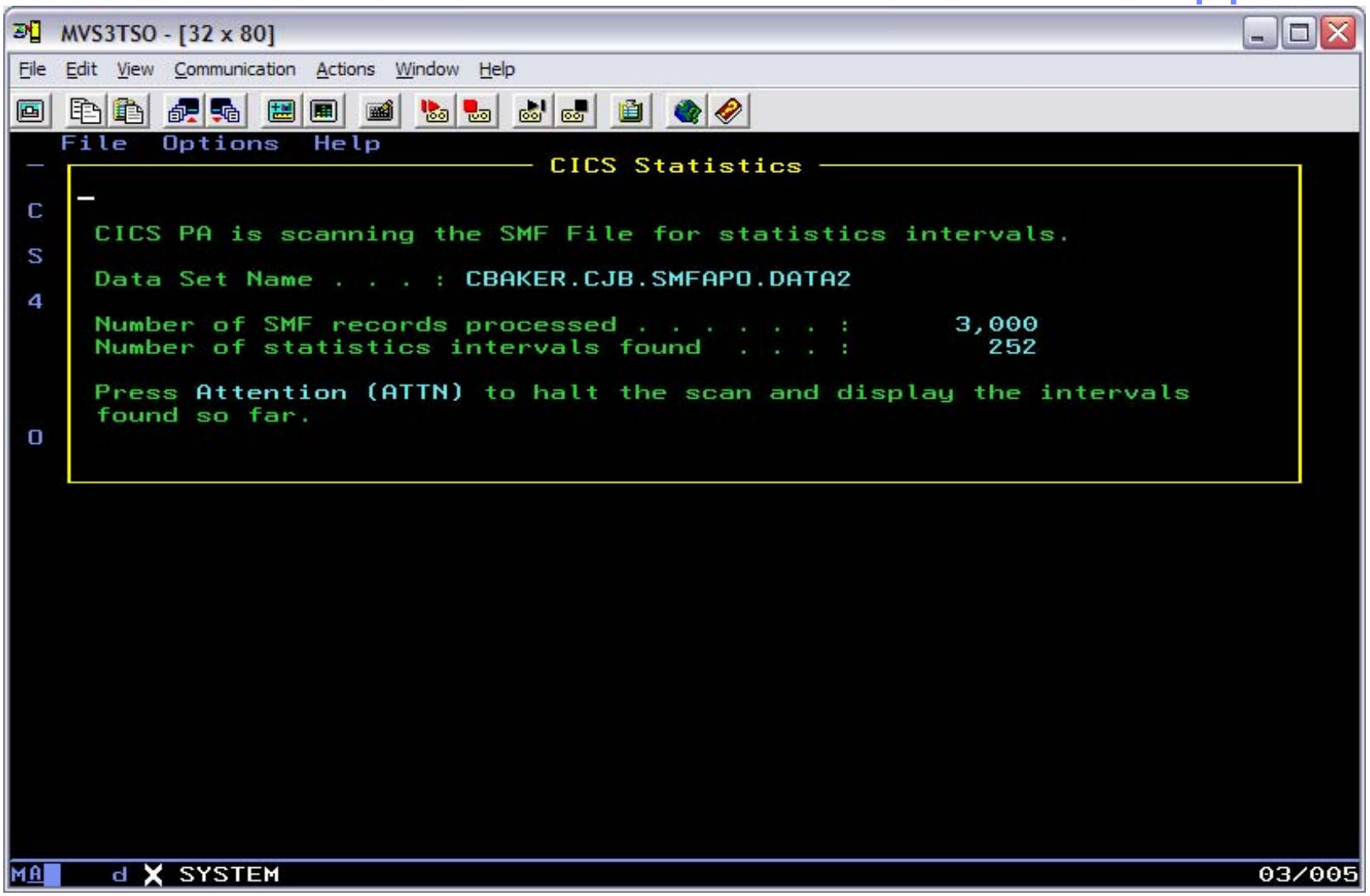
CICS Statistics and CICS Server Statistics Support

- CICS PA now provides comprehensive reporting and analysis of CICS statistics and CICS server statistics data
- The CICS PA Statistics online reporter provides comprehensive reporting of CICS Statistics data …
  - Directly from an unloaded SMF data set or a CICS PA Historical Database
  - The reporting facility has QMF-like features; including …
    - Tabular reporting, Sorting by field (column), …
    - Forms to design personalized reports
    - Print facility (to a data set or to SYSOUT)
- CICS Statistics data can also be collected into a CICS PA Historical Database (HDB)
  - Facilities to Export to a DB2 table or Extract to a CSV file
  - Historical statistics data can also be reported using online reporting
- Supported for CICS Transaction Server for z/OS V2.2 or later

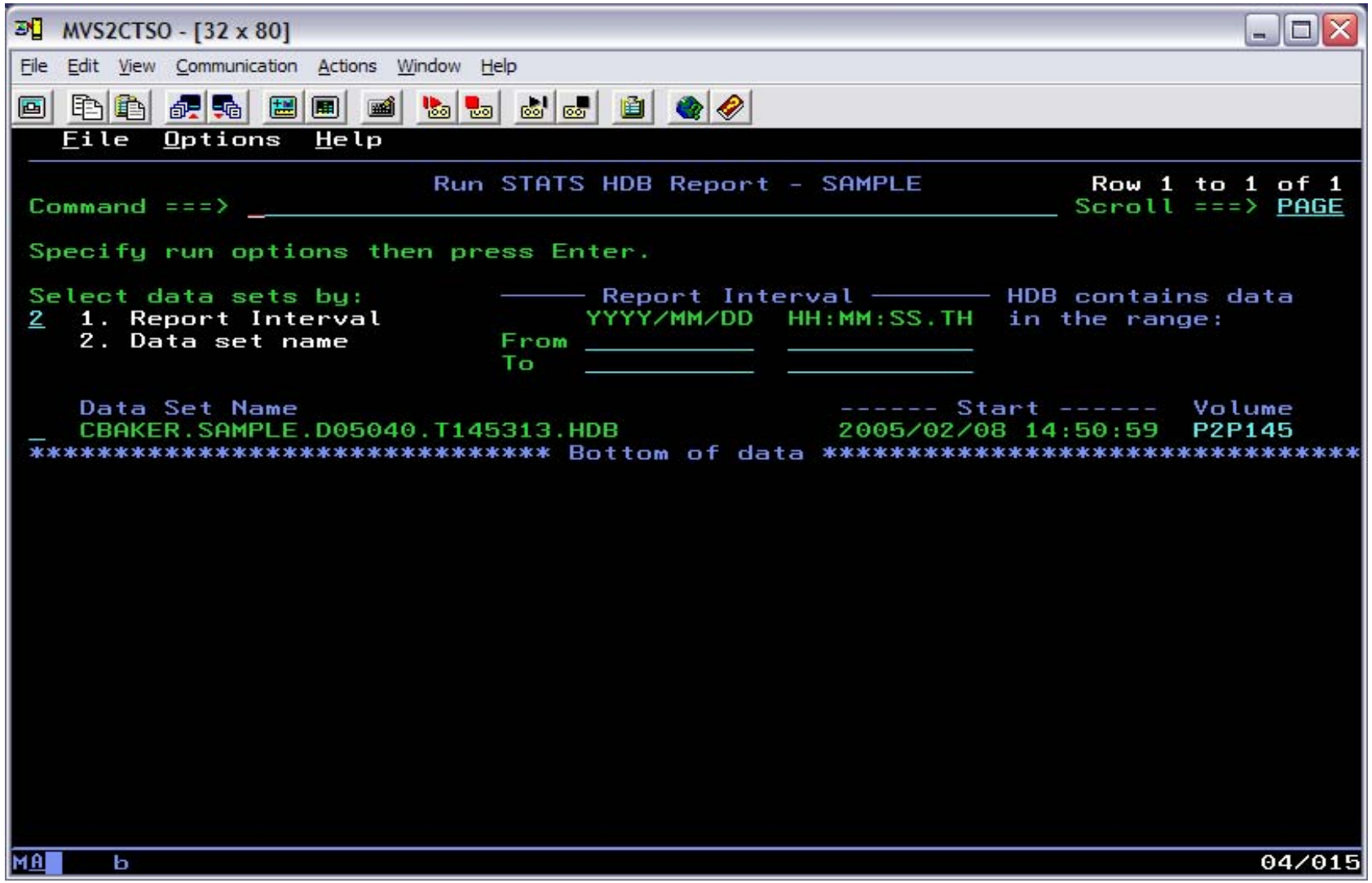
CICS Statistics and CICS Server Statistics Support



CICS Statistics and CICS Server Statistics Support



CICS Statistics and CICS Server Statistics Support



CICS Statistics - Notes

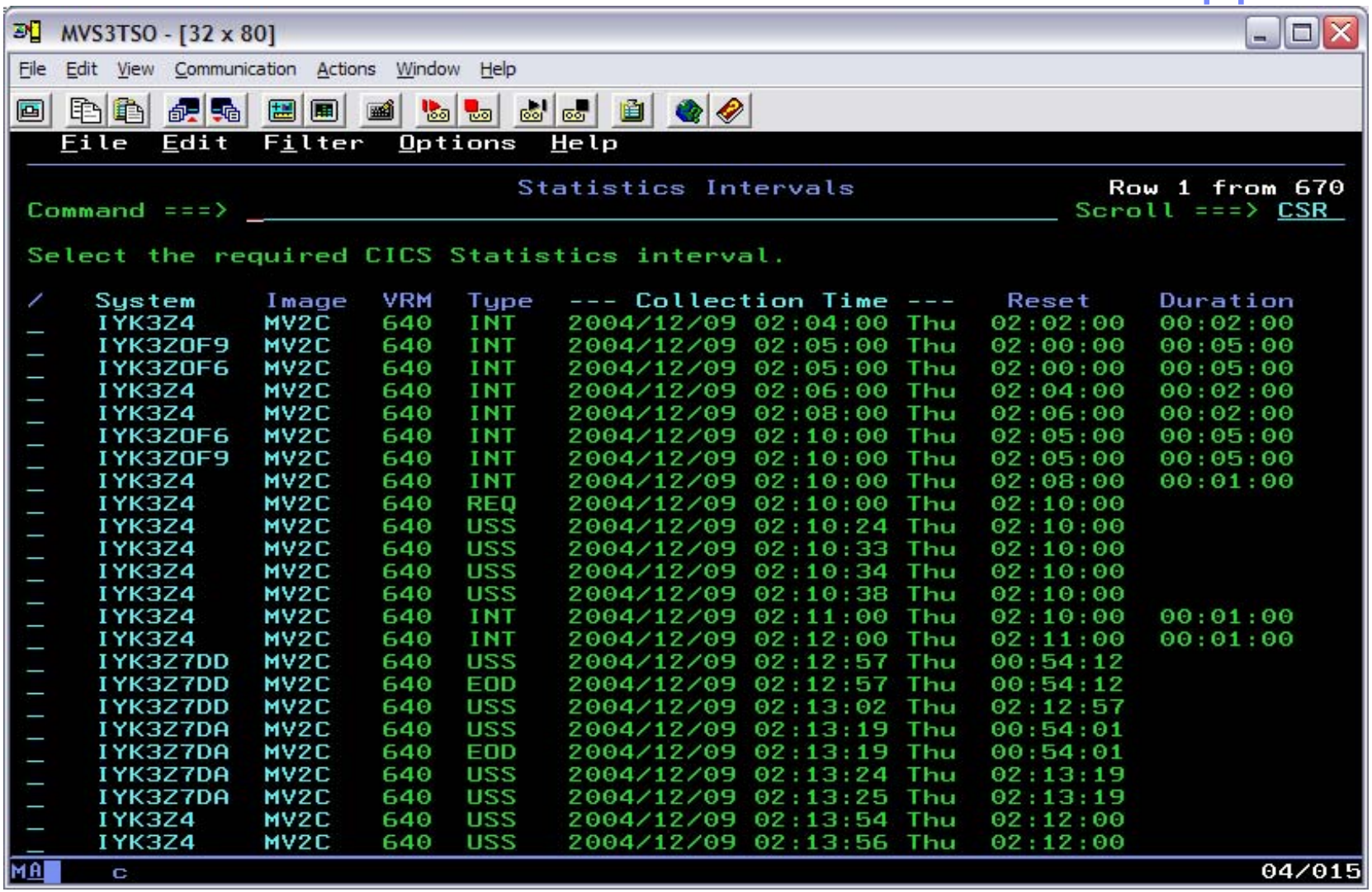
The previous three slides showed an example of the CICS Statistics Online Reporting Menu where we selected option 4, Process SMF file. This option allows you to view and/or print the selected statistics interval or just a subset of the statistics data collected in the interval.

The CICS Statistics Online Reporting Menu allows you to select the statistics data from an SMF data set from your personal or shared system definitions, from a CICS PA Historical Database (HDB), or from any unloaded SMF data set.

The third slide showed an example of viewing a statistics report from an HDB.

The next slide shows the selected Statistics Interval and the type of data that was collected in that interval. From this panel you can either view or print the selected statistics data.

CICS Statistics and CICS Server Statistics Support

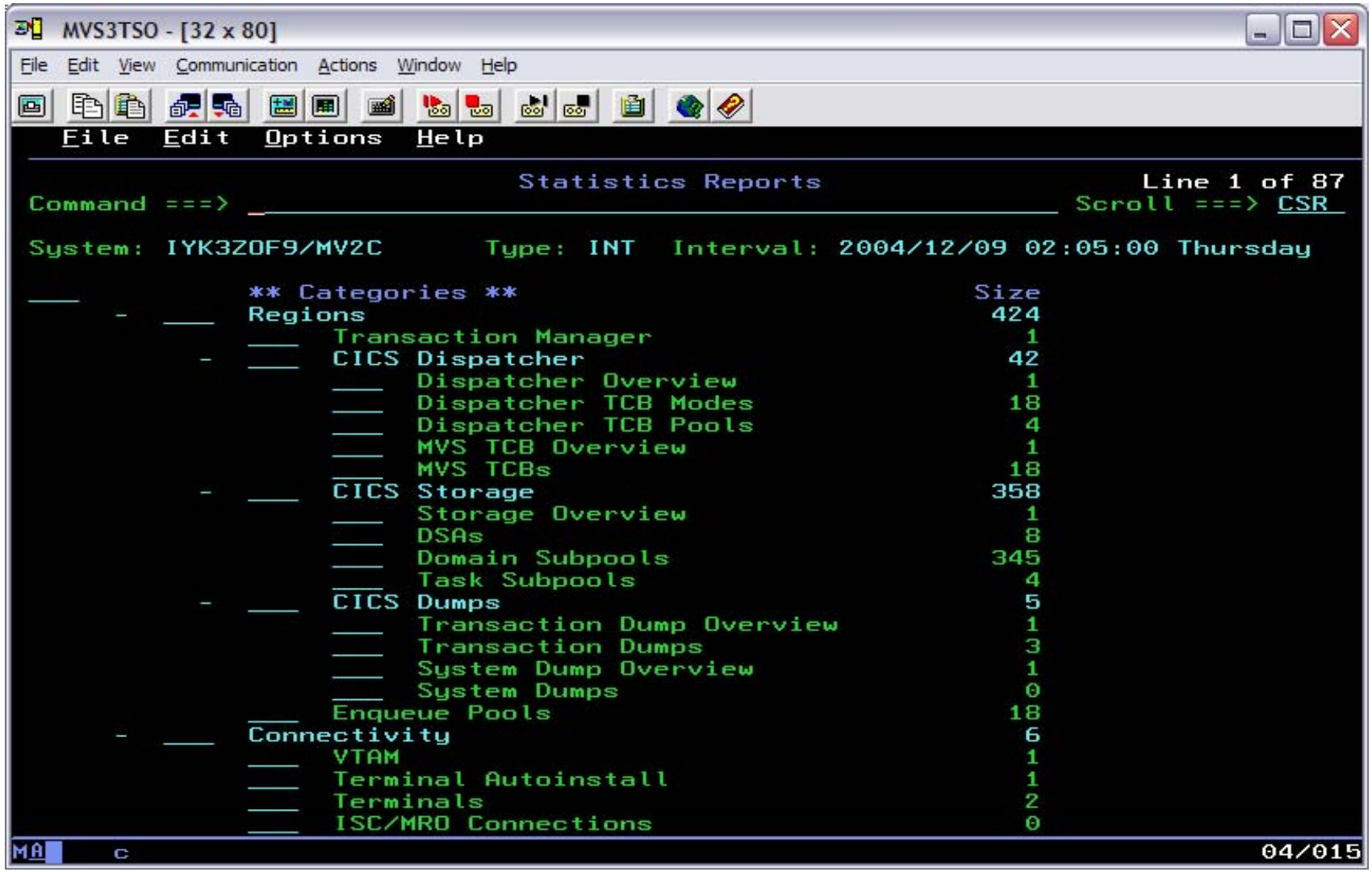


CICS Statistics - Notes

The previous slide shows the statistics data that is available in the interval that we selected from the unloaded SMF data set. From this panel you can either view the selected data, customize the report layout, or print the selected statistics data.

The next slide shows the selected Statistics Interval and the statistics data that was collected by the statistics interval. The data is shown by category, you can expand or collapse each category group, print the entire interval, or print a subset of the interval either by category or by a specific statistics record type.

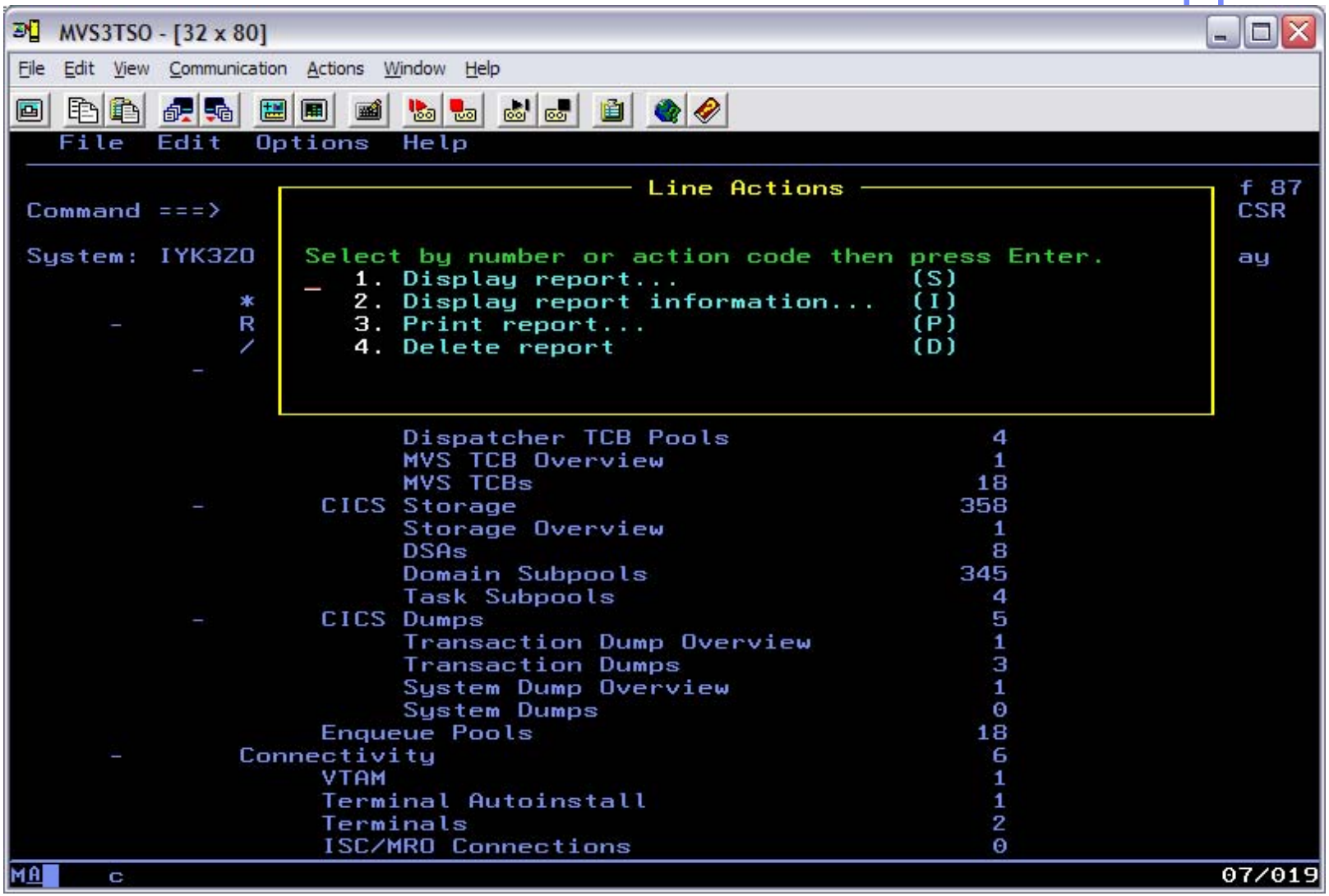
CICS Statistics and CICS Server Statistics Support



CICS Statistics and CICS Server Statistics Support

- The CICS PA Statistics online reporter provides comprehensive reporting of CICS Statistics data …
  - The reporting facility has QMF-like features; including …
    - Tabular reporting, Sorting by field (column), …
    - Forms to design personalized reports
    - Hyper-links to jump directly to related reports
    - Print facility (to a data set or to SYSOUT)

CICS Statistics and CICS Server Statistics Support

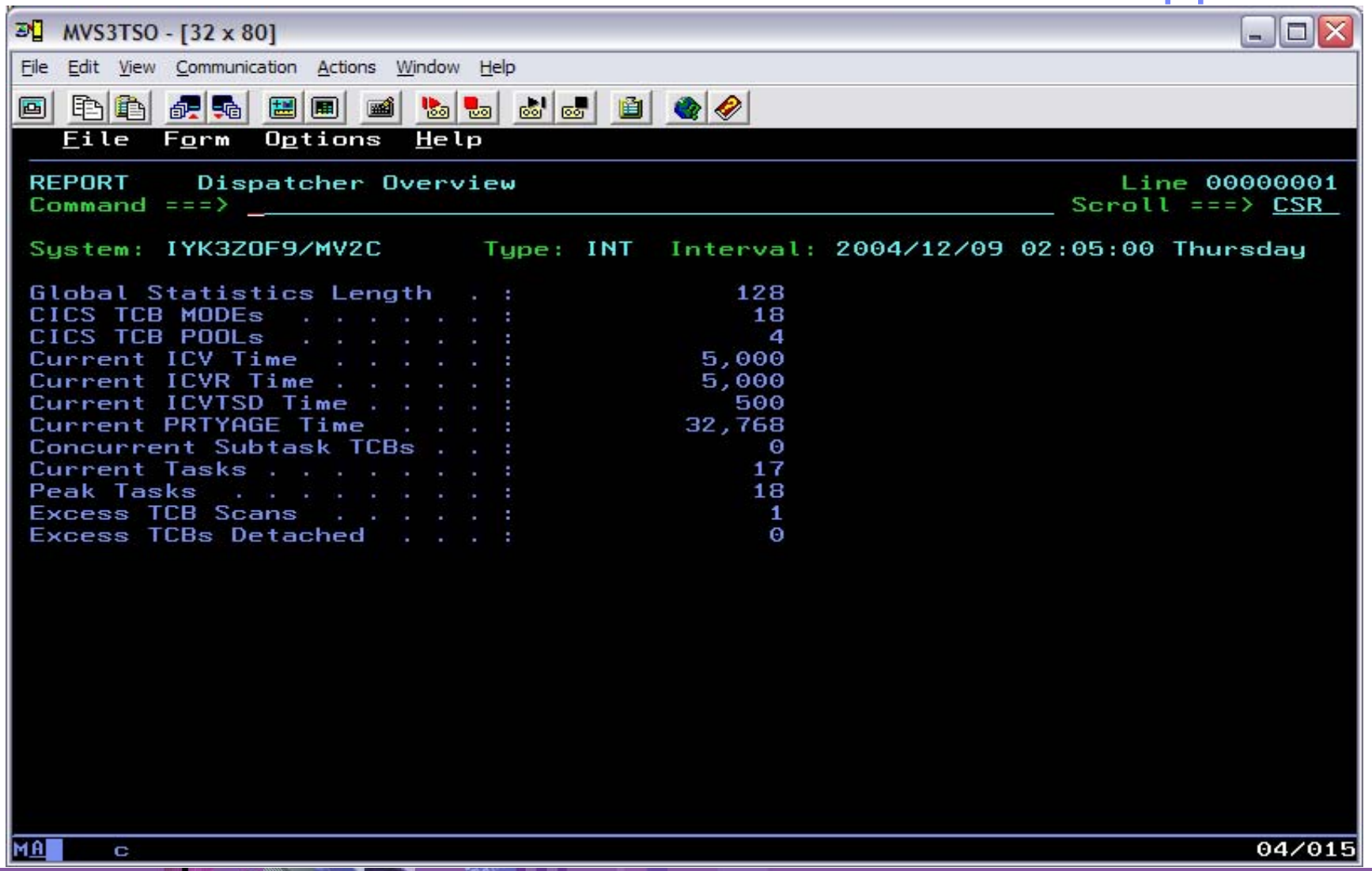


CICS Statistics - Notes

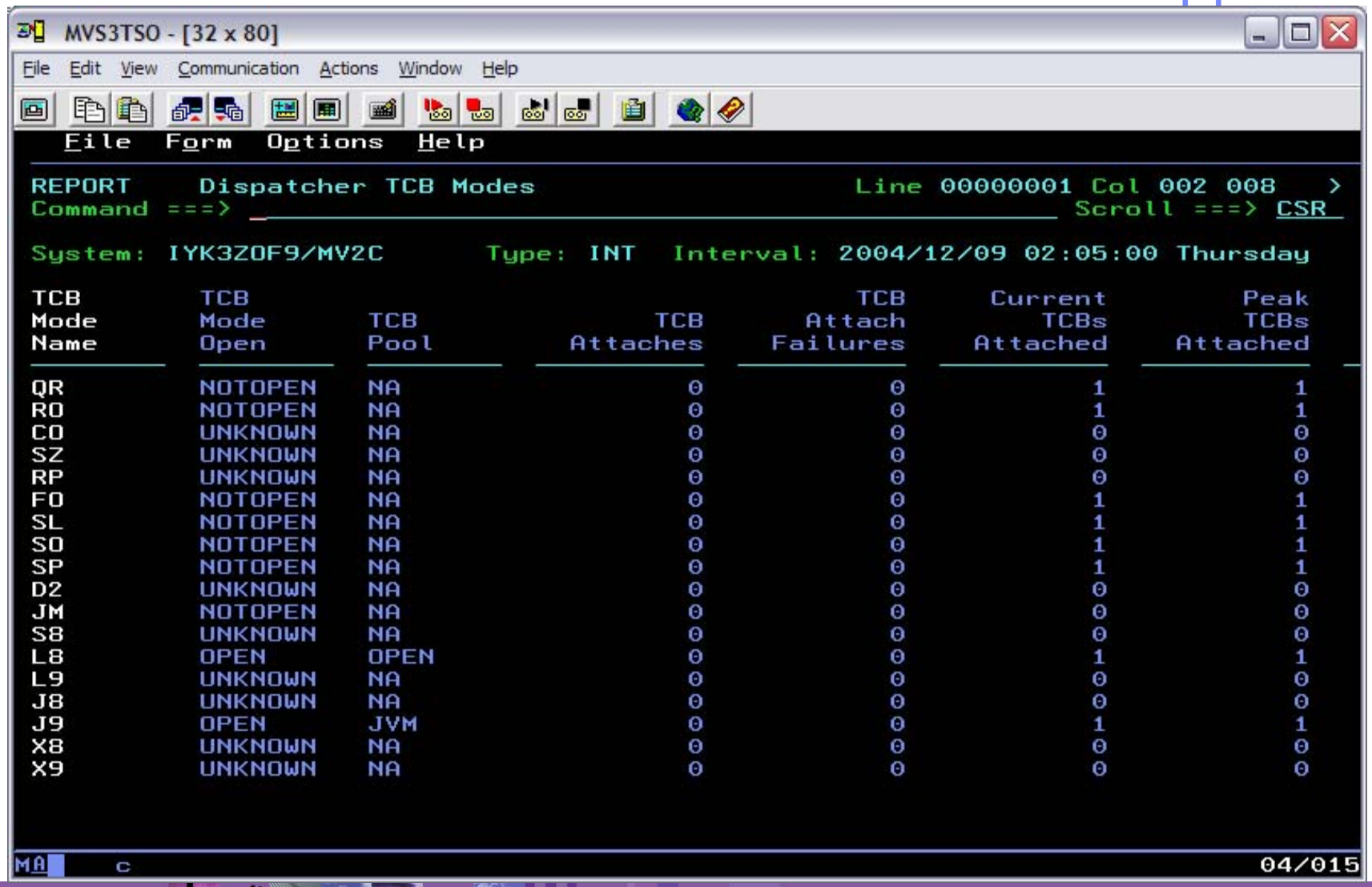
The previous slide shows an example of the line action commands that are available to display and/or report on a selected statistics report.

The next two slides show examples of the Dispatcher Overview and Dispatcher TCB Modes reports.

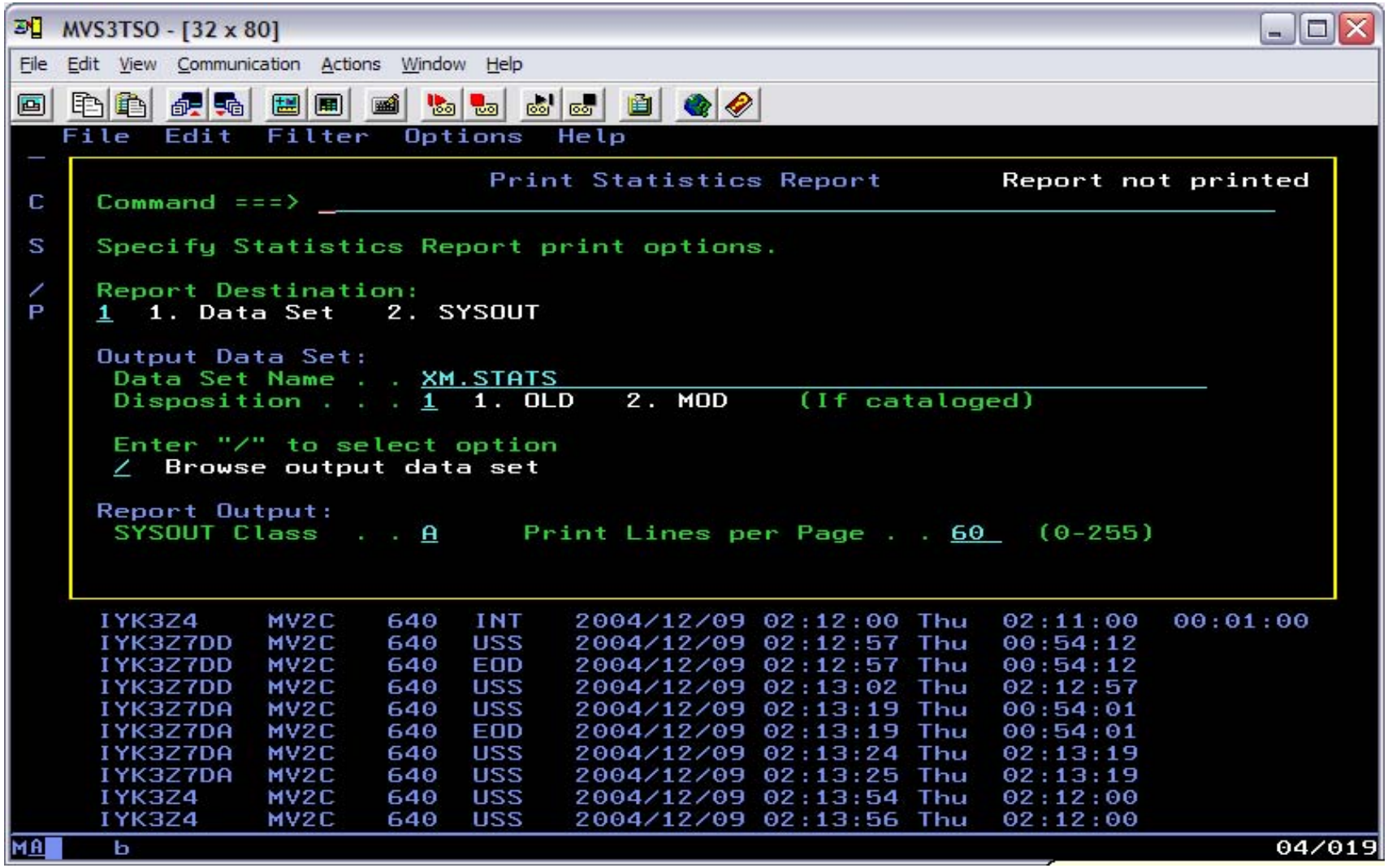
CICS Statistics and CICS Server Statistics Support



CICS Statistics and CICS Server Statistics Support



CICS Statistics and CICS Server Statistics Support

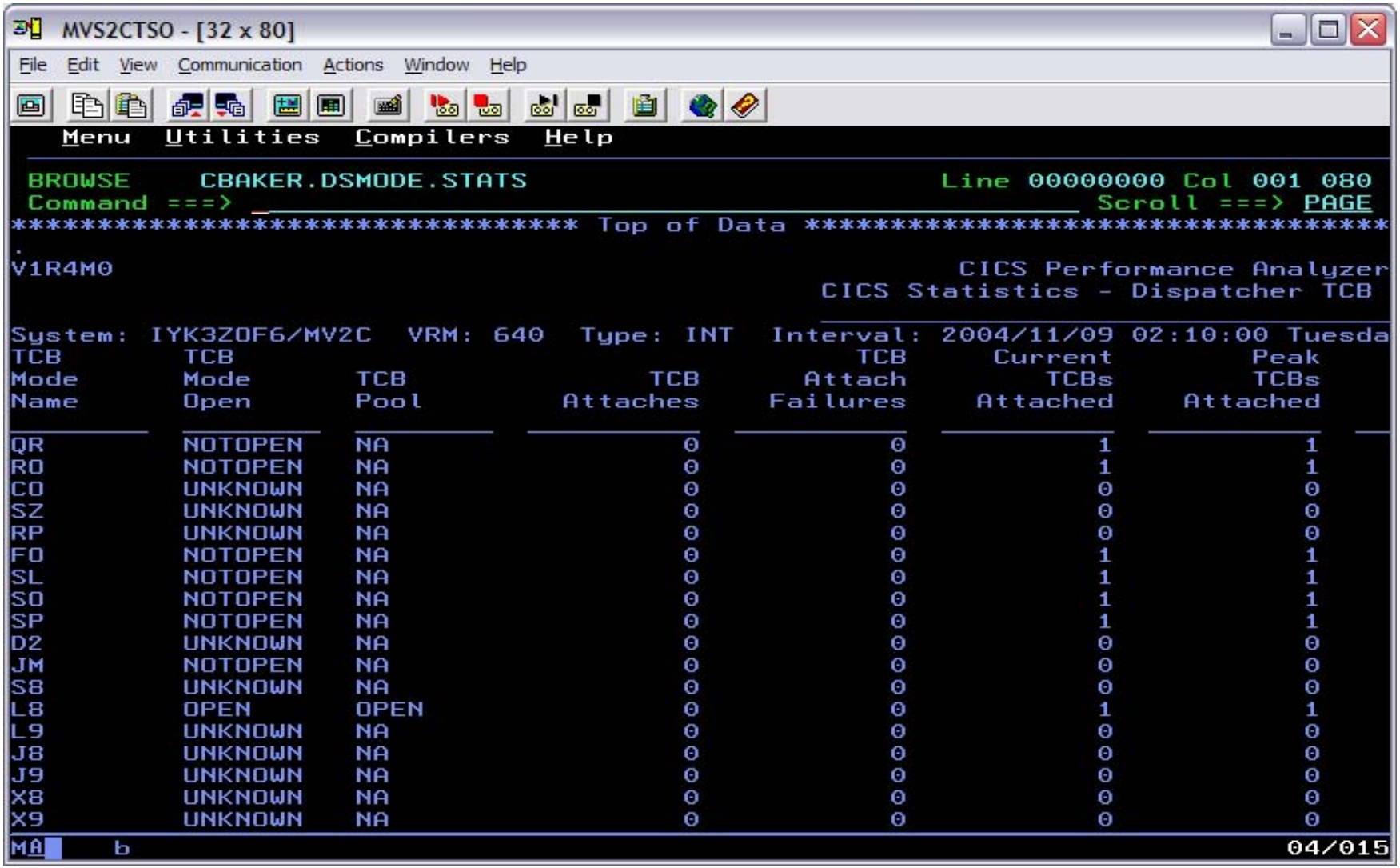


CICS Statistics - Notes

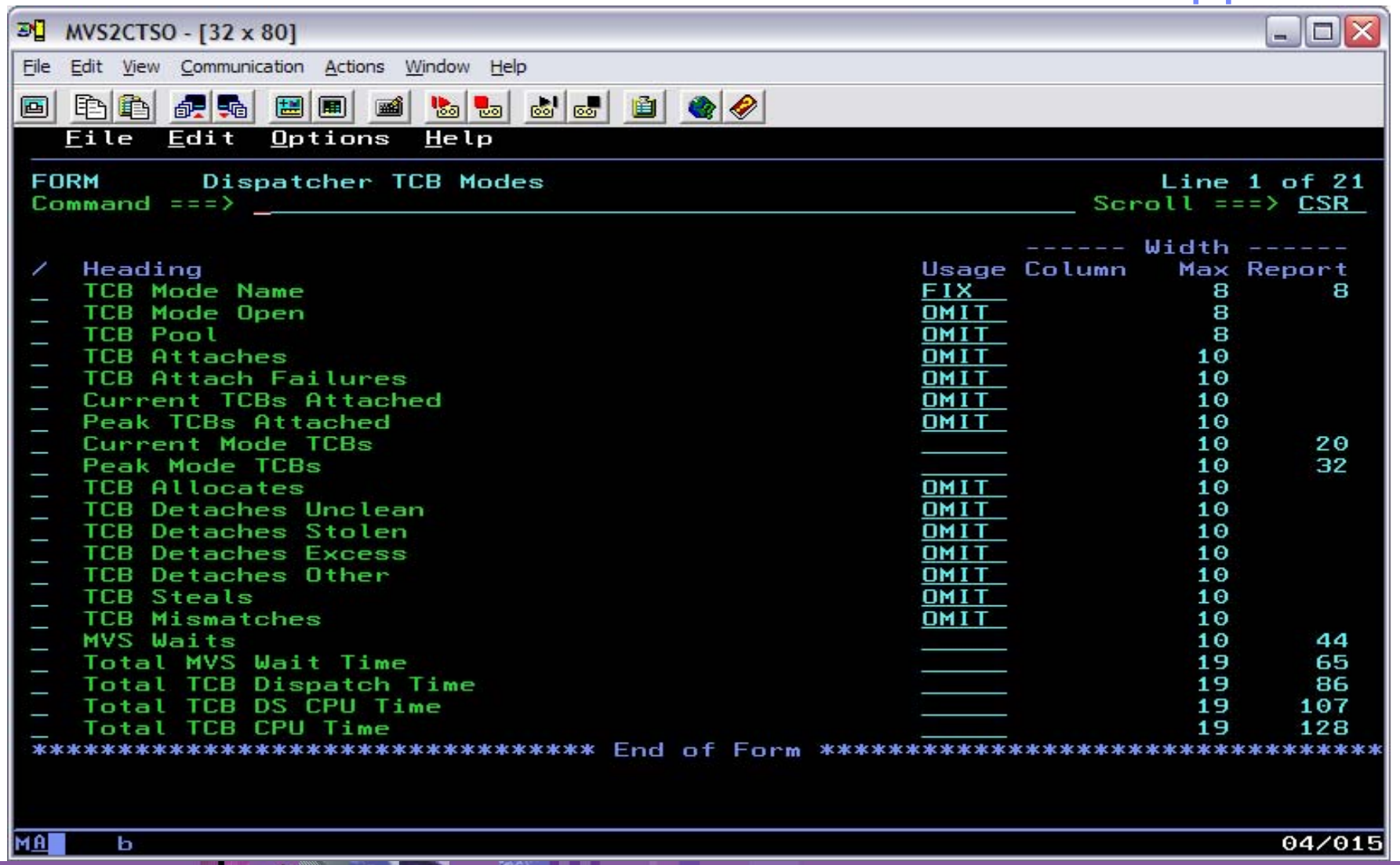
The previous slide shows an example printing a statistics report. The report can be sent to either a data set, which can then be browsed, or to SYSOUT.

The next slide show an example of browsing a statistics report sent to a dataset.

CICS Statistics and CICS Server Statistics Support



CICS Statistics and CICS Server Statistics Support

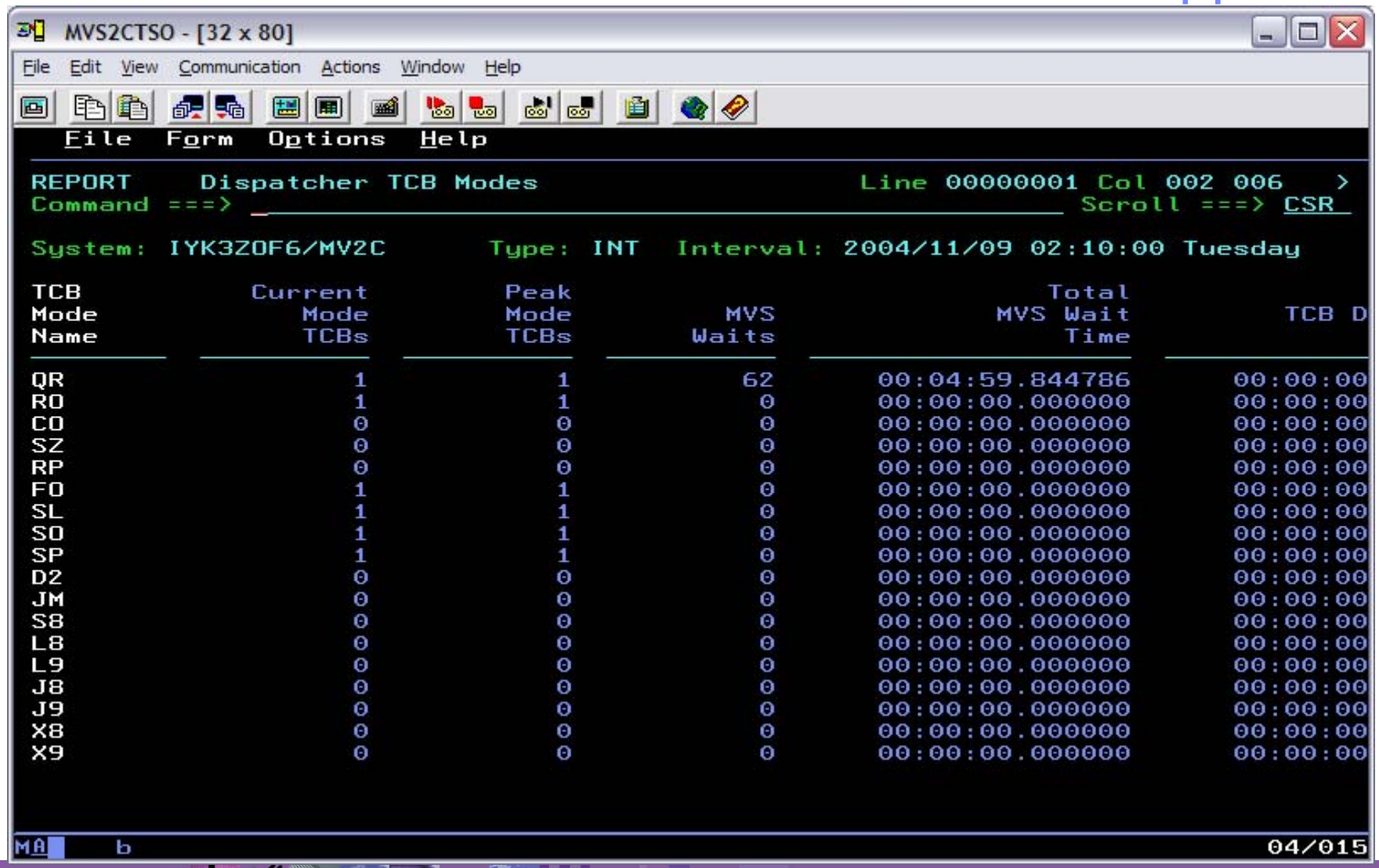


CICS Statistics - Notes

The previous slide shows an example of the report form for the Dispatcher TCB Modes report. Fields can be moved, omitted, etc, on the report as required. In this particular example we want to omit a number of the fields.

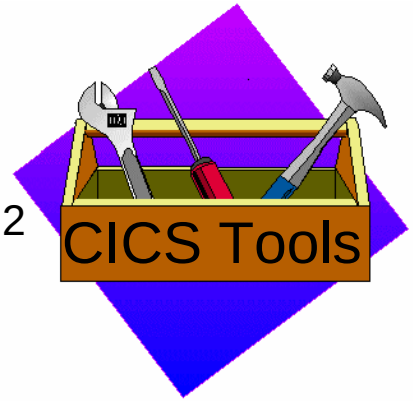
The next slide shows the Dispatcher TCB Modes report using the report form shown on the previous slide.

CICS Statistics and CICS Server Statistics Support



Summary

- CICS Performance Analyzer for z/OS
  - Comprehensive Performance Reporting for CICS
    - Including DB2, WebSphere MQ, and z/OS System Logger
  - CICS Monitoring Facility (CMF) and CICS Statistics SMF 110 data
  - Extensive Tabular Reports and Extract Data Sets
  - Historical Database
    - Trending, Capacity Planning and Accounting
  - ISPF Dialog to build, maintain, and submit reports and extracts
- CICS PA Version 1.4 - Product information ...
  - Program Product - 5655-F38
  - Releases Supported ...
    - CICS Transaction Server for z/OS, Version 3 and Version 2
    - CICS Transaction Server for OS/390, Version 1
  - More Information ....
    - http://www.ibm.com/cics/



Interface to Tivoli Accounting Workstation for z/OS

- What is Tivoli Decision Support Accounting Workstation for z/OS ?
  - Stand-alone IT accounting and charge-back application
- CICS PA can be a data source for Tivoli Accounting Workstation
  - Using CICS PA's Historical Database (HDB) support …
    - To collect and summarize the CICS transaction performance data
    - To Extract to CSV or Export to DB2 to provide flexible data access
    - HDB Load Audit trail to provide information on the data collected
  - Using Tivoli Accounting Workstation …
    - Accounting and Chargeback process
- IBM Tivoli Decision Support Accounting Workstation for z/OS V2.1.1
  - Program Product – 5698-A42
- More Information …
  - http://www.ibm.com/software/tivoli/products/tds-acct/

References

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

CICS Performance Analyzer Release 3, SG24-6063

Tivoli Decision Support Accounting Workstation for z/OS User Guide, SH19-4516