This chapter describes the sample reports supplied with TMON for CICS TS. It provides specific customization options for each report as well as information on:

- General reporting techniques you can apply to all reports to obtain different perspectives on data
- Summarization parameters and intervals
- Summarizing nonquantitative data.

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Reporting Techniques

To pinpoint areas of interest for a report, you should understand two important concepts: scope and level of summarization.

*Scope* is defined as the amount of data selected for a report by Report Writer control statements. It can be explicitly defined through the SELECT or EXCLUDE statements or implicitly defined through the use of data fields that limit Report Writer to certain record types. *Level of summarization* is defined as the lowest level summary parameter, for example:
A report may be generated as a summarization of all transactions for the entire day, or as a summarization of all transactions by an hourly interval, which provides a higher level of summarization. All the sample reports have the same scope (the number of days’ records) and level of summarization (the system ID).

Controlling scope and level of summarization is similar to using a telescope. By choosing a wider scope or field of vision, you may notice an area that is different from the general topography. By narrowing your scope and zooming in on that area (that is, increasing the level of magnification), you may be able to determine why the area is different. Because there are advantages to both perspectives, Report Writer provides you with the flexibility to adjust the scope and level of summarization for your reports, for example:

If a report with a high level of summarization shows a CICS system with high average response time for a particular day, your first step is to narrow the scope by limiting the report to that particular CICS region and day. This reduces the amount of data selected for the subsequent reports. You then can increase the magnification by lowering the level of summarization to an hourly interval for that day. Control of scope is achieved through the SELECT statement on the day and system ID, and level of summarization is controlled using the LMRKTIME field in the SUMF parameter of the REPORT statement.

After rerunning the report with the new control statements, you may notice an isolated time period when the response time climbs sharply upward. You can narrow the scope again to select only records from that time period. You then can zoom in on the problem, by lowering the level of summarization, to identify only those intervals with high response times and ignore those that do not exhibit the problem.

This process can be repeated until you are viewing detail data without any summarization. To lower the level of summarization to 10-minute intervals, specify LMRKTIME(0010000000) in the SUMF parameter of the REPORT statement. Specify LMRKTIME(0005000000) for 5-minute intervals. The more you narrow the scope and lower the level of summarization, the more you are able to focus on problem areas.

Suppose your monthly report contains unnecessary data, displaying activity for weekends and weekday off-hours along with normal business hours. The extraneous data makes it difficult to determine normal system performance. In this case, you need to reduce the amount of data selected (that is, narrow your scope), for example:

```
SELECT FDATA DATE 030104
      TDATA DATE 033104
      DRANGE MONDAY FRIDAY
      TRANGE 080000 170000
```
These FDATA and TDATA parameters limit the data to prime shift (8 A.M. to 5 P.M.), Monday through Friday, for March 2004. The DRANGE and TRANGE parameters specify selection criteria to be applied to every record being considered for the report. These parameters let you specify a range of days of the week (DRANGE) and a range of time for each day (TRANGE) to be covered in the report.

You can apply the process of narrowing the scope and lowering the level of summarization to most of the sample reports included with TMON for CICS TS. This reporting technique should prove very effective in helping you identify problem areas in your CICS systems. You also can reverse the order of the summary parameters to help explain particular performance trends or alert you to problem areas. When several days are input to Report Writer, switching the summary parameters provides different perspectives on the definition of normal system performance.

Another important technique is the use of Report Writer LINE functions. When a report displays a field with an apparently unusual average, a good procedure is to run another report with the same summarization parameters, but only for the one field that seems unusual. Specify the field five times, and use the minimum (M), maximum (X), average (A), total (T), and standard deviation (S) LINE functions. Also specify the AVERAGE BY field. (For transaction data, the AVERAGE BY field is transaction count, TATRANCT). The report helps to establish how the average was determined.

The reporting techniques, discussed in this section, are further explored in the later discussions of the individual TMON for CICS TS sample reports. Using these techniques, appropriate examples have been created for each sample report. See the customization section of each report discussion for explicit examples.

**Summarization Parameters**

You summarize data to present it in a condensed form. You then can view the data without being overwhelmed by its volume. The SUMF statement drives the summarization process, and the LINE statement determines what information is presented on the report, for example:

These control statements tell Report Writer to summarize by transaction ID within system ID:

```
LINE TASYSID TAPTRAN TARSPTM TACPURTM TAIOCT TAIOTM
SUMF TASYSID TAPTRAN
```

The resulting report would contain the fields specified on the LINE statement.
Although some data types lend themselves to summarization better than others, almost any type—date, character, flag byte, time stamp, or time value—can be used as a summarization parameter. The most common data types used for summarization are date and character fields. Transaction start date, system ID, transaction ID, and terminal ID often are used as summarization parameters. Time values, time stamps, and other numeric values, however, also can be used. Because these values are generally unique, it is best to choose an interval when summarizing by time or other numeric values.

The Report Writer lets you specify an interval value for each numeric or time-oriented field you specify in the SUMF statement. For instance, you could produce a report showing how many of which transactions had a response time within user-defined limits. Or, you could reverse the summarization parameters and show the number of instances for each transaction that fell into user-defined limits of response time.

Another unlikely summarization parameter is a flag byte. Flag bytes can be dealt with in a number of ways, for example:

In the Access Method Summary report (member RWTA04), you convert the flag byte into character data. The access method type flag byte is converted into a 4-byte character field through a UFLD statement. Use the defined UFLD field to summarize the data. You also can handle flag bytes with different bit settings for different events by using the PROC parameter of the SELECT or REPORT command to select the bit settings in which you are interested. If a PROC expression references a 1-byte hexadecimal field, it treats the field as a flag byte. Refer to Chapter 3 in *ASG-TMON Products for OS/390 & z/OS TMON Report Writer Guide* for more information.

A limitation to summarization fields is that they cannot contain line functions (M, X, A, T, P, or S). (Line functions are calculated when the control breaks are reached, and the control breaks cannot be reached until a line function is calculated.)

When using Report Writer, it is important to keep in mind all the possible ways of slicing the data by using different summarization parameters. This technique provides you with a large repertoire of approaches to examine not only problems in your CICS systems, but also normal system performance and operation using the same small base of reports.

**Summarizing Nonquantitative Data**

The effects of summarization are obvious for time and numerical values, but not so obvious for other data types (such as character, time stamps, and flag bytes). The effects of summarizing nonquantitative fields can easily lead to mistakes.
Report Writer always chooses the last occurrence of a character data field when character data is summarized. Often a character field can slip into a report in which a SUMF statement has been added. The only significance of the character field is that it was extracted from the last record out of the sort.

Time stamps are stored in the same format in which time values are stored. A time stamp also is treated the same as a time value; that is, it is calculated as an average, totaled, or calculated as a percent. A time stamp field that has been altered in that manner has no meaning and may cause incorrect operation of the program, such as abends (overflows) and excessive run time (recovering from abends). Do not include a time stamp in the LINE statement unless it also is specified in the SUMF statement.

Flag bytes are unique because they are ORed together to produce a composite flag byte that may or may not be representative of the input data, for example:

Eight records, each containing a different bit set in the same flag byte, would produce a summary line showing FF. In a report, this value might suggest 1,000 transactions had CI splits, CA splits, and string and buffer waits, and then abended, invoking Dynamic Transaction Backout. Most likely, only a few transactions had CI splits and string and buffer waits, and only one or two transactions had a CA split or abended. The flag byte is a composite of all the summarized records, not a representation of the average record.

## Distributed Sample Reports

This table lists the name of each member in the TMON for CICS TS distributed installation library that contains Report Writer control statements you use to create TMON for CICS TS reports:

<table>
<thead>
<tr>
<th>Member Name</th>
<th>Report Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWT260</td>
<td>DB2 Statistics Summary Report</td>
</tr>
<tr>
<td>RWT261</td>
<td>DB2 Thread Analysis Report</td>
</tr>
<tr>
<td>RWT262</td>
<td>DB2 Task Analysis Report</td>
</tr>
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<td>RWTA01</td>
<td>Transaction Resource Utilization</td>
</tr>
<tr>
<td>RWTA02</td>
<td>Access Method/File Summary</td>
</tr>
<tr>
<td>RWTA03</td>
<td>VOLSER Analysis</td>
</tr>
<tr>
<td>RWTA04</td>
<td>Access Method Summary</td>
</tr>
<tr>
<td>Member Name</td>
<td>Report Title</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>RWTA05</td>
<td>MRO Remote System Overview</td>
</tr>
<tr>
<td>RWTA06</td>
<td>Transaction Summary</td>
</tr>
<tr>
<td>RWTA07</td>
<td>Terminal Usage Report</td>
</tr>
<tr>
<td>RWTA08</td>
<td>Transaction Rate Report</td>
</tr>
<tr>
<td>RWTA09</td>
<td>Cost Distribution by Transaction</td>
</tr>
<tr>
<td>RWTA10</td>
<td>Cost Factoring by Transaction</td>
</tr>
<tr>
<td>RWTA11</td>
<td>Application Total Page</td>
</tr>
<tr>
<td>RWTA12</td>
<td>Transaction Resource Wait Analysis</td>
</tr>
<tr>
<td>RWTA13</td>
<td>Transaction Resource Request Analysis</td>
</tr>
<tr>
<td>RWTA14</td>
<td>Transaction Dispatch - TCB Usage</td>
</tr>
<tr>
<td>RWTA15</td>
<td>Transaction MRO/ISC Connections</td>
</tr>
<tr>
<td>RWTB01</td>
<td>Display of End of Sample Interval Stats</td>
</tr>
<tr>
<td>RWTB02</td>
<td>Display of All Behavior Observations</td>
</tr>
<tr>
<td>RWTB03</td>
<td>All Observations by Job</td>
</tr>
<tr>
<td>RWTB04</td>
<td>Outlier Event Report from Behavior Data</td>
</tr>
<tr>
<td>RWTB05</td>
<td>Population to Sample Stats Comparison</td>
</tr>
<tr>
<td>RWTB06</td>
<td>Threshold Recommendations</td>
</tr>
<tr>
<td>RWTD60</td>
<td>TD Queue Summary Report</td>
</tr>
<tr>
<td>RWTD61</td>
<td>TD Queue Detail Analysis Report</td>
</tr>
<tr>
<td>RWTF60</td>
<td>File Statistics Summary Report</td>
</tr>
<tr>
<td>RWTF61</td>
<td>Data Tables Statistics Summary Report</td>
</tr>
<tr>
<td>RWTF62</td>
<td>File Statistics Detail Report</td>
</tr>
<tr>
<td>RWTF63</td>
<td>Data Tables Statistics Detail Report</td>
</tr>
<tr>
<td>RWTI01</td>
<td>Response Time Distribution</td>
</tr>
</tbody>
</table>
JCL Considerations

For your JCL, use **TMCE** as the 4-character product identifier and **020** as the 3-character release number. Chapter 2 in *ASG-TMON Products for OS/390 & z/OS TMON Report Writer Guide* provides a JCL model for running Report Writer.

<table>
<thead>
<tr>
<th>Member Name</th>
<th>Report Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RWTI02</td>
<td>CPU Time Overview</td>
</tr>
<tr>
<td>RWTI03</td>
<td>Transaction Response Time Summary</td>
</tr>
<tr>
<td>RWTI04</td>
<td>I/O Summary</td>
</tr>
<tr>
<td>RWTI06</td>
<td>Hourly Paging Summary</td>
</tr>
<tr>
<td>RWTI07</td>
<td>System vs Application CPU Utilization</td>
</tr>
<tr>
<td>RWTI08</td>
<td>System Total Page</td>
</tr>
<tr>
<td>RWTI09</td>
<td>Online History Comparison by Date</td>
</tr>
<tr>
<td>RWTL60</td>
<td>Alert Messages Report</td>
</tr>
<tr>
<td>RWTM60</td>
<td>Global MRO/ISC Connection Summary</td>
</tr>
<tr>
<td>RWTM61</td>
<td>Detail MRO/ISC Connection Report</td>
</tr>
<tr>
<td>RWTP60</td>
<td>Global Program Statistics Report</td>
</tr>
<tr>
<td>RWTP61</td>
<td>Detail Program Statistics Report</td>
</tr>
<tr>
<td>RWTR60</td>
<td>DSA Detail Report</td>
</tr>
<tr>
<td>RWTS60</td>
<td>Global TS Queue Analysis Report</td>
</tr>
<tr>
<td>RWTS61</td>
<td>Detail TS Queue Statistics Report</td>
</tr>
<tr>
<td>RWTT60</td>
<td>Detail Terminal Statistics Report</td>
</tr>
<tr>
<td>RWTT60</td>
<td>Detail Supertrace Report</td>
</tr>
<tr>
<td>RWTX60</td>
<td>Transaction Summary Report</td>
</tr>
<tr>
<td>RWTX61</td>
<td>Detail Transaction Statistics Report</td>
</tr>
</tbody>
</table>
Sample Report Descriptions

The remainder of this chapter looks at a sampling (25) of the TMON for CICS TS sample reports. Each report is designed as a 1-page overview of a different facet of system performance. You can easily customize most of the reports to quickly pinpoint areas of interest. All the sample reports are summarized across date and system ID.

You can produce all the TMON for CICS TS sample reports using control statements and JCL provided in the TMON for CICS TS distributed installation library. You can tailor the library report members to produce reports that meet the needs of your site.

This information is provided for each documented report:

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose</td>
<td>The purpose of the report.</td>
</tr>
<tr>
<td>Report Data</td>
<td>A list of all fields, including computed fields, used to create the report. (Computed fields are those fields created through UFLD statements.)</td>
</tr>
<tr>
<td>Control Statements</td>
<td>The control statements used to create the report. For detailed information about a specific control statement, see Chapter 3 in <em>ASG-TMON Products for OS/390 &amp; z/OS TMON Report Writer Guide</em>.</td>
</tr>
<tr>
<td>Customization</td>
<td>Report-specific examples of methods to customize the report. The scenarios of customization discussed in this section are only examples; you are not limited to these techniques.</td>
</tr>
</tbody>
</table>
Purpose

The Transaction Resource Utilization report provides an overview of the average and total data for transactions on a given system for a given day. It calculates z/OS usage and total paging counts.

Report Data

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID [TASYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTA01:

```
UFLD
  NAME MVSMPF
  TYPE TIME
  PERCENT TATSKDTM
  HEAD1 'MULTI PGM'
  PROC MVSMPF = TATSKDTM - TACPURTM
REPORT
  LINE = TASYSID LMRKDATE TARSPTM TATSKDTM(T) TACPURTM(T)
        MVSMPF(P) TATRANCT(T) TAOCT(T) TAPGETCT(T)
  SUMF = TASYSID LMRKDATE
  SFORM = TAPGETCT
  GRAPHS = MVSMPF(1000)
  TITLE = 'TRANSACTION RESOURCE UTILIZATION'
  WIDTH = 132
  COVER = NO
```
Customization

If the Transaction Resource Utilization report shows that resource consumption is unsatisfactory, you can redirect the report to pinpoint the areas of abnormally high or low resource usage by modifying the control statements. For example:

Suppose that after examining the Transaction Resource Utilization report, you want to focus on average response time and average dispatch time for system ID 04HD, particularly on April 9, 2004. Since the report does not show that paging and I/O are high, which would account for high response time, you want to examine the average transaction execution to determine why the response time appears higher than that reported for other days. To exclude all unnecessary data, add this SELECT statement to the control statements used to produce this report:

```
SELECT
    FDATA DATE 040904 TIME 000000
    TDATA DATE 040904 TIME 180000
PROC
    WHEN TASYSID EQ '04HD' THEN ACCEPT
```

The SELECT statement tells Report Writer to include all data from April 9, 2004, between the hours of 12 A.M. and 6 P.M., for system ID 04HD. The SELECT statement lets you process only that data in which you are interested.

**Note:**

You can specify only one PROC parameter in the SELECT statement, and it must be the last parameter specified in the statement.

Change the SUMF statement to help you pinpoint the transaction ID causing high response time. Change the SUMF statement to:

```
SUMF TAPTRAN
```

Change the LINE statement to include TAPTRAN (CICS primary transaction ID) as the first field displayed on the report. Because you want only data generated within SYSID 04HD on April 9, 2004, remove the TASYSID and LMRKDATE fields from the LINE statement.

A control break occurs every time the transaction ID changes. An average line is displayed for each transaction ID. The new report can help you to determine the cause of high response and dispatch times.

Often, simply reorganizing the data on an existing report (by changing the way data is summarized through the SUMF statement) can sufficiently provide the information that you require, for example:
Suppose you want to display daily totals of all activity on all CICS address spaces, instead of weekly totals for individual CICS address spaces. To obtain daily totals of all activity, reverse the order of the TASYSID and LMRKDATE fields on the SUMF and LINE statements. Change the SUMF statement to:

**SUMF LMRKDATE TASYSID**

The SUMF statement tells Report Writer to force a control break every time the date changes and within date every time the SYSID changes. The SYSID line is a subset of each day. The totals from each SYSID are accumulated at each LMRKDATE control break to provide a daily total of all activity, as shown in this report:

```
DATE: 04/28/04 ASG: TMON for CICS TS PAGE: 1
TIME: 11:22:10 TRANSACTION RESOURCE UTILIZATION
DATA IS FROM 04/01/04 AT 00:00 TO 04/04/04 AT 17:47

<table>
<thead>
<tr>
<th>DATE</th>
<th>SYSID</th>
<th>CPU TIME</th>
<th>AVG</th>
<th>TASK</th>
<th>TASK</th>
<th>MULT</th>
<th>PGM</th>
<th>MULT</th>
<th>PGM %</th>
<th>TRAN</th>
<th>1/O</th>
<th>PAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/01/04</td>
<td>B4HD</td>
<td>4:41.3438</td>
<td>4:05.1657</td>
<td>32.0155</td>
<td>86.9</td>
<td>=============</td>
<td>3,609</td>
<td>0</td>
<td>1,227</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04/01/04</td>
<td>****</td>
<td>4:41.3438</td>
<td>4:05.1657</td>
<td>32.0155</td>
<td>86.9</td>
<td>=============</td>
<td>3,609</td>
<td>0</td>
<td>1,227</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04/03/04</td>
<td>B4HD</td>
<td>0.0283</td>
<td>1:38.3690</td>
<td>14.0005</td>
<td>85.8</td>
<td>=============</td>
<td>9,969</td>
<td>0</td>
<td>813</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04/03/04</td>
<td>****</td>
<td>0.0283</td>
<td>1:38.3690</td>
<td>14.0005</td>
<td>85.8</td>
<td>=============</td>
<td>9,969</td>
<td>0</td>
<td>813</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04/04/04</td>
<td>B4HD</td>
<td>7:16.9402</td>
<td>5:59.6844</td>
<td>48.1702</td>
<td>86.6</td>
<td>=============</td>
<td>4,154</td>
<td>0</td>
<td>3,019</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04/04/04</td>
<td>****</td>
<td>7:16.9402</td>
<td>5:59.6844</td>
<td>48.1702</td>
<td>86.6</td>
<td>=============</td>
<td>4,154</td>
<td>0</td>
<td>3,019</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td>2:39.6380</td>
<td>11:43.2190</td>
<td>1:34.1862</td>
<td>86.6</td>
<td>=============</td>
<td>17,732</td>
<td>0</td>
<td>5,059</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```
RWTA02 - Access Method/File Summary

Purpose

The Access Method/File Summary report provides a summary of file statistics by access methods. The number of I/Os and the function of those I/Os are displayed against each file in the system, presenting the traffic against each file.

Report Data

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCESS METHOD [UFLD AMTYPE]</td>
<td>Displays the access method type, defined through a UFLD statement.</td>
</tr>
<tr>
<td>CICS SYSID [TASYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTA02:

```
UFLD
   NAME AMTYPE
   TYPE CHAR
   HEAD1 'ACCESS'
   HEAD2 'METHOD'
   LENGTH 4
PROC
   WHEN TAFILACM = 80 THEN AMTYPE = 'ISAM'
   WHEN TAFILACM = 40 THEN AMTYPE = 'BDAM'
   WHEN TAFILACM = 20 THEN AMTYPE = 'VSAM'
   WHEN TAFILACM = 10 THEN AMTYPE = 'QSAM'
```
WHEN TAFILACM = 08 THEN AMTYPE = ‘RMTE’
WHEN TAFILACM = 04 THEN AMTYPE = ‘DL/I’
WHEN TAFILACM = 02 THEN AMTYPE = ‘DB2’
WHEN TAFILACM = 01 THEN AMTYPE = ‘USER’

REPORT
LINE LMRKDATE TASYSID AMTYPE TAFILID TAFILUCB TAFILVOL
   TAFILETI TAFILECT(T) TAFILEXC TAFILDEL(T) TAFILGET(T)
   TAFILBRW(T) TAFILADD(T) TAFILUPD(T)
PROC WHEN TAFILID{1,1} = ‘ ’ THEN REJECT
SUMF LMRKDATE TASYSID AMTYPE TAFILID TAFILEXC
   TAFILUCB TAFILVOL
   TAFILETI TAFILECT TAFILDEL TAFILGET
   TAFILBRW TAFILADD TAFILUPD
WIDTH 132
TITLE ‘ACCESS METHOD/FILE SUMMARY’
COVER NO

---

**Customization**

Reversing the order of the summary parameters for a report can help explain particular performance trends or alert you to problem areas. To switch the order of summary parameters, you must modify the SUMF statement. (You also would need to modify the LINE statement to follow the SUMF statement order.) Since the Access Method/File Summary report uses four levels of control breaks (LMRKDATE, TASYSID, AMTYPE, and TAFILID), switching or removing summary parameters can help you to see interesting trends and relationships, for example:

Suppose you change the SUMF statement to:

```
SUMF AMTYPE TAFILID LMRKDATE
```
Producing Reports

This SUMF statement causes summarization of file performance within file type across systems, within date. This type of summarization lets you check the files’ performance trends, as shown in this report:

Changing the SUMF statement to:

SUMF AMTYPE LMRKDATE TAFILID

lets you look at performance for each day, as shown in this report:
**Purpose**

The VOLSER Analysis report provides volume usage information by date and system ID. It is similar to RWTA02, but describes volumes rather than files. Use this report to identify heavily used DASD.

**Report Data**

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID [TASYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>FILE ACCESS COUNT TOT [TAFILECT]</td>
<td>Displays the total file request count.</td>
</tr>
<tr>
<td>FILE ACCESS TIME TOT [TAFILETI]</td>
<td>Displays the elapsed time for file requests.</td>
</tr>
<tr>
<td>FILE ADD REQ COUNT TOT [TAFILADD]</td>
<td>Displays the file add count.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTA03:

```
OPTION PLEFT
UFLD
   NAME EXCPIND
   TYPE CHAR
   LENGTH 15
   HEAD1 'FILE EXCEPTION'
   HEAD2 '  INDICATOR   '
PROC
   WHEN TAFILEXC = 80 THEN EXCPIND = 'VSAM STRNG WAIT'
   WHEN TAFILEXC = 40 THEN EXCPIND = 'LSR BUFFER WAIT'
   WHEN TAFILEXC = 20 THEN EXCPIND = 'VSAM CI SPLIT'
   WHEN TAFILEXC = 10 THEN EXCPIND = 'VSAM CA SPLIT'
   WHEN TAFILEXC = 08 THEN EXCPIND = 'DB2 POOL OVRFLW'
   WHEN TAFILEXC = 04 THEN EXCPIND = 'DB2 THREAD WAIT'
   WHEN TAFILEXC = 02 THEN EXCPIND = 'LSR STRING WAIT'
REPORT
   LINE LMRKDATE TASYSID TAFILVOL TAFILUCB TAFILETI
   TAFILEXT(T) TAFILEXC EXCPIND FILDELS(A) FILGETS(A)
   FILBRWS(A) FILADDS(A) FILUPDS(A)
   PROC WHEN TAFILID{1,1} = ' ' THEN REJECT
   SUMF LMRKID TAYSID TAFILVOL TAFILEXC
```
Customization

The VOLSER Analysis report displays file delete, get, add, browse, and update requests for every volume displayed on the report. These requests may be more useful to you if they are displayed as averages. You then can detect the average number of requests per transaction. You can compute an average for each request field by using these UFLD statements:

```plaintext
OPTION PLEFT
UFLD /* (creates DEL REQ as an average)
   NAME   FILDELS
   TYPE   COUNT
   AVERAGE TATRANCT
   PRECISION 4
   PROC
   FILDELS = TAFILDEL
UFLD /* (creates GET REQ as an average)
   NAME   FILGETS
   TYPE   COUNT
   AVERAGE TATRANCT
   PRECISION 4
   PROC
   FILGETS = TAFILGET
UFLD /* (creates BROWSE REQ as an average)
   NAME   FILBRWS
   TYPE   COUNT
   AVERAGE TATRANCT
   PRECISION 4
   PROC
   FILBRWS = TAFILBRW
UFLD /* (creates ADD REQ as an average)
   NAME   FILADDS
   TYPE   COUNT
   AVERAGE TATRANCT
   PRECISION 4
   PROC
   FILADDS = TAFILADD
UFLD /* (creates UPDATE REQ as an average)
   NAME   FILUPDS
   TYPE   COUNT
   AVERAGE TATRANCT
   PRECISION 4
   PROC
   FILUPDS = TAFILUPD
REPORT
LINE LMRKDATE TASYSID TAFILVOL
   TAFILETI TAFILECT(T) TAFILEXC FILDELS(A) FILGETS(A)
   FILBRWS(A) FILADDS(A) FILUPDS(A)
```
PROC WHEN TAFILID(1,1) = ' ' THEN REJECT
SUMF LMRKDATE TASYSID TAFILVOL TAFILEXC
SFORM LMRKDATE TAFILVOL
   TAFILETI TAFILECT TAFILEXC
TITLE 'VOLSER ANALYSIS'
WIDTH 132
COVER NO
RWTA04 - Access Method Summary

Purpose

The Access Method Summary report provides a summary of file statistics by access method type within date and system ID. This report is similar to RWTA02 and RWTA03, except that it describes access methods. Use this report to track the transition from older to newer access methods.

Report Data

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCESS METHOD</td>
<td>Displays the access method type, defined through a UFLD statement.</td>
</tr>
<tr>
<td>[UFLD AMTYPE]</td>
<td></td>
</tr>
<tr>
<td>CICS SYSID</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>[TASYSID]</td>
<td></td>
</tr>
<tr>
<td>END DATE</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>[LMRKDATE]</td>
<td></td>
</tr>
<tr>
<td>FILE ACCESS COUNT TOT</td>
<td>Displays the total file request count.</td>
</tr>
<tr>
<td>[TAFILECT]</td>
<td></td>
</tr>
<tr>
<td>FILE ACCESS TIME TOT</td>
<td>Displays the elapsed time for file requests.</td>
</tr>
<tr>
<td>[TAFILETI]</td>
<td></td>
</tr>
<tr>
<td>FILE ADD REQ COUNT TOT</td>
<td>Displays the file add count.</td>
</tr>
<tr>
<td>[TAFILADD]</td>
<td></td>
</tr>
</tbody>
</table>
**Control Statements**

These control statements, used to produce this report, are in the installation library in member RWTA04:

```plaintext
OPTION PLEFT
UFLD
   NAME EXCPIND
   TYPE CHAR
   LENGTH 15
   HEAD1 'FILE EXCEPTION'
   HEAD2 ' INDICATOR '
   PROC
      WHEN TAFILEXC = 80 THEN EXCPIND = 'VSAM STRNG WAIT'
      WHEN TAFILEXC = 40 THEN EXCPIND = 'LSR BUFFER WAIT'
      WHEN TAFILEXC = 20 THEN EXCPIND = 'VSAM CI SPLIT'
      WHEN TAFILEXC = 10 THEN EXCPIND = 'VSAM CA SPLIT'
      WHEN TAFILEXC = 08 THEN EXCPIND = 'DB2 POOL OVRFLW'
      WHEN TAFILEXC = 04 THEN EXCPIND = 'DB2 THREAD WAIT'
      WHEN TAFILEXC = 02 THEN EXCPIND = 'LSR STRING WAIT'
UFLD
   NAME AMTYPE
   TYPE CHAR
   LENGTH 4
   HEAD1 'ACCESS'
   HEAD2 'METHOD'
   PROC
      WHEN TAFILACM = 80 THEN AMTYPE = 'ISAM'
      WHEN TAFILACM = 40 THEN AMTYPE = 'BDAM'
      WHEN TAFILACM = 20 THEN AMTYPE = 'VSAM'
      WHEN TAFILACM = 10 THEN AMTYPE = 'QSAM'
      WHEN TAFILACM = 08 THEN AMTYPE = 'RMTE'
      WHEN TAFILACM = 04 THEN AMTYPE = 'DL/I'
      WHEN TAFILACM = 02 THEN AMTYPE = 'DB2 '
      WHEN TAFILACM = 01 THEN AMTYPE = 'USER'
```

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FILE BRW REQ COUNT TOT [TAFILBRW]</td>
<td>Displays the file browse count.</td>
</tr>
<tr>
<td>FILE DEL REQ COUNT TOT [TAFILDEL]</td>
<td>Displays the file delete count.</td>
</tr>
<tr>
<td>FILE EXC CONDS [TAFILEXC]</td>
<td>Displays the code of any file exception conditions observed.</td>
</tr>
<tr>
<td>FILE GET REQ COUNT TOT [TAFILGET]</td>
<td>Displays the file get count.</td>
</tr>
<tr>
<td>FILE UPD REQ COUNT TOT [TAFILUPD]</td>
<td>Displays the file update count.</td>
</tr>
</tbody>
</table>
REPORT
LINE LMRKDATE TASYSID AMTYPE
   TAFILETI TAFILECT(T) TAFILEXC TAFILDEL(T) TAFILGET(T)
   TAFILBRT(T) TAFILADD(T) TAFILUPD(T)
PROC WHEN TAFILEID{1,1} = ' ' THEN REJECT
SUMF LMRKDATE TASYSID AMTYPE TAFILEXC
SFORM
   TAFILETI TAFILECT TAFILEXC TAFILDEL TAFILGET
   TAFILBRT TAFILADD TAFILUPD
TITLE 'ACCESS METHOD SUMMARY'
COVER NO

Customization

You might want to focus on particular hours of the day, instead of reporting on the entire day’s activity for April 25, 2004. To limit the reported activity only to that data between the hours of 2 P.M. and 4 P.M., code this SELECT statement:

SELECT
   FDATA DATE 042504
   TDATA DATE 042504
   TRANGE 140000 160000

Suppose you want to report the standard deviation for file access time. You could add field TAFILETI(S) to the LINE statement. Standard deviation is computed using the conventional statistical formula using the sum, the sum of the squares, and the average calculated for the interval. It helps you to determine if one or more transactions are creating an extremely high or extremely low, inaccurate average or if much of the data is actually in the vicinity of the value represented as the average. If the latter is true, you can assume the average shown on the report accurately represents the median.
Purpose

The MRO Remote System Overview report provides information on remote system usage by date, system ID, and remote system ID.

Report Data

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID [TASYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTA05:

```plaintext
OPTION PLEFT
SELECT
PROC
  WHEN TATARECT > 0
  THEN ACCEPT
REPORT
  LINE LMRKDATE TASYSID TATARSID TATARAID TATARECT TATARETM
  SUMF LMRKDATE TASYSID TATARSID
  TITLE 'MRO REMOTE SYSTEM OVERVIEW'
  COVER NO
```

Customization

You might want to see more detailed information about remote system usage, specifically transaction volume between regions. By adding the TAPTRAN (CICS primary transaction ID) and TATRANCT (transaction count) fields, you can create a report of transaction summary.

Change the LINE and SUMF statements to:

```plaintext
REPORT
  LINE LMRKDATE TASYSID TATARSID TAPTRAN TATARAID TATARECT TATARETM TATRANCT
  SUMF LMRKDATE TASYSID TATARSID TAPTRAN
```
The new SUMF statement causes summarization of transaction ID within the MRO system ID, as shown in this report.

<table>
<thead>
<tr>
<th>END DATE</th>
<th>CICS</th>
<th>TARGET</th>
<th>PRIMARY SYSTEM</th>
<th>SYSTEM</th>
<th>EVENT COUNT</th>
<th>ELASED TIME</th>
<th>COUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/20/04</td>
<td>53D0</td>
<td>XAOR</td>
<td>BCEA53A0</td>
<td>4</td>
<td>0.0727</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5300</td>
<td></td>
<td>BCEA53A0</td>
<td>4</td>
<td>0.6871</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03/21/04</td>
<td>41T0</td>
<td>62TO</td>
<td>BCEA62TO</td>
<td>1</td>
<td>0.0000</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BCEA62TO</td>
<td>7</td>
<td>0.1366</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BCEA62TO</td>
<td>9</td>
<td>0.0642</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BCEA62TO</td>
<td>1</td>
<td>0.0642</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BCEA62TO</td>
<td>24</td>
<td>0.1366</td>
<td>13</td>
<td></td>
</tr>
</tbody>
</table>
### Purpose

The Transaction Summary report shows the number of executions for each transaction and how responsive those transactions were.

### Report Data

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

#### Field

<table>
<thead>
<tr>
<th>Description</th>
<th>Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the system identifier.</td>
<td>CICS SYSID [TASYSID]</td>
</tr>
<tr>
<td>Displays the date the record was written.</td>
<td>END DATE [LMRKDATE]</td>
</tr>
<tr>
<td>Displays the total number of input and output operations.</td>
<td>I/O COUNT TOT [TAIOCT]</td>
</tr>
<tr>
<td>Displays the average I/O time.</td>
<td>I/O TIME AVG [TAIOTM]</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTA06:

```
OPTION PLEFT
REPORT
  LINE LMRKDATE TASYSID TAPTRAN TATRANCT TARSPTM TATSKDTM TACPURTM TATSKWTM TAU24HWM(X) TAU31HWM(X) TAIOCT TAIOTM TAPGETCT
  SUMF LMRKDATE TASYSID TAPTRAN
  SFORM TATRANCT TARSPTM TATSKDTM TACPURTM TATSKWTM TAU24HWM TAU31HWM TAIOCT TAIOTM TAPGETCT
  TITLE 'TRANSACTION SUMMARY'
  WIDTH 132
  COVER NO
```
Customization

After examining the Transaction Summary report, you may want to focus on specific transaction activity for a particular SYSID, for example:

Suppose you want to examine each transaction that executed within system ID F530 on April 4, 2004, by hourly intervals. You need to add a SELECT statement and change the existing SUMF statement:

```
SELECT
   FDATA DATE 040404
   TDATA DATE 040404
PROC
   WHEN TASYSID = 'F530' THEN ACCEPT
REPORT
   LINE TAPTRAN LMRKTIME TATSPMT TATSKDTM(T) TACPURTM(T)
       TATSKWTM(T) TAU24HWM(T) TAU31HWM(T) TAI0CT(T)
       TAI0TM(T) TAPIGETCT(T)
SUMF TAPTRAN LMRKTIME(0100000000)
   WIDTH = 137
```

The SELECT statement limits the scope of the report to a particular date (April 4, 2004) and system ID (F530). The LMRKTIME field specified in the SUMF statement lowers the level of summarization to the start time of a transaction at hourly intervals.

**Note:**

You can specify only one PROC parameter in the SELECT statement, and it must be the last parameter specified in the statement.

Switching the order of the fields on the SUMF statement and removing the TASYSID field also helps to limit the scope of the data, as shown in this report:
### TRANSACTION SUMMARY

DATA IS FROM 04/04/04 AT 10:41 TO 04/04/04 AT 14:54

<table>
<thead>
<tr>
<th>PRIMARY END</th>
<th>RESPONSE</th>
<th>TASK DISP</th>
<th>TASK WAIT</th>
<th>USER24</th>
<th>USER31</th>
<th>I/O</th>
<th>I/O</th>
<th>PAGING</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANID</td>
<td>CPU</td>
<td>TASK</td>
<td>CPU</td>
<td>POOL</td>
<td>POOL</td>
<td>TOT</td>
<td>TOT</td>
<td>COUNT</td>
</tr>
<tr>
<td></td>
<td>TIME</td>
<td>TIME</td>
<td>CPU TIME</td>
<td>POOL</td>
<td>POOL</td>
<td>TOT</td>
<td>TOT</td>
<td>COUNT</td>
</tr>
<tr>
<td></td>
<td>AVG</td>
<td>TOT</td>
<td>HWM</td>
<td>TOT</td>
<td>HWM</td>
<td>TOT</td>
<td>TOT</td>
<td>TOT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRANID</th>
<th>TIME</th>
<th>CPU AVG</th>
<th>CPU TOT</th>
<th>TASK AVG</th>
<th>TASK TOT</th>
<th>USER24 AVG</th>
<th>USER24 TOT</th>
<th>USER31 AVG</th>
<th>USER31 TOT</th>
<th>I/O AVG</th>
<th>I/O TOT</th>
<th>PAGING AVG</th>
<th>PAGING TOT</th>
<th>COUNT AVG</th>
<th>COUNT TOT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AINQ</td>
<td>11:00</td>
<td>0.2361</td>
<td>0.5649</td>
<td>0.0045</td>
<td>0.6539</td>
<td>2.064</td>
<td>0</td>
<td>1</td>
<td>0.3103</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AINQ</td>
<td>*****</td>
<td>0.2361</td>
<td>0.5649</td>
<td>0.0045</td>
<td>0.6539</td>
<td>2.064</td>
<td>0</td>
<td>1</td>
<td>0.3103</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMNU</td>
<td>11:00</td>
<td>1.8609</td>
<td>3.2647</td>
<td>0.0048</td>
<td>0.0972</td>
<td>1.504</td>
<td>0</td>
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<td>107</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13:00</td>
<td>1.5232</td>
<td>12.0829</td>
<td>0.0071</td>
<td>0.1025</td>
<td>6.016</td>
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<td>133</td>
<td></td>
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</tr>
<tr>
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<td>14:00</td>
<td>0.0136</td>
<td>0.0814</td>
<td>0.0048</td>
<td>0.0002</td>
<td>4.512</td>
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<td>AMNU</td>
<td>*****</td>
<td>0.9768</td>
<td>15.4290</td>
<td>0.0166</td>
<td>0.1999</td>
<td>12.032</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CATA</td>
<td>15:00</td>
<td>0.1680</td>
<td>0.3004</td>
<td>0.0023</td>
<td>0.0355</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>9</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>CATA</td>
<td>*****</td>
<td>0.1680</td>
<td>0.3004</td>
<td>0.0023</td>
<td>0.0355</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CATD</td>
<td>15:00</td>
<td>2.6637</td>
<td>5.2293</td>
<td>0.0064</td>
<td>0.0981</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>160</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CATD</td>
<td>*****</td>
<td>2.6637</td>
<td>5.2293</td>
<td>0.0064</td>
<td>0.0981</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>160</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CATR</td>
<td>14:00</td>
<td>0.0311</td>
<td>0.0620</td>
<td>0.0033</td>
<td>0.0001</td>
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<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>0</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CATR</td>
<td>*****</td>
<td>0.0311</td>
<td>0.0620</td>
<td>0.0033</td>
<td>0.0001</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEBT</td>
<td>11:00</td>
<td>1.7159</td>
<td>2.0151</td>
<td>0.0202</td>
<td>1.4167</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13:00</td>
<td>21.9839</td>
<td>14.2664</td>
<td>0.0239</td>
<td>29.7014</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>102</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15:00</td>
<td>15.4039</td>
<td>1.7244</td>
<td>0.0213</td>
<td>29.0834</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEBT</td>
<td>*****</td>
<td>13.0346</td>
<td>18.0059</td>
<td>0.0654</td>
<td>1:00.2015</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>176</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CESD</td>
<td>11:00</td>
<td>0.8910</td>
<td>1.1880</td>
<td>0.0056</td>
<td>0.5940</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13:00</td>
<td>0.2361</td>
<td>4.1388</td>
<td>0.0396</td>
<td>2.5283</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15:00</td>
<td>0.1624</td>
<td>3.9057</td>
<td>0.0328</td>
<td>0.6412</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CESD</td>
<td>*****</td>
<td>0.2241</td>
<td>9.2325</td>
<td>0.0780</td>
<td>3.7635</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.0000</td>
<td>97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Terminal Usage Report provides a daily log of terminal usage. Use this report to identify the terminals used most frequently.

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.
Field | Description
--- | ---
END DATE [LMRKDATE] | Displays the date the record was written.
END TIME [UFLD ENDTIME] | Displays the transaction stop time, defined through a UFLD statement.
IDLE TIME TOT [UFLD IDLETIME] | Displays the time a terminal was idle, defined through a UFLD statement.
INITIAL TIME [UFLD FIRSTTM] | Displays the transaction start time, defined through a UFLD statement.
JOB NAME [LMRKJOBN] | Displays the name of the CICS job. This value is obtained from the TIOT control block.
LOGON DURATION TOT [UFLD LOGONTM] | Displays the time a terminal was logged onto CICS, defined through a UFLD statement.
RESPONSE TIME AVG [TARSPTM] | Displays the response time.
TERM ID [TATERID] | Displays the terminal ID.
TRAN COUNT TOT [TATRANCT] | Displays and graphs the transaction count.

**Control Statements**

These control statements, used to produce this report, are in the installation library in member RWTA07:

```
OPTION PLEFT
UFLD
   NAME LOGONTM
   HEAD1 = 'LOGON'
   HEAD2 = 'DURATION'
   TYPE TIME
UFLD
   NAME FIRSTTM
   HEAD1 = 'INITIAL'
   HEAD2 = 'TIME'
   TYPE TIMEP
UFLD
   NAME IDLETIME
   HEAD1 = 'IDLE'
   HEAD2 = 'TIME'
   TYPE TIME
```
Suppose you are more interested in logging the monthly activity of a particular terminal ID than a daily usage account of all terminal IDs. To obtain a list of the activity for each terminal ID, by terminal ID, change the SUMF statement to:

SUMF TATERID LMRKDATE

Change the LINE statement to:

LINE TATERID LMRKDATE TASTRTOD LMRKTIME TARSPTM TATRANCT LOGONTM IDLETIME

The SUMF statement forces a control break every time the terminal ID changes. Report Writer prints a detail line for each day TMON for CICS TS logs that the terminal ID is in use.

The new LINE statement tells Report Writer to print these fields, in order:
Terminal ID
End date
Initial (start) time
End time
Response time
Logon duration
Idle time

as shown in this report:

<table>
<thead>
<tr>
<th>TERM ID</th>
<th>DATE</th>
<th>END TIME</th>
<th>RESPONSE TIME</th>
<th>TRAN COUNT</th>
<th>TOT DURATION</th>
<th>LOGON TIME</th>
<th>IDLE TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;AAA</td>
<td>03/25/04</td>
<td>9:24:11.7811</td>
<td>0.7874</td>
<td>4</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;AAA</td>
<td>03/25/04</td>
<td>9:24:11.8658</td>
<td>0.7874</td>
<td>4</td>
<td>5:31:12.110</td>
<td>5:27:37.14</td>
<td></td>
</tr>
<tr>
<td>&lt;AEO</td>
<td>03/25/04</td>
<td>10:07:07.3933</td>
<td>0.0564</td>
<td>22</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;AEO</td>
<td>03/25/04</td>
<td>10:07:07.3938</td>
<td>0.0564</td>
<td>22</td>
<td>10:07:07.3938</td>
<td>10:07:07.1635</td>
<td></td>
</tr>
<tr>
<td>&lt;AHS</td>
<td>03/25/04</td>
<td>10:37:53.1846</td>
<td>0.0578</td>
<td>28</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;AHS</td>
<td>03/25/04</td>
<td>10:37:53.1852</td>
<td>0.0578</td>
<td>28</td>
<td>10:37:53.1851</td>
<td>10:37:51.5672</td>
<td></td>
</tr>
<tr>
<td>SCO1</td>
<td>03/25/04</td>
<td>10:38:19.1416</td>
<td>0.0777</td>
<td>76</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;A90</td>
<td>03/25/04</td>
<td>8:17:03.0106</td>
<td>1.2339</td>
<td>2</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;A90</td>
<td>03/25/04</td>
<td>8:17:03.0452</td>
<td>1.2339</td>
<td>2</td>
<td>8:17:03.0451</td>
<td>8:17:00.5733</td>
<td></td>
</tr>
<tr>
<td>&lt;A91</td>
<td>03/25/04</td>
<td>10:18:12.5692</td>
<td>0.2015</td>
<td>676</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;A91</td>
<td>03/25/04</td>
<td>10:18:12.5784</td>
<td>0.2015</td>
<td>676</td>
<td>10:18:12.5784</td>
<td>10:15:56.337</td>
<td></td>
</tr>
<tr>
<td>&lt;BBB</td>
<td>03/25/04</td>
<td>8:05:13.4519</td>
<td>2.5188</td>
<td>2</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;BBB</td>
<td>03/25/04</td>
<td>8:05:14.0984</td>
<td>2.5188</td>
<td>2</td>
<td>8:05:14.0984</td>
<td>8:05:09.0608</td>
<td></td>
</tr>
<tr>
<td>&lt;SOA</td>
<td>03/25/04</td>
<td>8:07:36.0945</td>
<td>0.0446</td>
<td>2</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;SOA</td>
<td>03/25/04</td>
<td>8:07:36.1427</td>
<td>0.0446</td>
<td>2</td>
<td>8:07:36.1425</td>
<td>8:07:36.0533</td>
<td></td>
</tr>
<tr>
<td>&lt;SOL1</td>
<td>03/25/04</td>
<td>10:20:57.6454</td>
<td>0.0262</td>
<td>2</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;SOL1</td>
<td>03/25/04</td>
<td>10:20:57.6710</td>
<td>0.0262</td>
<td>2</td>
<td>10:20:57.6710</td>
<td>10:20:57.6186</td>
<td></td>
</tr>
<tr>
<td>&lt;SPM</td>
<td>03/25/04</td>
<td>8:51:58.7733</td>
<td>0.1946</td>
<td>2</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;SPM</td>
<td>03/25/04</td>
<td>8:51:59.1106</td>
<td>0.1946</td>
<td>2</td>
<td>8:51:59.1105</td>
<td>8:51:58.7214</td>
<td></td>
</tr>
<tr>
<td>&lt;SIA1</td>
<td>03/25/04</td>
<td>9:51:46.2128</td>
<td>0.0619</td>
<td>2,055</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;SIA1</td>
<td>03/25/04</td>
<td>9:51:46.2237</td>
<td>0.0619</td>
<td>2,055</td>
<td>9:51:46.2225</td>
<td>9:49:38.9964</td>
<td></td>
</tr>
<tr>
<td>&lt;SPT</td>
<td>03/25/04</td>
<td>8:41:06.2819</td>
<td>0.0715</td>
<td>408</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;SPT</td>
<td>03/25/04</td>
<td>8:41:06.2879</td>
<td>0.0715</td>
<td>408</td>
<td>8:41:06.2879</td>
<td>8:40:37.1298</td>
<td></td>
</tr>
<tr>
<td>&lt;SOU7</td>
<td>03/25/04</td>
<td>7:44:26.9488</td>
<td>0.0890</td>
<td>159</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;SOU7</td>
<td>03/25/04</td>
<td>7:44:26.9518</td>
<td>0.0890</td>
<td>159</td>
<td>7:44:26.9518</td>
<td>7:44:12.7945</td>
<td></td>
</tr>
<tr>
<td>&lt;SOV</td>
<td>03/25/04</td>
<td>7:45:16.1117</td>
<td>0.1062</td>
<td>206</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;SOV</td>
<td>03/25/04</td>
<td>7:45:16.1932</td>
<td>0.1062</td>
<td>206</td>
<td>7:45:16.1932</td>
<td>7:45:34.3075</td>
<td></td>
</tr>
<tr>
<td>&lt;SOW</td>
<td>03/25/04</td>
<td>7:45:13.1942</td>
<td>0.0936</td>
<td>267</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;SOW</td>
<td>03/25/04</td>
<td>7:45:13.1942</td>
<td>0.0936</td>
<td>267</td>
<td>7:45:13.1942</td>
<td>7:44:48.2114</td>
<td></td>
</tr>
<tr>
<td>&lt;SOU6</td>
<td>03/25/04</td>
<td>10:06:44.9437</td>
<td>0.5283</td>
<td>16</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>&lt;SOU6</td>
<td>03/25/04</td>
<td>10:06:45.3319</td>
<td>0.5283</td>
<td>16</td>
<td>10:06:45.3318</td>
<td>10:06:36.8790</td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td>10:06:42.2045</td>
<td>0.1236</td>
<td>4,835</td>
<td>47:01:49.39</td>
<td>37:04:0182</td>
<td></td>
</tr>
</tbody>
</table>
RWTA08 - Transaction Rate Report

The Transaction Rate Report shows statistics on transaction response time and number of transaction executions by the hour. Use this report to determine the busiest time of day for transaction executions.

Report Data

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID [TASYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>END TIME [LMRKTIME]</td>
<td>Displays the time the record was written.</td>
</tr>
<tr>
<td>RESPONSE TIME AVG [TARSPTM]</td>
<td>Displays the average response time.</td>
</tr>
<tr>
<td>RESPONSE TIME MAX [TARSPTM]</td>
<td>Displays the maximum response time.</td>
</tr>
<tr>
<td>RESPONSE TIME MIN [TARSPTM]</td>
<td>Displays the minimum response time.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTA08:

```
OPTION PLEFT
UFLD
  NAME TRANRATE
  HEAD1 = 'TRANS RATE'
  HEAD2 = 'PER MINUTE'
  TYPE COUNT
REPORT
  LINE LMRKDATE TASYSID LMRKTIME TATRANCT TRANRATE TARSPTM
  TARSPTM(M) TARSPTM(X) TARSPTM(S)
SUMF LMRKDATE TASYSID LMRKTIME(100000000)
TITLE 'TRANSACTION RATE REPORT'
AT PRINT LMRKTIME
  TRANRATE = TATRANCT / 60
WIDTH 132
COVER NO
```

Customization

If you notice heavy transaction activity within a specific hour displayed on the report, you may want to narrow the scope of the report to select only the time period of interest and lower the level of summarization from hourly intervals to 5- or 10-minute intervals. This may reveal normal response time for most intervals with only a few intervals showing longer response times. This process can be repeated until you are viewing detail data without any summarization. To lower the level of summarization to 10-minute intervals, change the SUMF statement to:

```
SUMF LMRKDATE TASYSID LMRKTIME(001000000)
```

The more you narrow the scope and lower the level of summarization, the more you are able to focus on problem areas.
### Purpose

The Cost Distribution by Transaction report shows you how to use the TCOST and COSTF statements. It supplies the cost breakdown of CPU, storage utilization, and I/O for each transaction, based on a total cost of $10,000.00. The total cost, to be recovered from users, is distributed evenly among those resource consumption fields to which cost units were assigned. This report lets you see how much each cost unit is worth in dollars. Your actual cost distribution reports should be evaluated to meet your site’s specific needs.

### Report Data

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID</td>
<td>[TASYSID] Displays the CICS system identifier.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTA09:

```
OPTION PLEFT
UFLD
   NAME STORAGE
   TYPE COUNT
   HEAD1 'TRANS'
   HEAD2 'STORAGE'
   PROC STORAGE = TAU24HWM + TAU31HWM
REPORT
   LINE LMRKDATE TASYSID TAPTRAN TATRANCT TACPURTM STORAGE(X) TAI OCT
   LMRKCOST
   SUMF LMRKDATE TASYSID TAPTRAN
   COSTF TACPURTM 5000 10
   COSTF STORAGE 100000 1
   COSTF TAI OCT 1000 1
   TCOST 1000000
   TITLE 'COST DISTRIBUTION BY TRANSACTION'
```
Customization

The TCOST statement coded for this report represents a total cost of $10,000.00 to be recovered. To customize this report, you should change this value relative to the number of days input to the report.

The COSTF statements assign a *cost-unit* value to four areas of resource consumption. Each COSTF statement translates an amount of resource into a number of cost units. The total cost units are then divided into the TCOST value, and each resource field is assigned a monetary value. If you change the first value in the COSTF statement, you adjust the resource amount. If you change the second value, you adjust the cost units equated to the resource consumption.

The Cost Distribution by Transaction report uses the amount specified in the TCOST statement and divides it by the total number of cost units calculated. The result is the monetary value of the cost unit. The monetary value is then multiplied by the number of cost units for each resource specified in a COSTF statement to determine the actual monetary value that the resource usage represents. The multiplication occurs on each line printed for the number of cost units for each resource specified in a COSTF statement.

As each record is read in, the number of cost units for each resource is calculated based on the COSTF statements. At end of file, the total cost (in the TCOST statement) is divided by the total number of cost units calculated during input. At output, the data is sorted, and at each control break summary, the cost units are accumulated. The total amount of cost units is multiplied by the cost-unit monetary value to determine the cost of the resource usage.
RWTA10 - Cost Factoring by Transaction

**Purpose**

The Cost Factoring by Transaction report supplies the cost breakdown of CPU, storage utilization, and I/O for each transaction. Because cost is based only on utilization, the sum of the individual costs is not equal to any fixed amount.

**Report Data**

This report uses the transaction performance (TA) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID [TASYSID]</td>
<td>Displays the CICS system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>I/O COUNT COST</td>
<td>Displays the I/O count cost, calculated through the COSTF statement for TAIOCT.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTA10:

```
OPTION PLEFT
UFLD
  NAME STORAGE
  TYPE COUNT
  HEAD1 'TRANS'
  HEAD2 'STORAGE'
  PROC STORAGE = TAU24HWM + TAU31HWM
REPORT
  LINE LMRKDATE TASYSID TAPTRAN TATRANCT TACPURTM STORAGE(X) TAI0CT
  LMRKCost
  SUMF LMRKDATE TASYSID TAPTRAN
  COSTF TACPURTM 5000 10
  COSTF STORAGE 100000 1
  COSTF TAI0CT 1000 1
  TITLE 'COST FACTORING BY TRANSACTION'
  WIDTH 132
  COVER NO
```
Customization

The COSTF statements assign a monetary value to each resource and then calculates the cost of each resource. Where the Cost Distribution by Transaction report reduced all resources to a common denominator, this report charges each resource. This type of cost report is useful when the MIS budget is formed by charging users, and you want to show a profit.
Purpose

The Application Total Page report summarizes and presents information from the transaction performance (TA) records on one page.
Report Data

The Application Total Page report displays standard fields. It is a 1-page report for all selected input data. The selected data determines the period covered by the report. In the absence of other selection criteria, the report contains data from 00:00:00 to 23:59:59. Refer to “Customization” on page 57 for information on how to run the Application Total Page report for each CICS address space and/or each selected day (24 hours or less).

The Application Total Page report has seven sections that show:

- Response time distributions
- An application profile
- Exceptional conditions
- Response time analysis
- File activity distribution
- Database call activity distribution
- Storage usage distribution.

The placement of each frame is controlled by the WIDTH parameter of the REPORT statement.

Application Profile

This section shows various statistics on transaction activity, such as:

- Averages for CPU time consumed, page-ins, page-outs, file requests, GETMAINs issued, and the highest amount of storage used
- The amount of time transactions were suspended due to waits
- The total number of DL/I, DB2, and file requests made by the selected transactions.

DB Call Activity Distribution

This section shows seven ranges (from ZERO to OVER 30) that represent the number of database calls issued by a transaction. The corresponding VOLUME field indicates the number of transactions that fall into each range. The PERCENT field displays and graphs the number of transactions for each range as a percent of total transactions. The CUM % field displays a cumulative percent, which is calculated at each range.
Exceptional Conditions

This section informs you of any unusual occurrences during the interval reported. It shows you how many times the condition transpired and the date and time of the first, second, and third occurrences, if any. The date is displayed in MMDD format. The time is displayed in HH:MM format and is rounded to the nearest quarter hour, for example:

2:12 P.M. is rounded to 2:15 P.M.

File Activity Distribution

Shows seven ranges (from ZERO to OVER 30) that represent the number of file requests issued by a transaction. The corresponding VOLUME field indicates the number of transactions that fall into each range. The PERCENT field displays and graphs the transactions for each range as a percent of total transactions. The CUM % field displays a cumulative percent, which is calculated at each range.

Response Time Analysis

This section provides an overview of transaction response time. It allows you to determine if all components of response time are at acceptable levels.

The AVG field shows the average of the field, while the PERCENT field displays and graphs each listed response time component as a percent of total response time.

Response Time Distribution

This section shows you statistics about transactions and their associated response times, specifically:

- The number of transactions in the TXNS field with response times that fall into one of 11 categories in the RESPONSE field.
- The number of transactions within each bucket as a percent of total transaction count in the PERCENT field. Each percent is graphed.
- The cumulative percent of transactions, calculated at each response time bucket in the CUM % field.
Storage Usage Distribution

This section shows you the range of storage used by each transaction. The total number of transactions that fall into each range is provided in the VOLUME field. The PERCENT field displays and graphs the number of transactions within each range as a percent of total transactions. The CUM % field displays a cumulative percent, which is calculated at each range.

Control Statements

These control statements, used to produce this report, are in the installation library in member RWTA11:

```plaintext
REPORT
  TPAGE
  WIDTH 132
  COVER NO
```

Customization

To create the Application Total Page report, you must code the TPAGE parameter of the REPORT statement. No subparameters are associated with TPAGE.

Customization of the Application Total Page report is limited to data selection and exclusion. You can use the SELECT and EXCLUDE statements to limit the data input to the report, for example:

To limit the Application Total Page report to March 6, 2004, for CICS SYSID F530, code these control statements:

```plaintext
SELECT
  FDATA DATE 030604
  TDATA DATE 030604
PROC
  WHEN TASYSID = 'F530' THEN ACCEPT
REPORT
  TPAGE
  WIDTH 132
  COVER NO
```

Note:

Only one Application Total Page report should be requested in a single execution of Report Writer. When requesting this report with reports other than the System Total Page (SPAGE) report, code the TPAGE REPORT statement first.
## RWTB01 - Display of End of Sample Interval Stats

The Display of End of Sample Interval Stats report displays the average and standard deviation observed at the end of the sample interval for each active evaluated target. The interval is the cycle time multiplied by the number of samples, as specified in the target definitions.

### Report Data

This report uses the SmartTarget behavior (TB) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>END TIME [LMRKTIME]</td>
<td>Displays the time the record was written. This time corresponds with the last interval of the record.</td>
</tr>
<tr>
<td>IMAGE NAME [TBSYSN]</td>
<td>Displays the name of the OS/390 image (CVTSNAME) on which the CICS job was running at the time of data collection.</td>
</tr>
<tr>
<td>ITEM TITLE [TBITMTTL]</td>
<td>Displays the title of the evaluated target.</td>
</tr>
<tr>
<td>JOB NAME [LMRKJOBN]</td>
<td>Displays the name of the started task or batch job for the CICS region being monitored.</td>
</tr>
</tbody>
</table>
2 Producing Reports

Control Statements

These control statements, used to produce this report, are in the installation library in member RWTB01:

```
REPORT
    SORTF TBITEM LMRKTIME
    LINE LMRKJOBN LMRKDATE LMRKTIME TBSYSN TBAPPL TBITMTTL TBAMEAN TBASTDV
    WIDTH 132
    TITLE = 'DISPLAY OF END OF SAMPLE INTERVAL STATS'
    COVER NO
```

Customization

You can customize this report by modifying the sort and selection criteria. RWTB01 includes a list of target numbers and their titles along with a sample SELECT statement to allow you to easily modify the report to select specific targets for analysis.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBS MEAN [TBAMEAN]</td>
<td>Displays the target’s average for the set of observations in the record.</td>
</tr>
<tr>
<td>STD DEV [TBASTDV]</td>
<td>Displays the target’s standard deviation for the set of observations in the record.</td>
</tr>
<tr>
<td>TARGET APPLID [TBAPPL]</td>
<td>Displays the VTAM APPLID of the CICS region being monitored.</td>
</tr>
</tbody>
</table>
## Purpose

The Display of All Behavior Observations report provides a summary of all the jobs reporting the same evaluated target. It displays, for all monitored CICS jobs, the detail observations along with the running average and standard deviation, in time sequence and by evaluated target ID. The statistics displayed are the running statistics sampled at the time of collection for the sample size set of preceding observations.

## Report Data

This report uses the SmartTarget behavior (TB) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>END TIME [LMRKTIME]</td>
<td>Displays the time the record was written. This time corresponds with the last interval of the record.</td>
</tr>
<tr>
<td>IMAGE NAME [TBSYSN]</td>
<td>Displays the name of the OS/390 image (CVTSNAME) on which the CICS job was running at the time of data collection.</td>
</tr>
<tr>
<td>ITEM TITLE [TBITMTTL]</td>
<td>Displays the title for the evaluated target.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTB02:

```
REPORT
SORTF TBITEM TBQSSTD
LINE LMRKJOBN LMRKDATE LMRKTIME TBQSYN TBAPPL TBITEM TBITMTTL TBQSSTD TBQSSTD TBQSMEA TBQSSTD
WIDTH 132
TITLE = 'DISPLAY OF ALL BEHAVIOR OBSERVATIONS'
COVER  NO
```
Customization

You can customize this report by modifying the sort criteria and display order to help you analyze specific CICS systems. You also can select specific targets and time ranges to research specific periods for behavior events.
The All Observations by Job report displays, for each evaluated target, the detail observations and the running average and standard deviation, in time sequence and by monitored CICS job. This report is similar to RWTB02; however, this format allows you to identify metrics that behave in a similar manner to varying conditions. When multiple targets show the same type of behavior under similar changing conditions, you may be able to reduce the number of active targets.

Report Data

This report uses the SmartTarget behavior (TB) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>END TIME [LMRKTIME]</td>
<td>Displays the time the record was written. This time corresponds with the last interval time of the record.</td>
</tr>
<tr>
<td>IMAGE NAME [TBSYSN]</td>
<td>Displays the name of the OS/390 image (CVTSNAME) on which the CICS job was running at the time of data collection.</td>
</tr>
<tr>
<td>ITEM TITLE [TBITMTTL]</td>
<td>Displays the title of the evaluated target.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTB03:

```
REPORT
   SORTF TBAPPL TBITEM TBOBSSTK
   LINE LMRKJOBN LMRKDATE LMRKTIME TBSYSN TBAPPL TBITEM TBITMTTL
   TBOSDSTA TBOBSSTD TBOSMEA TBOBSSTK
   WIDTH 132
   TITLE = 'ALL OBSERVATIONS BY JOB'
   COVER NO
```
Customization

You can modify the sort criteria and display order to help you analyze specific CICS systems. You also can select specific targets and time ranges to research specific periods for behavior events.
### Purpose

The Outlier Event Report from Behavior Data displays all the observations that are more than three current standard deviations from the current average at the time of the observations. You can use this report to help establish maximum and minimum thresholds for the Problem/Alert and Performance Monitors.

### Report Data

This report uses the SmartTarget behavior (TB) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>IMAGE NAME [TBSYSN]</td>
<td>Displays the name of the OS/390 image (CVTSNAME) on which the CICS job was running at the time of data collection.</td>
</tr>
<tr>
<td>ITEM TITLE [TBITMTTL]</td>
<td>Displays the title of the evaluated target.</td>
</tr>
</tbody>
</table>

#### Example Data

<table>
<thead>
<tr>
<th>DATE</th>
<th>IMAGE</th>
<th>APPLID</th>
<th>ITEM TITLE</th>
<th>VALUE</th>
<th>STD DEV</th>
<th>MEAN</th>
<th>TIME OF OBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>SCE2AC41</td>
<td>EVAL CPU / MINUTE</td>
<td>.039</td>
<td>.001</td>
<td>.035</td>
<td>16:02:11</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>SCE2AC41</td>
<td>EVAL CPU / MINUTE</td>
<td>.057</td>
<td>.003</td>
<td>.035</td>
<td>16:03:13</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL CPU / MINUTE</td>
<td>.196</td>
<td>.001</td>
<td>.033</td>
<td>16:11:33</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL PAGE / MINUTE</td>
<td>176.140</td>
<td>15.120</td>
<td>2.840</td>
<td>16:11:33</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE I/O</td>
<td>26.000</td>
<td>.180</td>
<td>.030</td>
<td>16:12:36</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>.044</td>
<td>.007</td>
<td>.001</td>
<td>16:12:36</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>1.615</td>
<td>.279</td>
<td>.052</td>
<td>16:12:36</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL CPU / MINUTE</td>
<td>.176</td>
<td>.031</td>
<td>.040</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE I/O</td>
<td>28.000</td>
<td>4.660</td>
<td>.960</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>21.000</td>
<td>4.990</td>
<td>1.330</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
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<td>16:13:38</td>
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<td>32.000</td>
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<td>EVAL TERMINATE CPU</td>
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<td>1.500</td>
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<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
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<tr>
<td>04/19/04</td>
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<td>32.000</td>
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<tr>
<td>04/19/04</td>
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<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
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<tr>
<td>04/19/04</td>
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<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
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<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
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</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE DIS</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
<tr>
<td>04/19/04</td>
<td>SYSA</td>
<td>EYVMAS1A</td>
<td>EVAL TERMINATE CPU</td>
<td>32.000</td>
<td>8.620</td>
<td>1.500</td>
<td>16:13:38</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTB04:

```
UFLD NAME STDRG
  PRECISION 3
  TYPE COUNT
  PROC STDRG = TBOBBSTD + TBOBBSTD + TBOBBSTD
UFLD NAME UPLIM
  PRECISION 3
  TYPE COUNT
  PROC UPLIM = TBOBBMEA + STDRG
UFLD NAME LOLIM
  PRECISION 3
  TYPE COUNT
  PROC LOLIM = TBOBBMEA - STDRG
SELECT
  PROC WHEN TBOBBSTD EQ 0 THEN REJECT
```
Customization

This report is similar to RWTB02 and RWTB03; however, in this report, the standard deviation and average values are represented by the events before the current observation is added. Any observation more than three standard deviations of the preceding event from the average of the preceding event is considered an outlier. An outlier may occur:

- During transitional periods for a target ID
- When an exceptional event occurs in the CICS region
- Due to oversampling the system.

You can customize this report to select date and time ranges expected to be similar. During these periods, outliers may identify a pattern of activity that helps you to identify the source.

See Chapter 7 in *ASG-TMON for CICS TS for z/OS Data Guide* for more information on outliers.
Purpose

The Population to Sample Stats Comparison report computes the average and standard deviation for each target as a population sample over the set of data selected. It then compares that data to the largest average and standard deviation values of the sampled data. This report provides an additional perspective on the effect of the sample size on sample time statistics.

Report Data

This report uses the SmartTarget behavior (TB) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTB05:

```
UFLD NAME AVGCT
  TYPE COUNT
  HEAD1 'NUMBER'
  HEAD2 'OF OBS'
  PROC AVGCT = TBOBSSTK / TBOBSSTK

UFLD NAME AVGDTA
```
Customization

You can use this report to ensure that the sample count and cycle time are producing a reasonable representation of the entire system. The sample count (the SCALE field) and the cycle time (the CYCLE field) are specified on the Threshold Alerts screen (Option 10.3.2), described in Chapter 15 in *ASG-TMON for CICS TS for z/OS Reference Guide*. You may want to select specific time ranges to ensure that data is computed for the population statistics in a way similar to the way data was computed for the base comparison with the sampled statistics recorded in the behavior data.
RWTB06 - Threshold Recommendations

**Purpose**

The Threshold Recommendations report computes and displays, for each job, the maximum and minimum boundaries for each target in the selected data. The minimum boundary is computed as the current average minus three times the current standard deviation (or 0 if the result is negative). When the minimum boundary is 0, no minimum threshold is recommended. The maximum boundary is computed as the current average plus three times the current standard deviation.

The target item number of the corresponding minimum target is the evaluated target item number minus 1. The target item number of the corresponding maximum target is the evaluated target item number minus 2, for example:

The evaluated, minimum, and maximum file request (FC AVG RESP) target item numbers are 227, 226, and 225, respectively.

**Report Data**

This report uses the SmartTarget behavior (TB) records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.
2 Producing Reports

Control Statements

These control statements, used to produce this report, are in the installation library in member RWTB06:

```
UFLD NAME STDRG
  PRECISION 3
  TYPE COUNT
  PROC STDRG = TBOBSTD + TBOBSTD + TBOBSTD
UFLD NAME UPLIM
  PRECISION 3
  TYPE COUNT
  HEAD1 'UPPER'
  HEAD2 'LIMIT'
  PROC UPLIM = TBOBBMEA + STDRG
UFLD NAME LOLIM
  PRECISION 3
  TYPE COUNT
  HEAD1 'LOWER'
```

Field | Description
---|---
IMAGE NAME [TBSYSN] | Displays the name of the OS/390 image (CVTSNAME) on which the CICS job was running at the time of data collection.
ITEM TITLE [TBITMTTL] | Displays the title of the evaluated target. The maximum and minimum targets have similar titles to the evaluated target.
LOWER LIMIT MIN [UFLD LOLIM] | Displays the computed maximum recommended value for the minimum threshold based on the data observed, as defined through a UFLD statement. A negative number implies that no minimum recommendation exists.
TARGET APPLID [TBAPPL] | Displays the VTAM APPLID of the CICS region being monitored.
TARGET ITEM [TBITEM] | Displays the 3-digit identifier for the evaluated target. The target item number of the maximum threshold target related to this evaluated target is this item number minus two. The target item number of the minimum threshold target related to this evaluated target is this item number minus one.
UPPER LIMIT MAX [UFLD UPLIM] | Displays the computed minimum recommended value for the maximum threshold based on the data observed.
Customization

This report provides a starting point for setting monitoring thresholds for a CICS region. If the supplied data represents the typical behavior of the CICS region, you should expect at least a 1 percent occurrence of threshold alerts. This amount may be excessive and require additional adjustment. You can select specific time ranges for maximum and minimum evaluations.
RWTI01 - Response Time Distribution

The Response Time Distribution report shows a daily count of transactions and the percent of those transactions that fell into various response time intervals for each system.

Report Data

This report uses the transaction performance history (TI) subtype-1 and subtype-2 records. The table lists the report fields. If applicable, the TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID [TISYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>END TIME [LMRKTIME]</td>
<td>Displays the time the record was written.</td>
</tr>
</tbody>
</table>

Purpose

The Response Time Distribution report shows a daily count of transactions and the percent of those transactions that fell into various response time intervals for each system.
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTI01:

```
UFLD
  NAME TOTRANS
  TYPE COUNT
  HEAD1 'ENDED'
  HEAD2 'TRANS'
  PROC TOTRANS = TIRSPCT
UFLD
  NAME RESP1
  TYPE COUNT
  PERCENT TOTRANS
  HEAD1 'RESP 0-1'
  PROC RESP1 = TIRPS01
UFLD
  NAME RESP2
  TYPE COUNT
  PERCENT TOTRANS
  HEAD1 'RESP 1-2'
  PROC RESP2 = TIRPS12
```
Customization

You can narrow the data provided by this report to determine when high response time peaks occur, for example:

Suppose that you want to learn why 32.7 percent of the transactions on March 21, 2004, possess a response time greater than five seconds. You could add this SELECT statement to the control statements for this report:

```
SELECT
FDATA DATE 032104 TIME 130000
TDATA DATE 032104 TIME 150000
PROC
  WHEN TISYSID EQ '41T0' THEN ACCEPT
```

The SELECT statement tells Report Writer to include all data from March 21, 2004, between the hours of 1 P.M. and 3 P.M., but only for system ID 41T0. It eliminates unnecessary data and lets you view only data that is relevant to determining the cause of high resource usage.
Note: You can specify only one PROC parameter in the SELECT statement, and it must be the last parameter specified in the statement.

Change the SUMF statement to determine the transaction(s) responsible for the high response time. Change the SUMF statement to:

SUMF TIHRSTID

Change the LINE statement to include TIHRSTID (transaction with highest response time) and TIRSPTM(T) (total response time). Because you want only data generated within SYSID 41T0 on March 21, 2004, remove the TISYSID and LMRKDATE fields from the LINE statement. Replace the response time bucket fields with useful transaction resource usage statistics.

A control break occurs every time the transaction ID changes. The detail line displays for each transaction execution. The new report can help you pinpoint the specific transactions maintaining high response times.
RWTI02 - CPU Time Overview

Purpose

The CPU Time Overview report provides the amount of CPU time used by TMON for CICS TS. CPU time is broken down into SRB CPU time, application CPU time, subtask TCB time, and CPU time across waits.

Report Data

This report uses the transaction performance history (TI) subtype-1 and subtype-2 records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPL CPU TIME TOT [TIAPLCTM]</td>
<td>Displays the total application CPU time.</td>
</tr>
<tr>
<td>CICS OVHD CPU TIME TOT [TILSTCPU]</td>
<td>Displays the total CICS overhead CPU time.</td>
</tr>
<tr>
<td>CICS SYSID [TISYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>REGION CPU TIME TOT [TITCBCTM]</td>
<td>Displays the total CPU time consumed by the CICS region.</td>
</tr>
<tr>
<td>SRB CPU TIME TOT [TISRBCTM]</td>
<td>Displays the total SRB CPU time.</td>
</tr>
<tr>
<td>SUBTASK CPU TIME TOT [TISUBTTM]</td>
<td>Displays the total subtask TCB time.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTI02:

```
OPTION PLEFT
REPORT
LINE LMRKDATE TISYSID
     TISRBCTM(T) TIAPlCTM(T) TILSTCPU(T) TISUBTTM(T) TIMONTTM(T)
     TITCBCTM TICPURTM
SUMF LMRKDATE TISYSID
WIDTH 132
TITLE = 'CPU TIME OVERVIEW'
```

Customization

The CPU Time Overview report shows, for each type of CPU time, the total amount of CPU time used. Suppose, however, you want each distinct type of CPU time to represent a percent of the total of all CPU times. You could create a UFLD statement to define total CPU time and a UFLD statement for each CPU time field. Each CPU time field would represent a percent of total CPU time, for example:

This UFLD statement creates a field for the total of CPU time on which to base the percent of each type of CPU time:

```
UFLD
   NAME TOTCPU
   TYPE TIME
   PROC
     TOTCPU = TISRBCTM + TIAPlCTM + TILSTCPU + TISUBTTM + TIMONTTM + TITCBCTM + TICPURTM
```

The UFLDs for each type of CPU time, calculated in these control statements, replace the corresponding fields on the LINE statement:
Each CPU time field prints as a percent of total CPU time.
RWTI03 - Transaction Response Time Summary

**Purpose**

The Transaction Response Time Summary report provides a daily summary by date and system for various response time-related data for the transactions on the system.

**Report Data**

This report uses the transaction performance history (TI) subtype-1 and subtype-2 records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID [TISYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>TASK DISP TIME AVG [TITSKDTM]</td>
<td>Displays the average transaction dispatch time.</td>
</tr>
<tr>
<td>TMON VERSION [TIMONVER]</td>
<td>Displays the TMON for CICS TS version.</td>
</tr>
<tr>
<td>TRAN COUNT TOT [TITRANCT]</td>
<td>Displays the total transaction count.</td>
</tr>
<tr>
<td>TRANS EXCLUDED TOT [TITRNXCT]</td>
<td>Displays the total transactions excluded.</td>
</tr>
<tr>
<td>USER EXCL RESP TIME AVG [TITRNXTM]</td>
<td>Displays the average response time for excluded transactions.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTI03:

```
OPTION PLEFT
REPORT
  LINE LMKDATE TISYSID TIMONVER TITRANCT(T)
  TITRNXCT(T) TITRNXTM TITSDKTM
SUMF LMKDATE TISYSID
WIDTH 132
TITLE = 'TRANSACTION RESPONSE TIME SUMMARY'
COVER NO
```

Customization

Suppose you want to create this report for March 22, 2004, covering only the prime shift. You could add this SELECT statement to the control statements used to create this report:

```
SELECT
  FDATA DATE 032204
  TDATA DATE 032204
  TRANGE 080000 170000
```

The TRANGE parameter specifies selection criteria to be applied to every record being considered for the report. It specifies a time range for each day (in this example, 8 A.M. to 5 P.M.):

<table>
<thead>
<tr>
<th>DATE</th>
<th>SYSID</th>
<th>VERSION</th>
<th>TRAN</th>
<th>TRANS</th>
<th>USER EXCL</th>
<th>TASK DISP</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/22/04</td>
<td>A2A1</td>
<td>21</td>
<td>51</td>
<td>0</td>
<td>.0000</td>
<td>.9987</td>
</tr>
<tr>
<td>03/22/04</td>
<td>D2A1</td>
<td>21</td>
<td>22</td>
<td>0</td>
<td>.0000</td>
<td>1.3178</td>
</tr>
<tr>
<td>03/22/04</td>
<td>T2A1</td>
<td>21</td>
<td>51</td>
<td>0</td>
<td>.0000</td>
<td>1.1879</td>
</tr>
<tr>
<td>03/22/04</td>
<td>****</td>
<td>21</td>
<td>124</td>
<td>0</td>
<td>.0000</td>
<td>1.1453</td>
</tr>
<tr>
<td>TOTALS</td>
<td>21</td>
<td>124</td>
<td>0</td>
<td>.0000</td>
<td>1.1453</td>
<td></td>
</tr>
</tbody>
</table>

The more you restrict the amount of data, the more useful your report, for example:
Suppose the existing Transaction Response Time Summary report indicates that transaction response times are unusually high for all CICS regions except SYSID A2A1. You may want to break down the report into hourly intervals to pinpoint particular problem hours, for example:

```
SELECT
  PROC
    WHEN TISYSID EQ 'A2A1' THEN REJECT
SUMF LMRKDATE TISYSID LMRKTIME(0100000000)
```

**Note:**
You can specify only one PROC parameter in the SELECT statement, and it must be the last parameter specified in the statement.

The SELECT statement tells Report Writer to exclude any data resulting from transaction executions within SYSID A2A1. The SUMF statement tells Report Writer to summarize by date, SYSID, and hour, as shown in this report:

```
<table>
<thead>
<tr>
<th>END</th>
<th>CICS</th>
<th>TIME</th>
<th>VERSION</th>
<th>TRAN</th>
<th>TRANS</th>
<th>USEN EXCL</th>
<th>RESP TIME</th>
<th>TASK DISP</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/22/04</td>
<td>D2A1</td>
<td>11:00</td>
<td>21</td>
<td>44</td>
<td>0</td>
<td>.0000</td>
<td>1.3178</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>D2A1</td>
<td>*****</td>
<td>21</td>
<td>44</td>
<td>0</td>
<td>.0000</td>
<td>1.3178</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T2A1</td>
<td>11:00</td>
<td>21</td>
<td>73</td>
<td>0</td>
<td>.0000</td>
<td>1.1879</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T2A1</td>
<td>*****</td>
<td>21</td>
<td>73</td>
<td>0</td>
<td>.0000</td>
<td>1.1879</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03/22/04</td>
<td>****</td>
<td>*****</td>
<td>21</td>
<td>117</td>
<td>0</td>
<td>.0000</td>
<td>1.2367</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03/29/04</td>
<td>D2A1</td>
<td>11:00</td>
<td>21</td>
<td>27</td>
<td>0</td>
<td>.0000</td>
<td>.3343</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14:00</td>
<td>21</td>
<td>25</td>
<td>0</td>
<td>.0000</td>
<td>1.2813</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15:00</td>
<td>21</td>
<td>20</td>
<td>0</td>
<td>.0000</td>
<td>.8075</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>D2A1</td>
<td>*****</td>
<td>21</td>
<td>72</td>
<td>0</td>
<td>.0000</td>
<td>.7946</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T2A1</td>
<td>11:00</td>
<td>21</td>
<td>56</td>
<td>0</td>
<td>.0000</td>
<td>.2876</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14:00</td>
<td>21</td>
<td>32</td>
<td>0</td>
<td>.0000</td>
<td>1.2467</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15:00</td>
<td>21</td>
<td>38</td>
<td>0</td>
<td>.0000</td>
<td>.2244</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T2A1</td>
<td>*****</td>
<td>21</td>
<td>126</td>
<td>0</td>
<td>.0000</td>
<td>.5210</td>
<td></td>
<td></td>
</tr>
<tr>
<td>03/29/04</td>
<td>****</td>
<td>*****</td>
<td>21</td>
<td>198</td>
<td>0</td>
<td>.0000</td>
<td>.6205</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td></td>
<td>21</td>
<td>315</td>
<td>0</td>
<td>.0000</td>
<td>.8494</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

**Note:**
In this example, you also would need to modify the LINE statement to include the LMRKTIME field.

Perhaps you simply want to change the way data is summarized on the Transaction Response Time Summary report. You may want individual totals for each CICS address space instead of daily totals of all CICS address spaces. Reverse the order of the fields on the SUMF statement. Change the SUMF statement to:

```
SUMF TISYSID LMRKDATE
```
The new SUMF statement tells Report Writer to force a control break every time the CICS SYSID changes. (In this example, you also would need to modify the LINE statement to follow the SUMF statement order.) The detail line displays for each day of activity within the SYSID. The individual totals for each SYSID are provided at the control break, as shown in this report:

<table>
<thead>
<tr>
<th>CICS</th>
<th>END</th>
<th>TMON</th>
<th>TRAN</th>
<th>TRANS</th>
<th>USER EXCL</th>
<th>TASK DISP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTALS 21 512 0 .0000 .8036
**RWT104 - I/O Summary**

**Purpose**

The I/O Summary report provides an overview of I/O activity by date and system, which indicates the amount of I/O used by various CICS functions.

**Report Data**

This report uses the transaction performance history (TI) subtype-1 and subtype-2 records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID [TISYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>DB2 NON-SQL CT TOT [TISQLCTM]</td>
<td>Displays the total number of DB2 non-SQL requests.</td>
</tr>
<tr>
<td>DB2 NON-SQL TM AVG [TISQLCTM]</td>
<td>Displays the average DB2 non-SQL time.</td>
</tr>
<tr>
<td>DB2 SQL COUNT TOT [TISQLCTM]</td>
<td>Displays the total number of DB2 SQL requests.</td>
</tr>
<tr>
<td>DB2 SQL TIME AVG [TISQLCTM]</td>
<td>Displays the average DB2 SQL time.</td>
</tr>
<tr>
<td>DB2 WAIT COUNT TOT [TISQLCTM]</td>
<td>Displays the total number of DB2 wait requests.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTI04:

```
REPORT
LINE LMRKDATE TISYSID TITRANCT(T)
     TIFCPRCT(T) TIFCPRTM TIDLIRCT(T) TIDLIRTM
     TISQLCCT(T) TISQLCTM TINSQCCT(T) TINSQCTM
     TIDB2WCT(T) TIDB2WTM TIUDBRCT(T) TIUDBRTM
SFORM TIFCPRCT TIFCPRTM TIDLIRCT TIDLIRTM TITRANCT
     TISQLCCT TISQLCTM TINSQCCT TINSQCTM TIDB2WCT
     TIDB2WTM TIUDBRCT TIUDBRTM
SUMF LMRKDATE TISYSID
TITLE 'I/O SUMMARY'
WIDTH 132
COVER NO
```
RWTI06 - Hourly Paging Summary

**Purpose**

The Hourly Paging Summary report provides an hourly summary of storage and paging statistics by date and system ID. Use this report to find paging activity in your system relative to other system activity.

**Report Data**

This report uses the transaction performance history (TI) subtype-1 and subtype-2 records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CICS SYSID [TISYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>END TIME [LMRKTIME]</td>
<td>Displays the time the record was written.</td>
</tr>
<tr>
<td>PAGE IN COUNT AVG [TIPGEICT]</td>
<td>Displays the average number of page-in operations.</td>
</tr>
<tr>
<td>PAGE IN COUNT MAX [TIPGEICT]</td>
<td>Displays the maximum number of page-in operations.</td>
</tr>
<tr>
<td>PAGE IN COUNT MIN [TIPGEICT]</td>
<td>Displays the minimum number of page-in operations.</td>
</tr>
</tbody>
</table>
These control statements, used to produce this report, are in the installation library in member RWTI06:

```
OPTION PLEFT
REPORT
  LINE LMRKDATE TISYSID LMRKTIME
    TIPGEICT(A) TIPGEOCT(A) TIPGETCT(A)
    TIPGEICT(H) TIPGEOCT(H) TIPGETCT(H)
    TIPGEICT(X) TIPGEOCT(X) TIPGETCT(X)
    TIPGEICT(T) TIPGEOCT(T) TIPGETCT(T)
SFORM
    TIPGEICT TIPGEOCT TIPGETCT
SUMF LMRKDATE TISYSID LMRKTIME(0100000000)
TITLE 'HOURLY PAGING SUMMARY'
```
Customization

You can change the existing control statements to summarize data by date and system ID to obtain a daily paging summary report. Change the SUMF statement to:

SUMF LMRKDATE TISYSID
# Purpose

The System vs Application CPU Utilization report compares system CPU utilization to application CPU utilization.

## Report Data

This report uses the transaction performance history (TI) subtype-1 and subtype-2 records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPL TO SYS RATIO TOT [UFLD APLRATIO]</td>
<td>Displays the ratio of application CPU time to system CPU time, defined through a UFLD statement.</td>
</tr>
<tr>
<td>CICS SYSID [TISYSID]</td>
<td>Displays the system identifier.</td>
</tr>
<tr>
<td>DFHSIP CPU TOT [UFLD TOTCPU]</td>
<td>Displays the total CICS CPU time, defined through a UFLD statement.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTI07:

```
OPTION PLEFT
UFLD
   NAME TOTCPU
   TYPE TIME
   HEAD1 'DFHSIP'
   HEAD2 ' CPU '
   PROC TOTCPU = TITCBCTM
UFLD
   NAME TOTDISP
   TYPE TIME
   HEAD1 'DFHSIP'
   HEAD2 'DISPATCH'
   PROC TOTDISP = TITSKDTM
UFLD
   NAME APLRATIO
   TYPE COUNT
   HEAD1 'APPL TO SYS'
   HEAD2 ' RATIO '
REPORT
   LINE LMRKDATE TISYSID TOTDISP(T) TOTCPU(T) APLRATIO TIAPLCTM
   SUMF LMRKDATE TISYSID
   GRAPHS TOTCPU(100000000)
   GRAPHS TOTDISP(100000000)
   GRAPHS APLRATIO(100)
   WIDTH 132
   AT PRINT TISYSID
   WHEN TOTCPU > 0 THEN APLRATIO = (TIAPLCTM * 100) / TOTCPU
   ELSE APLRATIO = 0
   TITLE 'SYSTEM VS APPLICATION CPU UTILIZATION'
   COVER NO
```
Customization

Suppose you want to create this report for March 2004, covering only prime shift on weekdays. You could add this SELECT statement to the control statements used to create this report:

```
SELECT
    FDATA  DATE 030104
    TDATA  DATE 033104
    DRANGE MONDAY FRIDAY
    TRANGE 080000 170000
```

These FDATA and TDATA parameters tell Report Writer to include all data from the month of March 2004, beginning with the first record of March 1, 2004, and ending with the last record of March 31, 2004. The DRANGE and TRANGE parameters specify selection criteria to be applied to every record being considered for the report. The DRANGE parameter specifies a range of days of the week for reporting (e.g., Monday through Friday), while the TRANGE parameter specifies a time range for each day in the report (e.g., 8 A.M. to 5 P.M.).

The more you restrict the amount of data, the more useful your report, for example:

```
Suppose the existing System vs Application CPU Utilization report indicates that CPU utilization is unusually high for all CICS regions except SYSID CICS. You may want to break down the report into hourly intervals to pinpoint particular problem hours.
```
RWTI08 - System Total Page

**Purpose**

The System Total Page report summarizes and presents information from the transaction performance history (TI) subtype-1 and region interval (TR) records on one page.

**Report Data**

The System Total Page report displays standard fields. A single-page System Total Page report is created for each day and includes all CICS address spaces. The selected data determines the period covered by the System Total Page report. In the absence of other selection criteria, the report contains data from 00:00:00 to 23:59:59.
The report has six sections that show:

- CICS system activity
- CICS system availability
- High-water mark information
- CPU analysis
- I/O activity
- Storage analysis.

The placement of each section is controlled by the WIDTH parameter of the REPORT statement.

**CICS System Activity**

This section shows you statistics about the transactions and their associated response times, specifically:

- The number of transactions in the TXNS field with response times that fall into one of six categories in the RESPONSE field.
- The number of transactions within each bucket as a percent of total transaction count in the PERCENT field. Each percent is graphed.
- The cumulative percent of transactions, calculated at each response time bucket in the CUM % field.
- The number of terminated, excluded transactions.
- The total number of transactions not transferred to TMON Log File Services as a result of being rejected by the WRITE RECORD user exit during the interval reported.

**CICS System Availability**

This section provides system-related statistics, such as:

- The beginning and ending time stamps for the interval reported
- The amount of system down time during the interval reported
- The start and end times of all periods when the system was operational during the interval reported and the duration of each.
CPU Analysis

This section shows you the total amount of dispatch time and CPU time used. Both dispatch and CPU time are broken down into distinct types including SRB, application, and subtask TCB.

High Water Mark Information

This section displays the highest levels of file waits and various pool storage usage for the reporting interval. The TRANID identifies the task associated with these high-water marks.

I/O Activity

This section displays the number of requests issued during the interval reported in the VOLUME field and the total elapsed time for the requests issued in the TOTAL TIME field. The time stamp shown in the TOTAL TIME field is measured from the issuance of the request until subsequent dispatch of the transaction upon completion of the request. The AVG TIME field shows the average elapsed time for each time of the request.

Storage Analysis

This section displays various storage statistics such as:

- The name and size (in units of 1K) of each CICS dynamic storage area (DSA)
- The total amount of each DSA in use at the end of the interval reported
- The number of times each DSA has encountered a short-on-storage (SOS) condition
- The number of CICS storage violations that occurred in each DSA.

Control Statements

These control statements, used to produce this report, are in the installation library in member RWTI08:

```
REPORT
  SPAGE
  WIDTH 132
```
To create the System Total Page report, you must code the SPAGE parameter of the REPORT statement. No subparameters are associated with SPAGE.

Customization of the System Total Page report is limited to data selection and exclusion. You can use the SELECT and EXCLUDE statements to limit the data input to the report.

You should request only one System Total Page report in a single execution of Report Writer. When requesting this report with reports other than the Application Total Page (TPAGE) report, code the SPAGE REPORT statement first.

To request a System Total Page report for individual CICS address spaces, use these control statements:

```plaintext
REPORT
SPAGE
WIDTH 132
SELECT PROC WHEN TIEGAPLD EQ 'CICSAPLD' THEN ACCEPT
```
RWTI09 - Online History Comparison by Date

Purpose

The Online History Comparison by Date report displays history records from the online history file for a specific date. It is equivalent to the Online History screen (Option 6.TI), when summarized by date.

Report Data

This report uses the transaction performance history (TI) subtype-1 and subtype-2 records. The table lists the report fields. The TMON for CICS TS or user-defined (for UFLD statements) field name is enclosed in brackets.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIP REQ TIME AVG</td>
<td>Displays the average EIP request time, defined through a UFLD statement.</td>
</tr>
<tr>
<td>[UFLD EIPRSP]</td>
<td></td>
</tr>
<tr>
<td>END DATE [LMRKDATE]</td>
<td>Displays the date the record was written.</td>
</tr>
<tr>
<td>ENDED TRANS TOT</td>
<td>Displays the number of transactions that ended on the specified date, defined through a UFLD statement.</td>
</tr>
<tr>
<td>[UFLD TRANSX]</td>
<td></td>
</tr>
<tr>
<td>I/O COUNT TOT [TIIOCT]</td>
<td>Displays the total number of input and output operations.</td>
</tr>
<tr>
<td>JOB NAME [LMRKJOBN]</td>
<td>Displays the CICS jobname.</td>
</tr>
<tr>
<td>PAGING COUNT TOT [TIPGETCT]</td>
<td>Displays the total number of page-in and page-out operations.</td>
</tr>
<tr>
<td>RESPONSE TIME AVG [TIRSPTM]</td>
<td>Displays the response time for transactions that ended on the specified date.</td>
</tr>
<tr>
<td>TASK CPU TIME TOT [TICPURTM]</td>
<td>Displays the total CPU time used by the transactions.</td>
</tr>
</tbody>
</table>
Control Statements

These control statements, used to produce this report, are in the installation library in member RWTI09:

```
OPTION PLEFT
UFLD
   NAME TRANSX
   TYPE COUNT
   HEAD1 'ENDED'
   HEAD2 'TRANS'
   PROC TRANSX = TITRANCT - TITRNXCT
UFLD
   NAME EIPRSP
   TYPE TIME
   AVERAGE TRANSX
   HEAD1 'EIP REQ'
   HEAD2 ' TIME'
   PROC EIPRSP = TIEIPRTM
REPORT
   LINE LMRKJOBN LMRKDATE TRANSX(T) TIRSPTM EIPRSP(A) TICPURTM(T)
   TIPGETCT(T) TIIOCT(T)
   SUMF = LMRKJOBN
   TITLE 'ONLINE HISTORY COMPARISON BY DATE'
   WIDTH = 132
   COVER NO
```

Customization

Because the purpose of the Online History Comparison by Date report is so specific (that is, to replicate the Online History screen when summarized by date), customizing it would defeat its purpose. Therefore, we have not offered any suggestions for report customization.