



Avaya™ Call Management System (CMS)
Custom Reports

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Preventing Toll Fraud

"Toll fraud" is the unauthorized use of your telecommunications system by an unauthorized party (for example, a person who is not a corporate employee, agent, subcontractor, or working on your company's behalf). Be aware that there may be a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

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Select **Support**, then select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, select **Global Escalation List**.

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Telecommunications security (of voice, data, and/or video communications) is the prevention of any type of intrusion to (that is, either unauthorized or malicious access to or use of) your company's telecommunications equipment by some party.

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An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or working on your company's behalf. Whereas, a "malicious party" is anyone (including someone who may be otherwise authorized) who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

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- Theft (such as, of intellectual property, financial assets, or toll-facility access)
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- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including but not limited to, human/data privacy, intellectual property, material assets, financial resources, labor costs, and/or legal costs).

Your Responsibility for Your Company's Telecommunications Security

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- System administration documents
- Security documents
- Hardware-/software-based security tools
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- Telecommunications security experts

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Avaya provides a telephone number for you to use to report problems or to ask questions about your contact center. The support telephone number is 1-800-242-2121 in the United States. For additional support telephone numbers, see the Avaya Web site:

<http://www.avaya.com>

Select **Support**, then select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, select **Global Escalation List**.

Acknowledgment

This document was written by the CRM Information Development group.

Avaya™ Call Management System (CMS) Custom Reports

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Preface

Avaya CMS Custom Reports, 585-215-822, was written for the CMS administrator who has access to all parts of CMS, and for administrators, such as split/skill supervisors, who have limited access to CMS.

Organization and use of this document

The following list describes the contents of each chapter and appendix in this document.

[Introduction to Custom Reports](#) on page 17

This section contains the following information:

- Defines a custom report, describes Screen Painter, and tells how CMS stores and retrieves data
- Gives the tasks for creating a custom report
- Lists the standard CMS reports that cannot be customized
- Lists the CMS database items that are not in standard reports but can be used in custom reports.

[Getting started](#) on page 35

This section shows you how to:

- Define a custom report's name, access, and type
- Change a custom report's access or description
- Delete a custom report

[Using Screen Painter editing tools](#) on page 45

This section shows you how to:

- Access Screen Painter
- Copy an existing report
- Edit a report with blocks
- Enter report text
- Save your work

[Defining the data for a custom report](#) on page 61

This section shows you how to:

- Define fields for the report input window
- Define report fields
- Define bars in a report
- Define the rows of data for a report
- Define fields on the report to show when the report was run and what items the report covers

[Completing your custom report](#) on page 121

This section shows you how to:

- Highlight fields
- Define no-scroll areas
- Save and test a report design
- Understand test design error messages
- Run a custom report

[Advanced report design](#) on page 141

This section shows you how to:

- Create a custom data table
- Include forecast data in a custom report
- Select rows from more than one table
- Do other alternative row search conditions
- Repeat aggregate function values in historical reports

Reasons for reissue

This document was reissued for the following reason:

- Added contact information for the Avaya Professional Services Organization to [Creating a custom data table](#) on page 141.

Related documents

Related documents lists sources for information related to contact center products and features. Not all documents are supported for all CMS releases or equipment.

To order Avaya documentation, call the Avaya Publications Center at 1-800-457-1235 (United States and Canada) or +1-207-866-6701 (outside the United States and Canada).

CMS software documents

Document title	Document number
Installing software on a CMS computer	
<i>Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide</i>	585-215-115
<i>CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting</i>	585-215-956
Setting up a disk-mirrored system	
<i>Avaya CMS R3V11 Software Installation, Maintenance, and Troubleshooting Guide</i>	585-215-115
<i>CentreVu Call Management System Release 3 Version 9 Software Installation, Maintenance, and Troubleshooting</i>	585-215-956

Upgrade documents

There are several upgrade paths supported with CMS. There is a document designed to support each upgrade. Note that none of the following upgrade documents are available from the publications center.

- Base load upgrades

Use a base load upgrade when upgrading CMS to the latest load of the same version (for example, R3V9 ak.g to R3V9 al.k). A specific set of instructions is written for the

Preface

upgrade and is shipped to the customer site with the CMS software CD-ROM as part of a Quality Protection Plan Change Notice (QPPCN).

Document title
<i>Avaya CMS R3V11 Base Load Upgrades</i>
<i>CentreVu Call Management System Release 3 Version 9 Base Load Upgrade Procedures</i>

- Platform upgrades and data migration

Use a platform upgrade when upgrading to a new hardware platform (for example, upgrading from a SPARCserver 5 to an Enterprise 3500). The new hardware platform is shipped from the Avaya factory with the latest CMS load. Therefore, as part of the upgrade you will have the latest CMS load (for example, R3V9 to R3V11 or the latest load of the same CMS version). For R3V11, a specific set of instructions is written for the upgrade and is shipped to the customer site with the new hardware.

Document title
<i>Avaya Call Management System Release 3 Version 11 Platform Upgrade and Data Migration</i>
<i>CentreVu Call Management System Release 3 Version 9 Platform Upgrade and Data Migration Instructions</i>

- Avaya Call Management System Upgrade Express (CUE)

Use CUE in the following conditions:

- CMS is being upgraded from an earlier version (for example, R3V5u or R3V6) to the latest version (for example, R3V9 or R3V11).
- The hardware platform is not changing.

A specific set of upgrade instructions is written for the upgrade and is shipped to the customer site with the CUE kit.

Document title
<i>Avaya Call Management System Release 3 Version 11 Sun Blade 100 Workstation CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Blade 100 Workstation Mirrored System CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Ultra 5 Computer CMS Upgrade Express</i>

Document title
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3000 Computer CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3000 Computer Mirrored System CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3500 Computer CMS Upgrade Express</i>
<i>Avaya Call Management System Release 3 Version 11 Sun Enterprise 3500 Computer Mirrored System CMS Upgrade Express</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Ultra 5 Computer CVUE Instructions</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer CVUE Instructions</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3000 Computer Mirrored System CVUE Instructions</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer CVUE Instructions</i>
<i>CentreVu Call Management System Release 3 Version 9 Sun Enterprise 3500 Computer Mirrored System CVUE Instructions</i>

Hardware documents

Document title	Document number
<i>Avaya Call Management System Sun Fire V880 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-215-116
<i>Avaya Call Management System Sun Fire V880 Computer Connectivity Diagram</i>	585-215-612
<i>Avaya Call Management System Sun Blade 100/150 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-310-783
<i>Call Management System Sun Blade 100/150 Computer Connectivity Diagram</i>	585-310-782
<i>Avaya Call Management System Sun Enterprise 3500 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-215-873
<i>Call Management System Sun Enterprise 3500 Computer Connectivity Diagram</i>	585-215-877

Preface

Document title	Document number
<i>Avaya Call Management System Sun Ultra 5 Computer Hardware Installation, Maintenance, and Troubleshooting</i>	585-215-871
<i>Call Management System Sun Ultra 5 Computer Connectivity Diagram</i>	585-215-872
<i>Avaya Call Management System Sun Enterprise 3000 and SPARCserver Computers Hardware Maintenance and Troubleshooting</i>	585-214-016
<i>Avaya Call Management System Terminals, Printers, and Modems</i>	585-215-874

Switch documents

Document title	Document number
<i>Avaya Call Management System Switch Connections, Administration, and Troubleshooting</i>	585-215-876

Administration documents

Document title	Document number
<i>Avaya Call Management System Release 3 Version 11 Administration</i>	585-215-515
<i>CentreVu Call Management System Release 3 Version 9 Administration</i>	585-214-015

Other documents

Document title	Document number
<i>Avaya CMS Open Database Connectivity</i>	585-780-701
<i>Avaya CMS R3V11 LAN Backup User Guide</i>	585-215-715
<i>Avaya CMS R3V11 External Call History Interface</i>	585-780-700
<i>CentreVu CMS Release 3 Version 9 External Call History Interface</i>	585-215-952
<i>Avaya CMS Custom Reports</i>	585-215-822
<i>Avaya CMS Forecast</i>	585-215-825
<i>Avaya Visual Vectors Version 11 Installation and Getting Started</i>	585-210-706
<i>Avaya Visual Vectors Version 11 User Guide</i>	585-210-709
<i>Avaya Visual Vectors Version 9 Installation and Getting Started</i>	585-210-947
<i>Avaya Visual Vectors Version 9 User Guide</i>	585-210-944

Documentation Web sites

For product documentation for all Avaya products and related documentation, go to <http://www.avayadocs.com>.



Important:

Additional information about new software or hardware updates will be contained in future issues of this book. New issues of this book will be placed on the Web site when available.

Use the following web sites to view related support documentation:

- Information about Avaya products and service

<http://www.avaya.com>

- Sun hardware documentation

<http://docs.sun.com>

- Okidata printer documentation

<http://www.okidata.com>

- Informix documentation

<http://www.informix.com>

- Tivoli Storage Manager documentation

<http://tivoli.com>



Introduction to Custom Reports

This chapter provides the following Avaya Call Management System (CMS) information:

- [Custom reports and Screen Painter](#) on page 17
- [Tasks to create a custom report](#) on page 19
- [Standard reports that cannot be customized](#) on page 21
- [Database items not in standard reports](#) on page 22
- [How CMS stores and retrieves data](#) on page 23

Custom reports and Screen Painter

What is a custom report?

A custom report is a report that you create and design using the Custom Reports subsystem. Like standard CMS reports, a custom report displays information about Automatic Call Distribution (ACD) activity in your call center. For a custom report, you determine what specific ACD information is displayed and how it is displayed.

Like standard reports, custom reports fall into two categories: real-time and historical. A single custom report can contain either real-time data or historical data, but *not* both.

Also, you run a custom report via the Custom Reports subsystem, *not* from the Reports subsystem.

Screen Painter

You design custom reports with a tool called Screen Painter. When creating historical and real-time custom reports, Screen Painter lets you:

- Copy existing report designs, including standard report designs

Introduction to Custom Reports

- Edit reports using block moves, copies, and deletions
- Define ACD data for report fields
- Define ACD data for bar graphs (if you have the CMS Graphics feature)
- Arrange report fields and bars
- Enter text for field labels, column headers, row headers, or special instructions
- Emphasize text and fields with highlighting options
- Define stationary (no-scroll) areas

For *historical custom reports only*, Screen Painter lets you:

- Merge data in a report field to include data from different ACD entities, for example, to define a field that represents the percentage of calls an agent answered compared to all calls handled by that agent's split or skill.
- Merge data in a report field to include data with different time frame, (for example, to define a field that represents the percentage of calls answered in an intrahour interval compared to all calls answered in the day.
- Include data from custom data tables that you create and populate within the CMS database. If you want to create custom data tables see [Advanced report design](#) on page 141.

 **CAUTION:**

If you create custom data tables, you need to make sure there is enough disk space available to store the data. CMS does not automatically check the available space. If you fill up your disk with custom data, then you will lose or damage stored custom and ACD data. See *CMS R3V11 Administration* (585-215-515) for more information about disk storage. Also, big reports could degrade the performance of your system. Make sure you test the new custom report before you or someone else uses it.

 **CAUTION:**

Do not tamper with standard ACD data in the CMS database. If you do, you will lose stored data.

 **Important:**

You cannot merge real-time data with historical data.

Tasks to create a custom report

There are 14 tasks you need to complete to create a custom report. If you consistently do all of these tasks for each report you create, then your reports will run properly and you will be able to create them efficiently.

The 14 tasks are:

1. [Defining a report's name, access, type, and option](#) on page 36

Define the name that you use both to run the report and to access the report design if you want to change the design. Define access to whether other users can run the report and copy the report's design to create their own custom reports. Define the type as either real-time or historical.

2. [Navigating Screen Painter](#) on page 45

Access Screen Painter so that you can design the report.

3. [Copying an existing report design](#) on page 50 (Optional)

Copy an existing design so that you start with existing report headings, data fields, bars, and other report features. While this is an optional step, it saves you a lot of time and trouble by copying and modifying an *existing* report design. Both standard and custom report designs can be copied.

4. [Editing a report with blocks](#) on page 54

Edit a report design using block moves, copies, and deletions. Editing with blocks lets you rearrange and delete sections of a report design quickly and easily. Block editing is particularly convenient when you have just copied an existing report design.

5. [Entering report text](#) on page 59

Enter text to provide headings for the data fields in the report. Entering report text should be one of the first things you do so that:

- The text provides a skeleton layout for positioning data fields
- The text helps you remember what data is supposed to go in the data fields

If you copy a report design the text of that report will be included. Using the Custom Reports subsystem, you can modify the text as required.

6. [Defining fields for the Report Input window](#) on page 61

Define fields for the report input window so that users can run the report using the parameters they choose (i.e., what split, agent, time, date, and so on, the report covers).

If you copy a report design, the definition of that report's input window will be included. You can then modify the input fields as needed.

7. [Defining report fields](#) on page 72 *and* [Defining bars in a report](#) on page 87

Define the location of fields and bars in the report, as well as the field length, bar height/length, and the data that should be displayed in the fields/bars. Defining data consists primarily of specifying which database items supply data to the fields/bars. Your definition of report data is not complete until you complete Task 8.

If you copy a report design, the definition of that report's data fields/bars will be included. You can then modify the data fields/bars as required.

8. [Defining the rows of data for a report](#) on page 96

Define which rows of data in a table will supply data for the fields and bars you defined in Task 7.

If you copy a report design, the definition of that report's rows of data will be included. You can then modify the selection of rows as required.

9. [Defining fields to show run time/date and user inputs](#) on page 116

Define fields on the report to show when the report was run and what items the report covers, as defined in the report input window.

If you copy a report design these fields will be included. You can modify the fields as required.

10. [Highlighting fields](#) on page 121

Change brightness levels (or color if you have a color terminal) or use underlines and reverse video to emphasize or de-emphasize individual fields and text in the report.

If you copy a report design, the highlighting and other video attributes will be included. You can then modify them as required.

11. [Defining stationary \(no-scroll\) areas](#) on page 124

Define parts of the report that will stay in the same place in the report window even when you are scrolling up and down or right and left. You will normally define no-scroll areas for column headers, column totals, and row identifiers.

If you copy a report design, no-scroll areas will be included. You can then modify the non-scroll areas as required.

12. [Saving the report design](#) on page 126

Save the design of your new custom report. So that, any work you performed will not be lost.

13. [Testing the report design](#) on page 127

Test your report immediately after designing and saving it. Testing helps eliminate wasted time in running a report whose design still has errors.

14. [Running Custom Reports](#) on page 139

Run your report.

Standard reports that cannot be customized

The following standard CMS reports cannot be customized:

- Real-time: Multi-ACD report
- Real-time: Multi-ACD Top Agent report
- Historical: Split/Skill: Status report
- Historical: VDN: Status report
- Historical: System: Multi-ACD by Split/Skill report (daily, weekly, monthly)
- Historical: System: Multi-ACD Call Flow by VDN report
- Historical: Trunk Group: Busy Hour report
- Historical: VDN: Busy Hour report

Database items not in standard reports

There are many more database items than are shown in the standard CMS reports. For a complete list and the definitions of all database items, see *CMS R3V11 Database Items and Calculations* (585-780-702).

How CMS stores and retrieves data

The most important and difficult part of designing a custom report is defining the data that goes in the report. To define custom report data, you must first understand how CMS stores and retrieves data, as described below.

How CMS stores data

CMS stores data in the CMS database. The database is divided into 54 different tables that can be used in custom reports. A table is an array of columns and rows that stores data for a type of ACD element (for example, split/skill, agent, trunk, trunk group, VDN, vector, call work code, forecasting, agent trace, call record, or exceptions) and for a specific time frame (for example, for the current intrahour interval, for past intrahour intervals, for past day - summarized by day, and so on). The figure below shows how a small piece of a table (the Current Interval Agent table, in this case) might look in the database.

Sample CMS table (Current Interval Agent table)

ACD	LOGID	SPLIT	EXTENSION	WORKMODE*	ACDCALLS	ACDTIME
1	1001	1	3201	1	21	988
1	1002	1	4440	1	19	777
1	1003	1	3002	2	15	400
1	1004	1	3003	2	9	58
1	1005	1	4003	2	11	644
1	1006	1	5671	4	20	245
1	1007	5	7835	3	7	851
1	1008	1	6666	3	18	603
1	1010	1	3241	1	18	203
1	2001	2	7762	4	13	789
1	2002	5	5642	2	14	549
1	2003	2	2221	2	10	402
1	2004	2	2242	4	19	452
1	2005	2	2287	1	21	616
1	2006	2	3982	3	19	569
1	2007	2	6543	2	15	745
1	2008	2	2345	2	9	109
1	2009	5	2022	2	11	367
1	2010	2	4323	4	20	322
1	3001	3	7655	1	7	188
1	3002	3	3425	1	18	704
1	3003	3	4563	1	18	256
1	3004	5	8885	2	13	980
1	3005	3	5544	2	14	589
1	3006	3	3789	2	10	340
1	3007	3	8675	2	19	299
1	3008	6	3009	1	21	688
1	3009	3	4477	2	19	901

* The numeric values for WORKMODE represent agent states that appear in reports. For example, 1 = AVAIL, 2 = ACD, 3 = ACW, and 4 = AUX.

Note:

The example in the above figure shows data for the current intrahour interval for agents 1001 to 3009. Because data in this table is in real time, data changes second by second. The example represents a snapshot (or the most recent update) of the table.

The following figure shows how a small piece of the Historical Intrahour Interval Split table looks. See the seventh line from the top of the table, 509 ACDCALLS:

Sample CMS table (Historical Intrahour Interval Split table)

ROWDATE	STARTTIME	ACD	SPLIT	ACDCALLS	ABANDONS	ACDTIME	ABNTIME	
070193	0800	1	1	443	48	36898	988	
070193	0800	1	2	234	37	20012	777	...
070193	0800	1	3	111	20	13111	400	...
070193	0900	1	1	652	59	53442	1058	...
070193	0900	1	2	451	32	27635	644	...
070193	0900	1	3	93	11	15321	245	...
070193	1000	1	1	509	43	35401	851	...
070193	1000	1	2	391	31	19768	603	...
070193	1000	1	3	142	10	9786	203	...
070193	1100	1	1	480	39	33389	789	...
070193	1100	1	2	491	22	26789	549	...
070193	1100	1	3	297	15	12530	402	...
070293	0800	1	1	399	36	37651	1452	...
070293	0800	1	2	299	20	29602	7616	...
070293	0800	1	3	138	13	11523	2569	...
070293	0900	1	1	400	46	36178	1745	...
070293	0900	1	2	300	33	24303	1109	...
070293	0900	1	3	225	12	15628	367	...
070293	1000	1	1	394	40	40002	1322	...
070293	1000	1	2	323	34	29881	1188	...
070293	1000	1	3	105	14	12115	704	...
070293	1100	1	1	418	41	34819	1256	...
070293	1100	1	2	246	30	21173	980	...
070293	1100	1	3	100	18	10281	589	...
070393	0800	1	1	417	34	37856	1340	...
070393	0800	1	2	247	24	26308	1299	...
070393	0800	1	3	141	14	12567	688	...
070393	0900	1	1	444	43	39003	1001	...
070393	0900	1	2	301	31	27034	809	...
070393	0900	1	3	206	8	14230	445	...
070393	1000	1	1	420	51	39045	1733	...
070393	1000	1	2	299	39	29562	1303	...
070393	1000	1	3	198	24	12400	899	...
070393	1100	1	1	403	50	30990	1812	...
070393	1100	1	2	320	31	25410	904	...
070393	1100	1	3	99	21	10222	587	...

Note:

The above figure shows data from July 1 to July 3, 1993, and simulates data for an ACD that has only three splits, 60-minute intrahour intervals, and activity each day from 8:00 a.m. to 12:00 p.m. only.

The CMS database uses names to refer to columns of data in a *table*. These names are called *Database items* in CMS. The Current Interval Agent table and the Intrahour Interval Split table actually contain many more columns (and hence many more database items) than are shown in the figures. For a complete listing of database items, see *Avaya CMS R3V11 Database Items and Calculations*, (585-780-702).

Each *row* in a table contains data that is related by the values of one or more of the columns. In the *Sample CMS table (Current Interval Agent table)*, each row in the Current

Introduction to Custom Reports

Interval Agent table contains data related by agent login ID. If you look at the row for login ID 1006 (displayed in bold), you see that the agent is logged into Split 1 on extension 5671 and is currently in AUX work mode. In addition, up to this point in the current interval, the agent has had:

- 20 ACD calls (ACDCALLS)
- 245 seconds of ACD talk time (ACDTIME).

A column or a set of columns that cause the values in a row to be related is called an index. An index stores data sequentially and adds structure for the storage of data in the other columns. For each value in an index column, the remaining values in the corresponding row are related to that value. Thus, in [Sample CMS table \(Current Interval Agent table\)](#) on page 24, the LOGID database item is an index.

In the previous figure, each row in the Intrahour Interval Split table contains data related by date, interval, and split. If you look at the row for Split 1 for the 10 o'clock interval on July 1, 1993 (displayed in bold), you see that Split 1 had:

- 509 ACD calls (ACDCALLS)
- 43 abandoned calls (ABANDONS)
- 35,401 cumulative seconds of ACD talk time for all ACD calls (ACDTIME)
- 851 cumulative seconds of wait time for all calls that abandoned before being answered (ABNTIME).

How CMS retrieves data

CMS retrieves data from the database based on three types of information you supply when you design a custom report:

- The name of the table
- The database items in the table
- The rows of data in the table.

For example, if you want a custom real-time agent report that lists the agents in a split, the report design might be displayed as shown in the following figure:

Sample 1 Custom report design

Split: xxxxxxxxxxx				
Agent ID:	Current State	ACD Calls	ACD Time	Average Talk Time
vvvv	vvvvv	vvv	vvv	vv:vv
↓	↓	↓	↓	↓

Note:

Each series of v's in the illustration represents a report field for which it is expected that CMS will find multiple values (in this case, values for more than one agent) and will display the values vertically in a column. The x's by the Split: label represent the fact that only one value (in this case, a single split's name or number) is expected for the field.

To tell CMS how to retrieve data, you must tell CMS to access the cagent (Current Interval Agent) table. Then, for each report field, you assign the appropriate database items. When you run the report, CMS will find, in the cagent table, the columns of data associated with the database items (columns 2, 5, 6, and 7 in the figure above).

Note:

For the report field Average Talk Time, you actually assign a calculation, ACETIME/ACDCALLS.

Sample 1 of selection of database item

ACD	LOGID	SPLIT	EXTENSION	WORKMODE	ACDCALLS	ACDTIME
1	1001	1	3201	1	21	988
1	1002	1	4440	1	19	777
1	1003	1	3002	2	15	400
1	1004	1	3003	2	9	58
1	1005	1	4003	2	11	644
1	1006	1	5671	4	20	245
1	1007	5	7835	3	7	851
1	1008	1	6666	3	18	603
1	1010	1	3241	1	18	203
1	2001	2	7762	4	13	789
1	2002	5	5642	2	14	549
1	2003	2	2221	2	10	402
1	2004	2	2242	4	19	452
1	2005	2	2287	1	21	616
1	2006	2	3982	3	19	569
1	2007	2	6543	2	15	745
1	2008	2	2345	2	9	109
1	2009	5	2022	2	11	367
1	2010	2	4323	4	20	322
1	3001	3	7655	1	7	188
1	3002	3	3425	1	18	704
1	3003	3	4563	1	18	256
1	3004	5	8885	2	13	980
1	3005	3	5544	2	14	589
1	3006	3	3789	2	10	340
1	3007	3	8675	2	19	299
1	3008	6	3009	1	21	688
1	3009	3	4477	2	19	901

Next, you identify the appropriate rows that supply data. If you want agents in Split 1, you must tell CMS to find rows that have the value 1 for the `SPLIT` database item. When you run the report, CMS finds the appropriate rows of data in the `cagent` table. See the rows with arrows in the following figure:

Sample 1 of selection of table rows

	ACD	LOGID	SPLIT	EXTENSION	WORKMODE	ACDCALLS	ACDTIME
→	1	1001	1	3201	1	21	988
→	1	1002	1	4440	1	19	777
→	1	1003	1	3002	2	15	400
→	1	1004	1	3003	2	9	58
→	1	1005	1	4003	2	11	644
→	1	1006	1	5671	4	20	245
→	1	1007	5	7835	3	7	851
→	1	1008	1	6666	3	18	603
→	1	1010	1	3241	1	18	203
	1	2001	2	7762	4	13	789
	1	2002	5	5642	2	14	549
	1	2003	2	2221	2	10	402
	1	2004	2	2242	4	19	452
	1	2005	2	2287	1	21	616
	1	2006	2	3982	3	19	569
	1	2007	2	6543	2	15	745
	1	2008	2	2345	2	9	109
	1	2009	5	2022	2	11	367
	1	2010	2	4323	4	20	322
	1	3001	3	7655	1	7	188
	1	3002	3	3425	1	18	704
	1	3003	3	4563	1	18	256
	1	3004	5	8885	2	13	980
	1	3005	3	5544	2	14	589
	1	3006	3	3789	2	10	340
	1	3007	3	8675	2	19	299
	1	3008	6	3009	1	21	688
	1	3009	3	4477	2	19	901

The data that CMS plugs into the report is the data found in the intersection of the selected database items and rows. Therefore, the report shows data as shown in the following figure:

Sample custom report 1

Split: 1				
Agent ID:	Current State	ACD Calls	ACD Time	Average Talk Time
1001	AVAIL	21	988	47:00
1002	AVAIL	19	777	40:09
1003	ACD	15	400	26:07
1004	ACD	9	58	6:44
1005	ACD	11	644	58:54
1006	AUX	20	245	12:25
1008	ACW	18	603	33:50
1010	AVAIL	18	203	11:28

Note:

Actually, when you design a custom report, you normally set up the row selection so that the users running the report can choose the rows in the report's input window. For example, to run the report in the previous figure, you would set up the row selection so users would fill out a Report Input window that asked them for a Split number. See [Defining fields for the Report Input window](#) on page 61.

As mentioned earlier, CMS uses indexes to create a structure for storing data. Similarly, CMS uses these indexes to search for data. Indexes allow CMS to find data much faster than if data were stored more randomly. Therefore, when you design a custom report, the rows of data for the report should be defined on the basis of index values. See [Defining fields for the Report Input window](#) on page 61.

Note:

The indexes for each standard table are fixed and cannot be changed, deleted or added to. However, if you define a custom table in the CMS database via INFORMIX SQL, you can define any indexes wanted for that new table.

As another example of how CMS retrieves report data is shown in [Sample 2 custom report design](#) on page 31, which is an example of a report design for a custom intrahour interval split report that lists, by intrahour interval, data for a split in a single day.

Sample 2 custom report design

Split: xxxxxxxxxxxx		
Date: xxxxxxxx		
	ACD	
Interval	Calls	Abandons
vvvvvvv	vvvv	vvvv

To tell CMS how to retrieve data, you must tell CMS to access the `hsplit` (Intrahour Interval Split) table. You must then assign the appropriate database items to the fields. When you run the report, CMS finds the columns of data associated with the database items in the `hsplit` table (see figure above).

Sample 2 of database item selection

ROWDATE	STARTTIME	ACD	SPLIT	ACDCALLS	ABANDONS	ACDTIME	ABNTIME	
070193	0800	1	1	443	48	36898	988	
070193	0800	1	2	234	37	20012	777	. . .
070193	0800	1	3	111	20	13111	400	. . .
070193	0900	1	1	652	59	53442	1058	. . .
070193	0900	1	2	451	32	27635	644	. . .
070193	0900	1	3	93	11	15321	245	. . .
070193	1000	1	1	509	43	35401	851	. . .
070193	1000	1	2	391	31	19768	603	. . .
070193	1000	1	3	142	10	9786	203	. . .
070193	1100	1	1	480	39	33389	789	. . .
070193	1100	1	2	491	22	26789	549	. . .
070193	1100	1	3	297	15	12530	402	. . .
070293	0800	1	1	399	36	37651	1452	. . .
070293	0800	1	2	299	20	29602	7616	. . .
070293	0800	1	3	138	13	11523	2569	. . .
070293	0900	1	1	400	46	36178	1745	. . .
070293	0900	1	2	300	33	24303	1109	. . .
070293	0900	1	3	225	12	15628	367	. . .
070293	1000	1	1	394	40	40002	1322	. . .
070293	1000	1	2	323	34	29881	1188	. . .
070293	1000	1	3	105	14	12115	704	. . .
070293	1100	1	1	418	41	34819	1256	. . .
070293	1100	1	2	246	30	21173	980	. . .
070293	1100	1	3	100	18	10281	589	. . .
070393	0800	1	1	417	34	37856	1340	. . .
070393	0800	1	2	247	24	26308	1299	. . .
070393	0800	1	3	141	14	12567	688	. . .
070393	0900	1	1	444	43	39003	1001	. . .
070393	0900	1	2	301	31	27034	809	. . .
070393	0900	1	3	206	8	14230	445	. . .
070393	1000	1	1	420	51	39045	1733	. . .
070393	1000	1	2	299	39	29562	1303	. . .
070393	1000	1	3	198	24	12400	899	. . .
070393	1100	1	1	403	50	30990	1812	. . .
070393	1100	1	2	320	31	25410	904	. . .
070393	1100	1	3	99	21	10222	587	. . .

Next, you must identify the appropriate rows that supply data. You might want data for the following:

- Split 1, which means you must identify rows that have the value 1 for the SPLIT database item.
- The date 07/02/93, which means you must identify rows with the value 070293 for the ROWDATE database item.
- The intrahour intervals 8:00 a.m. to 11:00 a.m., which means you must identify rows with the values 0800 through 1100 for the one database item.

CMS then finds the appropriate rows of data. See the boxed rows in the following figure:

Sample 2 of selection of table rows

ROWDATE	INTERVAL	ACD	SPLIT	ACDCALLS	ABANDONS	ACDTIME	ABNTIME
070193	0800	1	1	443	48	36898	988
070193	0800	1	2	234	37	20012	777
070193	0800	1	3	111	20	13111	400
070193	0900	1	1	652	59	53442	1058
070193	0900	1	2	451	32	27635	644
070193	0900	1	3	93	11	15321	245
070193	1000	1	1	509	43	35401	851
070193	1000	1	2	391	31	19768	603
070193	1000	1	3	142	10	9786	203
070193	1100	1	1	480	39	33389	789
070193	1100	1	2	491	22	26789	549
070193	1100	1	3	297	15	12530	402
→ 070293	0800	1	1	399	36	37651	1452
070293	0800	1	2	299	20	29602	7616
070293	0800	1	3	138	13	11523	2569
→ 070293	0900	1	1	400	46	36178	1745
070293	0900	1	2	300	33	24303	1109
070293	0900	1	3	225	12	15628	367
→ 070293	1000	1	1	394	40	40002	1322
070293	1000	1	2	323	34	29881	1188
070293	1000	1	3	105	14	12115	704
→ 070293	1100	1	1	418	41	34819	1256
070293	1100	1	2	246	30	21173	980
070293	1100	1	3	100	18	10281	589
070393	0800	1	1	417	34	37856	1340
070393	0800	1	2	247	24	26308	1299
070393	0800	1	3	141	14	12567	688
070393	0900	1	1	444	43	39003	1001
070393	0900	1	2	301	31	27034	809
070393	0900	1	3	206	8	14230	445
070393	1000	1	1	420	51	39045	1733
070393	1000	1	2	299	39	29562	1303
070393	1000	1	3	198	24	12400	899
070393	1100	1	1	403	50	30990	1812
070393	1100	1	2	320	31	25410	904
070393	1100	1	3	99	21	10222	587

Rows where
 SPLIT = 1,
 ROWDATE = 07/02/93,
 and STARTTIME from
 08:00 to 11:00am.

The data that CMS plugs into the report is the data found in the intersection of the selected database items and columns. Thus, the report shows data as follows:

Sample custom report 2

Split: 1		
Date: 07/02/93		
	ACD	
Interval	Calls	Abandons
8:00am	399	36
9:00am	400	46
10:00am	394	40
11:00am	418	41

Defining data is the central task of creating and designing a custom report. However, you must do many other tasks to create a custom report. [Getting started](#) on page 35, walks you through these tasks.



Getting started

Getting started explains how to perform the following tasks in Avaya Call Management System (CMS):

- [Defining a report's name, access, type, and option](#) on page 36

This is the first task in designing your custom report.

- [Changing a report's access, description, or report option](#) on page 43
- [Deleting a custom report](#) on page 44

You perform these tasks via the **Edit Report: Report Select** window.

To complete the design of a custom report, you must also follow the procedures in Chapter 2, Chapter 3, and Chapter 4, and, optionally, Chapter 5.

 **Important:**

To create, change, or delete a custom report, you must have read and write permission for the Custom Reports subsystem.

Defining a report's name, access, type, and option

Defining a report's name, access, type, and option explains how to define the following elements of your custom report:

- Name
- Access
- Type
- Option

Note:

You cannot define a custom report with a timetable. If you are a CMS administrator, you can also specify the owner of the report you are defining (see [Define the user ID](#) on page 40 in this procedure). If you are not a CMS administrator, you can define a report with only you as the owner.

To design a new custom report, perform the following tasks in the order indicated:

1. [Access the Report Select window](#) on page 37
2. [Assign a name to the report](#) on page 38
3. [Enter a report description](#) on page 40
4. [Define the user ID](#) on page 40
5. [Define access to the report](#) on page 40
6. [Define the report as Real-Time or Historical](#) on page 41
7. [Define the report option](#) on page 42
8. [Save the report name](#) on page 42

Access the Report Select window

To access the Report Select window:

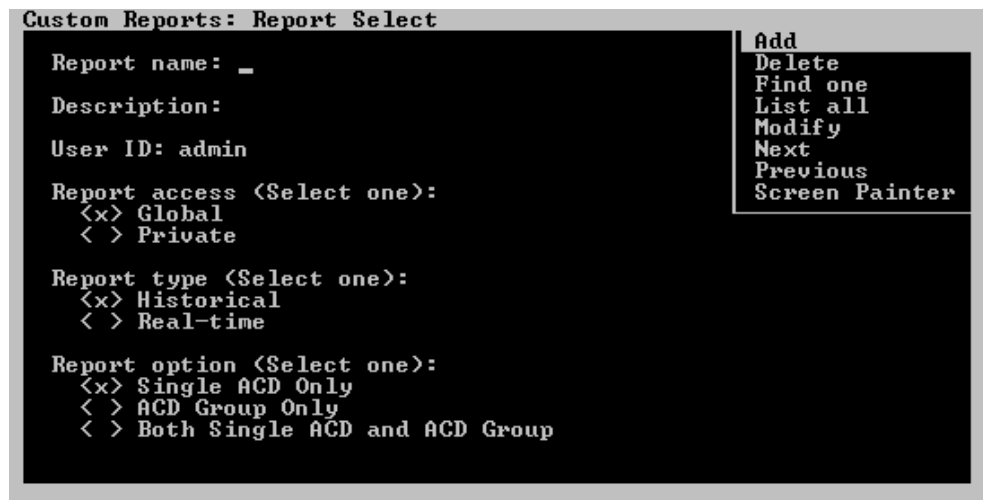
1. Select the `Custom Reports` option on the **Main Menu** and press **Enter**.

The system displays the **Custom Reports** submenu:



2. Select the `Edit Reports` submenu option.

The system displays the **Report Select** window:



Note:

If the Global Dictionary/ACD Groups feature has not been authorized the window will not display the **Report** option menu.

Assign a name to the report

Enter a name for your report in the `Report name` field. The name can have up to 20 characters, including spaces. Because the name you give your report must be unique, you may want to look at existing custom report names before entering a name for your report.

Use the following steps to list existing report names:

1. Clear the fields
2. Enter an `x` to select a report access—`global` or `private`
3. Enter an `x` to select a report type—`Historical` or `Real-time`
4. Enter an `x` to select a report option—`Single ACD Only`, `ACD Group Only`, or `Both Single ACD and ACD Group`. See the description for each report option below.
5. Press **Enter**
6. Select `List all`
7. Press **Enter**

The **List All** window displays all global or private custom report names for the specified report type.

8. Check the list to ensure that the name you want to give your report has not already been used.

If you are creating a global report, its name must be different from any name in the list.

If you are creating a private report, its name must be different from names of any existing global or private reports you have created. Your private report names can be the same as another user's private report names.

9. Press **Exit** to return to the **Report Select** window.

The **List All** window closes, and the cursor returns to the **Report Select** window.

10. Type the name you want for your report.

Definitions of the report options

Single ACD Only

When you select this report option, you are defining a report which will pertain only to information regarding a single ACD. If the single ACD is a member of an ACD Group, NO information about the ACD Group in which it is a member will be provided in this report. For example, if an Agent Split/Skill Report for Agent 5001 for ACD 1 is designed via the Screen

Painter (and ACD 1 is defined in the ACD Group named "Sales"), the report will only display information for Agent 5001 for ACD1.

Upon running the report, you must set your "Current ACD" as single a ACD or you will not see your report in the **Custom Reports > Historical** or **Real-Time** submenus.

ACD Group Only

When you select this report option, you are defining a report which will contain summarized information regarding ACDs that are members of an ACD Group. Queries for ACDs defined for this report will contain aggregate data of all the member ACDs within the ACD Group. For example, if an Agent Report for Agent 5001 for an ACD Group named "Sales" is required and "Sales" is an ACD Group which contains ACD members ACD 1 and ACD2, the report will contain an aggregate of Agent 5001's Split/Skill information from both ACD 1 and ACD 2.

Upon running the report, you must set your current ACD as a Group ACD or you will not see your report in either the **Custom Reports > Historical** or **Real-time** submenus.

Both Single ACD and ACD Group

When you select this report option, you are defining a report which can contain data useful information for reporting either at single ACD and/or ACD Group level. Upon running the report, your current ACD can be a single ACD or a Group ACD. Your report will be available in the **Custom Reports > Historical** or **Real-time** submenus regardless of your current ACD setting.

Enter a report description

If you want, enter a description of the report in the `Description` field. The description can have up to 50 characters, including spaces. Your description should be detailed enough to describe the report's contents accurately. *Do not* use the following characters:

<code>\</code>	back slash
<code>;</code>	semicolon
<code>'</code>	grave accent
<code>~</code>	tilde
<code>"</code>	double quotes
<code> </code>	pipe
<code>*</code>	asterisk
<code>?</code>	question mark

Define the user ID

Enter the user ID of the owner of the report. The default is your user ID. If you are a CMS administrator, you can enter another user's ID if you want to create a custom report for that user. Do this if you want only that user to be able to run the report.

Note:

If you want to list another user's existing custom reports, you can enter that user's ID and do a `List All`. You do not have to be an administrator to list other users' custom reports.

Define access to the report

Enter an `x` to select a report access option, either `global` or `private`.

Note:

It is a good idea to make your reports private until they have been debugged and run successfully. This prevents the possibility of other users from running reports you have saved but not yet tested.

`Global` access to the report gives other users the following capabilities:

- Other users can run the report
- Other users can copy the report design when designing their own custom report See [Copying an existing report design](#) on page 50 for more information

If you select `global`, your report's name must be different from the name of any other custom report — `global` or `private`.

`Private` access to the report means that only you and the CMS administrators can run the report. No other users, except for CMS administrators, can copy or run the report design for use in their own custom reports.

If you select `private`, your report's name must be different from the names of the following:

- Any other private report you have created of the same type
- Any user's global custom report of the same type

Note:

No other CMS user, other than a CMS administrator, can modify a report design you create, regardless of whether the report is `global` or `private`. A CMS administrator always has the ability to modify your report design, even if you make it `private`.

Define the report as Real-Time or Historical

Enter an `x` to select a report type, `Real-time` or `Historical`.

When you design the report on Screen Painter, you are able to access data only for the category you select. For example, if you select `Real-time`, you are not able to specify historical data in the report design.

Also, when you go to run the report, CMS lists the report under the appropriate submenu, `Real-time` or `Historical`.

You must select the `Historical` option if you want to include:

- Exceptions data
- Forecast data
- Call work code data
- Agent trace data
- Call record data.

Define the report option

The Global Dictionary/ACD Groups feature provides call center supervisors with transparent views of their agents regardless of which ACD they are logged into. Multi-ACD reporting also consolidates split reporting that will aggregate data from multiple ACDs.

When defining the report option, the Single ACD Only option will run only when the current ACD is set to a single ACD.

Enter an **x** to select one of the following options:

- Single ACD Only (default)
- ACD Group Only
- Both Single ACD and ACD Group

Note:

If the Global Dictionary/ACD Groups feature has not been authorized the window will not display the **Report** option menu.

Save the report name

To save the report name:

1. Press **Enter**.
2. Select `Add`
3. Press **Enter**.

The status line displays successful.

If CMS does not add the report name because the name is not unique, use `List all` to see what names already exist, and go back to [Assign a name to the report](#) on page 38.

After you have added the report name, you can access Screen Painter to begin designing the report.

Changing a report's access, description, or report option

To change a report's access or description:

Note:

You cannot change a report's name, type, option, or owner once you have added the report. Instead, you must create a new report with the wanted name, type, option, or owner. Then copy the design of the old report to the new report.

1. On the **Report Select** window, complete the fields you want to search on. (`Report type` is a required field for CMS.) Press **Enter**, and select `List all`. Press **Enter** again.

A **List All** window displays a list of all custom reports for the specified type and user ID.

Note:

You can change the `User ID` field to list another user's custom reports. You cannot change the user ID of a report that already exists.

2. Find the report you want to change, and press **Exit** to return to the **Report Select** window.

The cursor returns to the previously selected field of the **Report Select** window.

3. In the `Report name` field on the **Report Select** window, enter the name of the report for which you want to change the description or access.
4. If necessary, change the default `Report type` selection. Then, press **Enter**, select `Find one`, and press **Enter** again.

CMS fills in all fields with the report's characteristics.

5. Change the description or report access as needed. Then press **Enter**, select `Modify`, and press **Enter** again.

`Successful` is displayed on the status line.

Note:

You cannot change a report's name or user ID using `Modify`. To change a report name or user ID, you must add a new report name (with the wanted user ID), access `Screen Painter`, copy the old report's design to the new report, and finally delete the old report name.

Deleting a custom report

You need to be a CMS administrator to delete another user's custom reports.

To delete a custom report:

1. On the **Report Select** window, complete the fields you want to search on, and select `List all`. (Report type is a required field for CMS.)

A **List All** window displays a list of all global and private custom reports for the specified type and user ID.

Note:

You can change the `User ID` field to list another user's custom reports. However, you cannot delete another user's report unless you are a CMS administrator.

2. In the **List All** window, find the report you want to delete, and press **Exit** to return to the **Report Select** window.

The **List All** window closes, and the cursor returns to the first field of the **Report Select** window.

3. In the `Report name` field on the **Report Select** window, enter the name of the report you want to delete.

4. Press **Enter**, select `Find one`, and press **Enter** again.

CMS fills in all fields with the report's characteristics.

Note:

If more than one report has the same name, you may have to use `Next` to find the report you want.

5. Press **Enter**, select `Delete`, and press **Enter** again.

`Successful` is displayed on the status line.

Using Screen Painter editing tools

Using Screen Painter editing tools includes the following topics:

- [Navigating Screen Painter](#) on page 45
- [Copying an existing report design](#) on page 50
- [Editing a report with blocks](#) on page 54
- [Entering report text](#) on page 59
- [Saving your work](#) on page 60

Navigating Screen Painter

To design your Avaya Call Management System (CMS) custom report, use Screen Painter. With Screen Painter, you can enter report text, data fields, and data bars in a layout that closely resembles the layout of the actual report.

You must define the report name and its select characteristics in the **Edit Report: Report Select** window before you can access Screen Painter for that report.

Note:

You can access Screen Painter for a report that someone else designed only if you are a CMS administrator. However, if another user's report has global access, you can add your own report name. Then copy that user's report design on Screen Painter (see [Copying an existing report design](#) on page 50).

On Screen Painter, cursor movement, scrolling, and data entry all differ from those operations in normal CMS windows.

Navigating Screen Painter includes the following topics:

- [Accessing Screen Painter](#) on page 46
- [Moving the cursor on Screen Painter](#) on page 47
- [Screen Painter report size](#) on page 47
- [Scrolling Screen Painter](#) on page 48

Using Screen Painter editing tools

- [Properties of secondary windows](#) on page 49
- [Editing keys in secondary windows](#) on page 49

Accessing Screen Painter

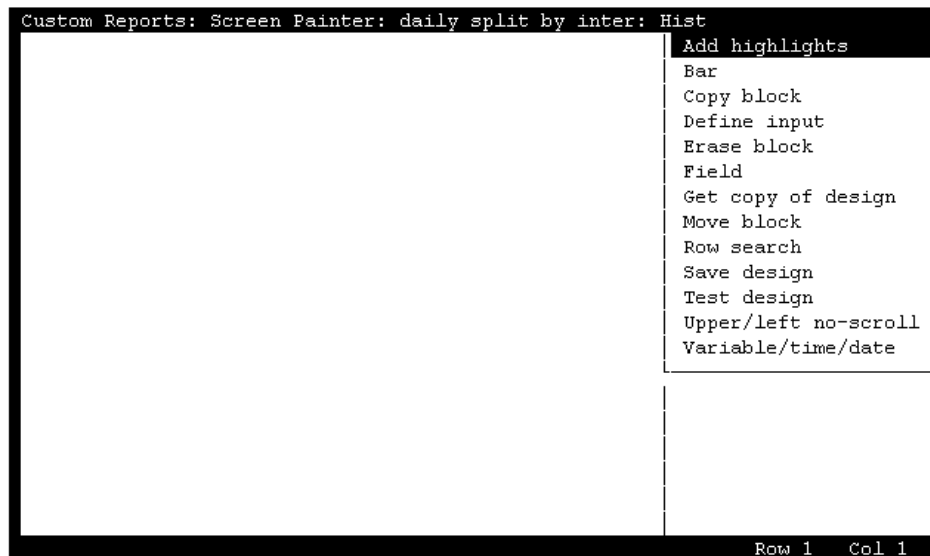
To access Screen Painter:

1. On the **Report Select** window, enter the name of the report in the Report name field, and select Find one.

The select characteristics of the report are displayed.

2. Select Screen Painter action list option.

The system displays the **Screen Painter** window:



Moving the cursor on Screen Painter

Since Screen Painter has no predefined fields, you can freely move the cursor around the interior of Screen Painter with the following keys:

Arrow keys	Move the cursor one space in the direction the arrow points.
Tab	Moves the cursor eight spaces to the right. You can also use Tab when you are defining blocks (see Editing a report with blocks on page 54”).
Shift + Tab	Press and hold Shift ; then press Tab . This key combination moves the cursor eight spaces to the left. You can also use Shift + Tab when you are defining blocks (see the “ Editing a report with blocks on page 54” section in this chapter). The Shift + Tab combination may not be available on some terminals. Throughout this document, when any set of two keys are shown side by side, press and hold the first key. Then press the second key.
Back Space	Moves the cursor one space to the left.
Ctrl + f	(Forward) Moves the cursor to the far right edge (132nd column) of Screen Painter.
Ctrl + b	(Back) Moves the cursor to the left edge (1st column) of Screen Painter.
Ctrl + d	(Down) Moves the cursor to the bottom (Line 25) of Screen Painter.
Ctrl + u	(Up) Moves the cursor to the top (Line 1) of Screen Painter.

Screen Painter report size

Screen Painter allows you to create a report design with maximum dimensions as follows:

- A horizontal size of 132 columns (character spaces)
- A vertical size of 25 lines

For most terminals, CMS displays (in the lower right border of Screen Painter) the exact position of the cursor within Screen Painter's 25 column by 132 column grid (see the

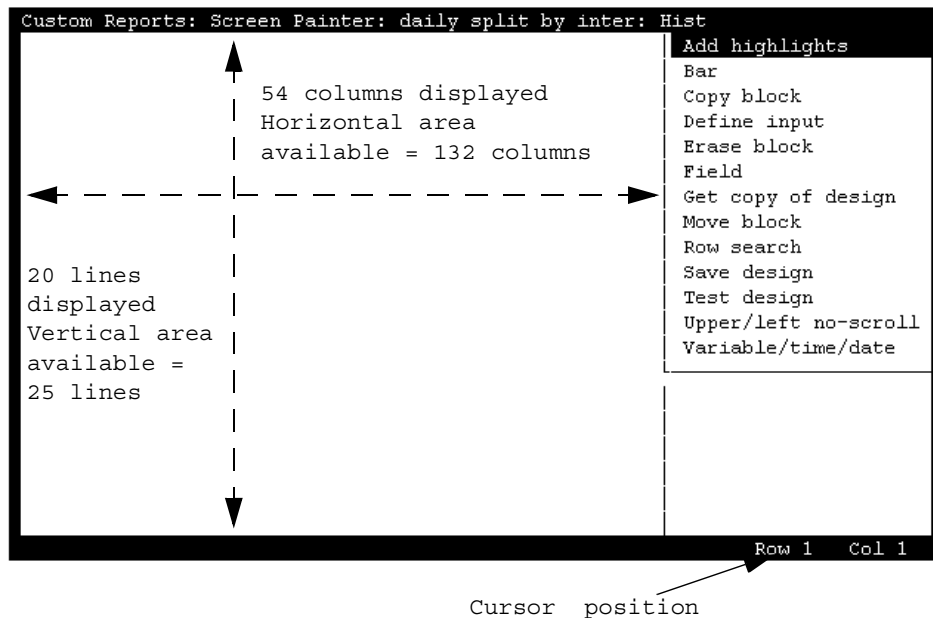
Using Screen Painter editing tools

following figure). However, because the interior of **Screen Painter** window is only 54 columns wide and 20 lines high, you may need to scroll Screen Painter horizontally or vertically to access areas that do not fit within the window.

Note:

The widest custom report that you can display on your terminal without scrolling is 78 columns wide. The terminal actually displays 80 columns, but the side borders of the report window use two of the columns.

Screen Painter size and cursor position



Scrolling Screen Painter

Screen Painter scrolls automatically when the cursor touches the left, right, top, or bottom border. Screen Painter scrolls one column or one line at a time when you use the arrow keys, but scrolls eight columns at a time when you use the **Tab** key for horizontal scrolling. Right scrolling beeps when the 132nd column is displayed. Left scrolling beeps when the first column is displayed. Down scrolling stops when the 25th line is displayed. Up scrolling stops when the top line is displayed again.

Properties of secondary windows

For most tasks on Screen Painter, you must complete a secondary window. These secondary windows pop up after you select an action list option. Some secondary windows automatically close when you are finished entering data and select an action list option. However, for some secondary windows, you must press the **Exit** screen-labeled key to close the window and return to Screen Painter.

If you use the **Current** screen-labeled key to leave a secondary window and return to Screen Painter, the secondary window remains open. However, until you close the secondary window, Screen Painter is locked and you cannot enter text or select any other action list options.

Editing keys in secondary windows

In the secondary windows only, you can use the standard field editing keys. These keys, which offer you considerable convenience, are as follows:

Ctrl + e	Turns insert mode on or off. With insert mode on, you insert characters at the cursor's current position in the field.
Ctrl + x	Erases characters in a field from the current position to the end of the field.
Ctrl + y	Erases all characters in a field.
Ctrl + z	Erases inputs in all fields in a window.

Copying an existing report design

In the majority of cases, you should begin your design of a custom report by copying an existing report design, then making wanted changes. Copying and then modifying an existing report design is usually the quickest, easiest method for designing a custom report.

You can copy standard report designs or custom report designs. You can also copy more than one report design into a single custom report. However, if your report is a historical report, you cannot copy a real-time report onto Screen Painter. Likewise, if your report is a real-time report, you cannot copy a historical report onto Screen Painter.

Note:

Run test design on a report copy before modifying it. This ensures the copy is working before you do any modification to it.

Items in the report you are copying may overlap text, fields, or bars you previously entered on Screen Painter. If items in the copied report overlap existing items, CMS copies to Screen Painter only those parts of the report that do not overlap.

 **Important:**

To prevent overlapping, you may need to clear the area in the upper left portion of Screen Painter before copying a report design. You can clear the area easily by moving or deleting all data as a block (see [Editing a report with blocks](#) on page 54). Be sure the cleared space is large enough to contain the report design you are copying.

You *cannot* copy the following standard reports:

- Real-time: Multi-ACD report
- Real-time: Multi-ACD Top Agent report
- Historical: Split/Skill: Status report
- Historical: VDN: Status report
- Historical: System: Multi-ACD by Split/Skill report
- Historical: System: Multi-ACD Call Flow by VDN report
- Historical: Trunk Group: Busy Hour report
- Historical: VDN: Busy Hour report.

To copy an existing report design perform the following tasks in the order indicated:

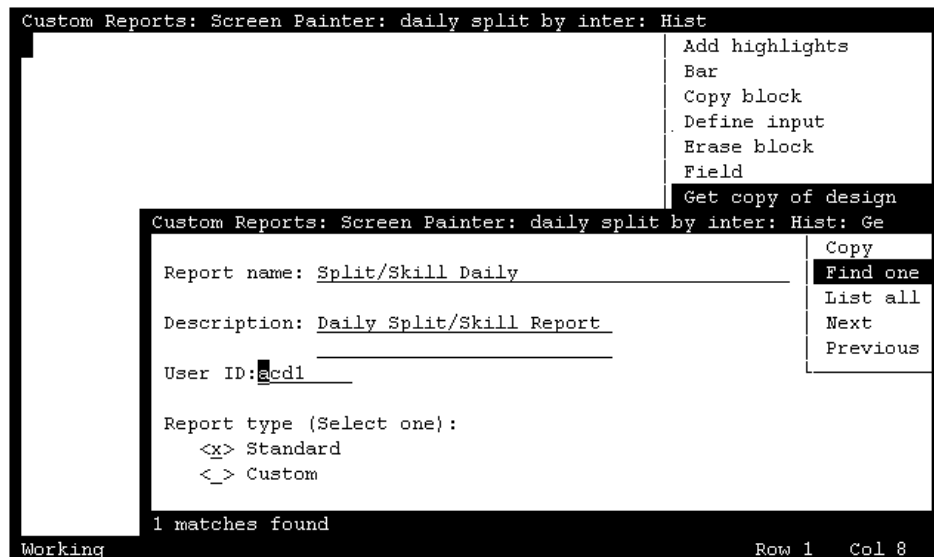
1. [Access the get copy window](#) on page 51
2. [Enter a report name](#) on page 51
3. [Enter a user ID](#) on page 52

4. [Select a report type](#) on page 52
5. [Verify the report](#) on page 52
6. [Copy the report](#) on page 52

Access the get copy window

On Screen Painter, select the `Get copy of design` action list option.

The system displays the **Get Copy** window:



Enter a report name

In the `Report name` field of the **Get Copy** window, enter the name of the report you want to copy. You can copy standard report designs, global report designs, and private report designs. However, you cannot copy another user's private report designs unless you are a CMS administrator.

If you do not know the report name, first select `List all`. For `List all`, you can leave the `Report name` blank, but you must select `Standard` or `Custom` in the `Report type` field. After you `List all`, you can go back and enter the report name.

Note:

Because of the need to shorten names of standard reports for this window, the name you must enter in this window does not always match the exact names of standard reports.

Enter a user ID

In the `User ID` field, enter a user ID only if one of the following is true:

- You are a CMS administrator and you want to copy another user's private report.
- You want to list only the custom reports of a specific user.

Select a report type

Enter `x` to select the `Report type` option (either `standard` or `custom`) for the type of report you want to copy. If the wrong option is selected, CMS may not find or copy the report you actually want.

Verify the report

Select `Find one` to verify that the report is the one you want to copy.

The user ID is displayed in the `User ID` field and, if it exists, the report description is displayed in the `Description` field.

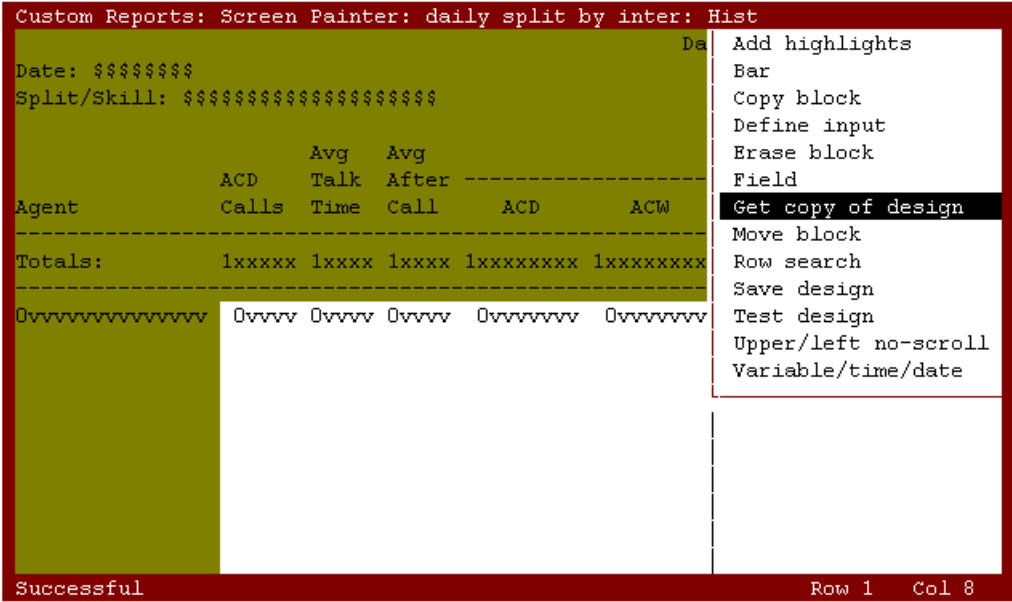
Copy the report

Select `Copy` to copy the report's design to Screen Painter.

The **Get Copy** window is displayed and the report design is displayed on Screen Painter, starting in the upper left corner.

If you want to copy another report design, clear the upper-left area by deleting or moving any existing block of text and fields (see [Editing a report with blocks](#) on page 54). Then repeat task 1 ([Access the get copy window](#) on page 51) through task 5 ([Verify the report](#) on page 52).

Copy of a report design (Using Get copy)



Note:

If part of the report you are copying overlaps existing text or fields on Screen Painter, CMS does not copy that part of the report to Screen Painter.

Editing a report with blocks

A block is a rectangular area on Screen Painter that you define and use to quickly rearrange fields and text. You can erase blocks, copy blocks, or move blocks.

You define a block with the cursor by marking two opposite corners of a rectangle. When you define a block, CMS highlights the defined area. A block can contain a single character of text, a single field or bar, several words of text, several fields/bars, a combination of fields/bars and text, or a whole report design.

Note:

If a block includes any part of a field/bar, CMS automatically includes the entire field in the block. You should therefore use care when deleting blocks to avoid unintentionally deleting a field/bar.

You can edit a report in blocks using the steps described in the following pages.

Erasing a block

Note:

Prior to completing a block erase, you can press **Ctrl + c** to cancel the erasure.

To erase a block:

1. On Screen Painter, place the cursor over one corner of the block, and select `Erase block`.

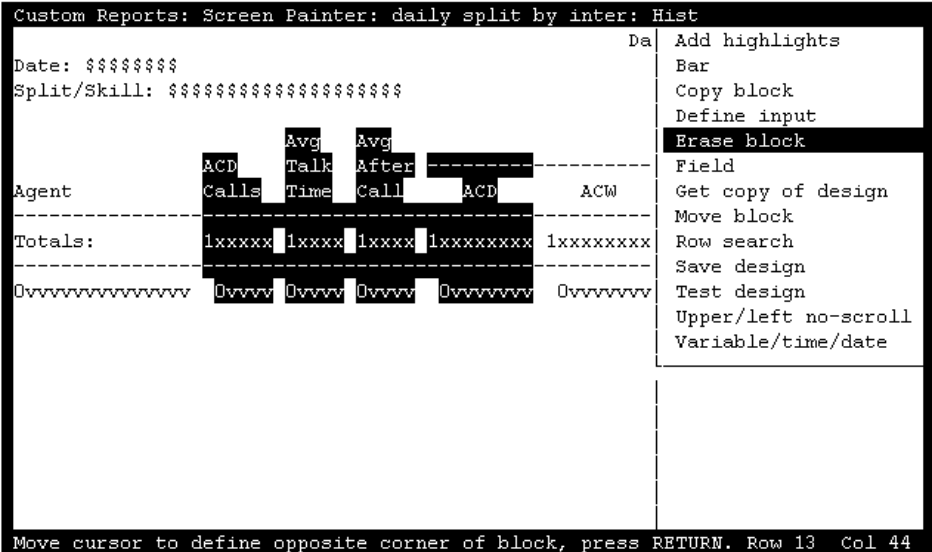
The cursor returns to its original position, and the following message is displayed on the status line:

`Move cursor to define opposite corner of block, press RETURN.`

2. Move the cursor to the opposite corner of the block. The block should include all fields and text you want to erase.

The block is highlighted as you move the cursor. (See the following figure.)

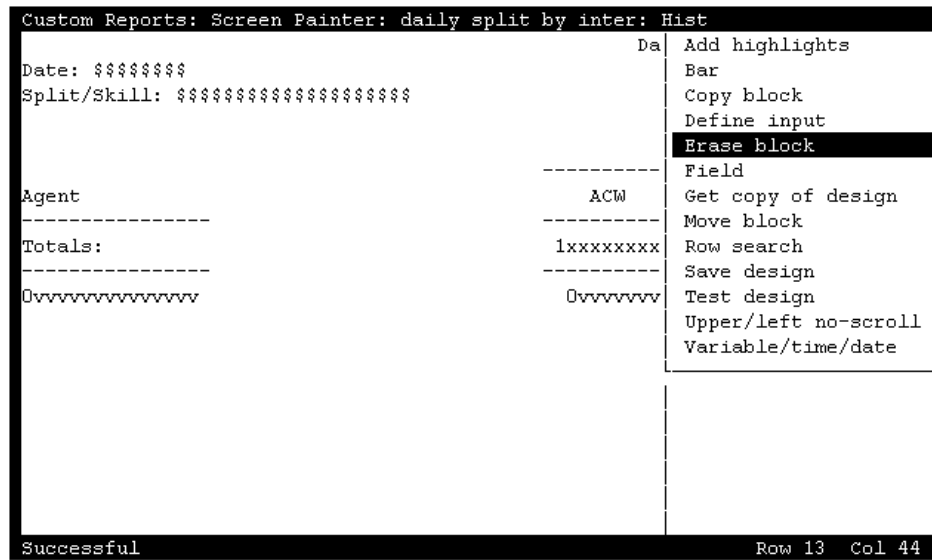
Defining a block to erase



In the sample above, we want to erase the middle section of the copied report design. To accomplish that (see previous figure), we have scrolled horizontally to the middle section and defined the block we want to erase.

3. Press **Enter**.
An acknowledgment window is displayed.
4. Enter **y**, and press **Enter**.
All fields and text within the block are removed. (See the following figure.)

Erasing the block



Moving a block

Note:

Prior to completing a block move, you can press **Ctrl + c** to cancel the move.

To move a block:

1. On Screen Painter, place the cursor over one corner of the block, and select `Move block`.

The cursor returns to its original position, and the following message is displayed on the status line:

Move cursor to define opposite corner of block, press RETURN.

2. Move the cursor to the opposite corner of the block. The block should include all fields and text you want to move.

The block you are defining becomes highlighted as you move the cursor. (See the following figure.)

Defining a block to move



Note:

For our example, we want to keep the ACW time column, but we want to move it over to the left next to the other report items we want to keep.

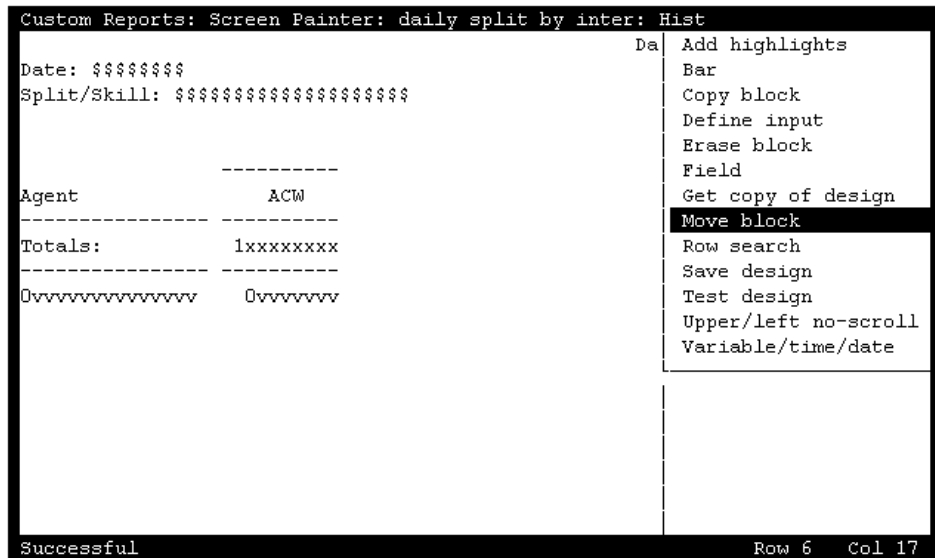
3. Press **Enter**.

The following message is displayed in the status line:
Move cursor to locate upper left corner of move, press RETURN.

4. Move the cursor to a new position for the upper left corner of the block, and press **Enter**.

All fields and text within the block move to the new location. (See the following figure.)

Completing a block move



When the block moves to its new location, the block's text or fields *cannot* overlap any other text or fields. If you do try to move a block to a location where it will overlap existing text or fields, an error message is displayed in the status line.

Copying a block

Note:

Prior to completing a block copy, you can press **Ctrl + c** to cancel the copy.

To copy a block:

1. On Screen Painter, place the cursor over one corner of the block, and select **Copy block**.

The cursor returns to its original position, and the following message is displayed on the status line:

Move cursor to define opposite corner of block, press RETURN.

2. Move the cursor to a position where you want the opposite corner of the block to be. The block should include all fields and text you want to copy.

The block you are defining becomes highlighted as you move the cursor.

3. Press **Enter**.

The following message is displayed in the status line:

Move cursor to locate upper left corner of copy, press Return.

4. Move the cursor to the new position for the upper left corner of the block, and press **Enter**.

All fields and text within the block are copied to the new location.

When you copy a block, the block's text or fields cannot overlap any other text or fields. If you do try to copy a block to a location where it will overlap existing text or fields, an error message displays in the status line.

Entering report text

You can enter text on Screen Painter to label your fields, enter a report title, or include special instructions for the report. You should normally enter text to label each data field so that when you run the report you will know what data the field is showing.

You should enter text before defining the data fields for two reasons:

- The text provides a skeleton layout to help you position your data fields.
- The text helps you remember what each data field represents. If you have to change fields, this text saves you time.

To enter text, simply position the cursor where you want the text and type the characters. You can use the space bar to create spaces and to delete text. You can also simply overwrite existing text with new text.

Note:

You cannot overwrite a data field.

To delete large portions of text, use the `Erase block` action list option (see [Erasing a block](#) on page 54).

Saving your work

To save your work:

- Select the `Save design` action and press **Enter**.
- If you press **Exit** before saving, then the following message is displayed:

```
There have been changes made in Screen Painter since the last
SAVE. Do you still want to Exit?
```

```
Enter y or Y for yes, n or N for no: _
```

If you enter `n` (or `N`), you are returned to Screen Painter without saving any changes.
If you enter `y` (or `Y`), you are returned to the **Report Select** window.

■ ■ ■ ■ ■ ■

Defining the data for a custom report

Defining the data for a custom report includes the following topics:

- [Defining fields for the Report Input window](#) on page 61
- [Defining report fields](#) on page 72
- [Defining bars in a report](#) on page 87
- [Defining the rows of data for a report](#) on page 96
- [Defining fields to show run time/date and user inputs](#) on page 116
- [Saving your work](#) on page 119

Defining fields for the Report Input window

To define the fields for the **Report Input** window complete the following tasks in the order indicated:

1. [Access the Report Input window](#) on page 62
2. [Access the Define Input window](#) on page 62
3. [Define the variable name](#) on page 63
4. [Enter a field prompt](#) on page 64
5. [Define the number of field columns and rows](#) on page 65
6. [Define the field as single value or range/list](#) on page 65
7. [Provide a default value for the field](#) on page 65
8. [Select a field type](#) on page 65
9. [Associate an ACD with the variable field](#) on page 69
10. [Save a variable input field](#) on page 70

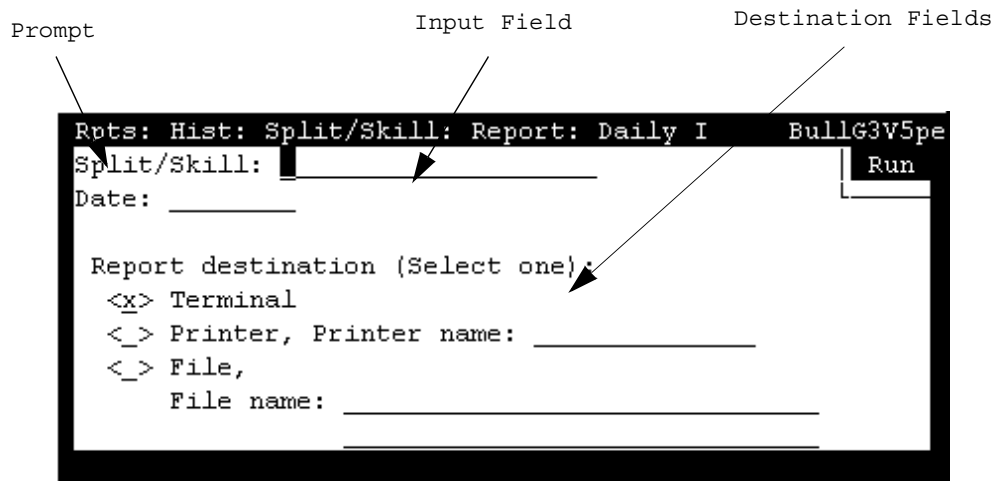
This section also includes the following:

- [Defining the order in which input fields are displayed](#) on page 70
- [Changing report input fields](#) on page 71

Access the Report Input window

To run a standard Avaya Call Management System (CMS) report, you first access a **Report Input** window (see [Sample Report Input window](#) on page 62). The **Report Input** window gives you control over what data (which splits/skills, trunks, dates, intrahour intervals, and so on) are included in the report.

Sample Report Input window



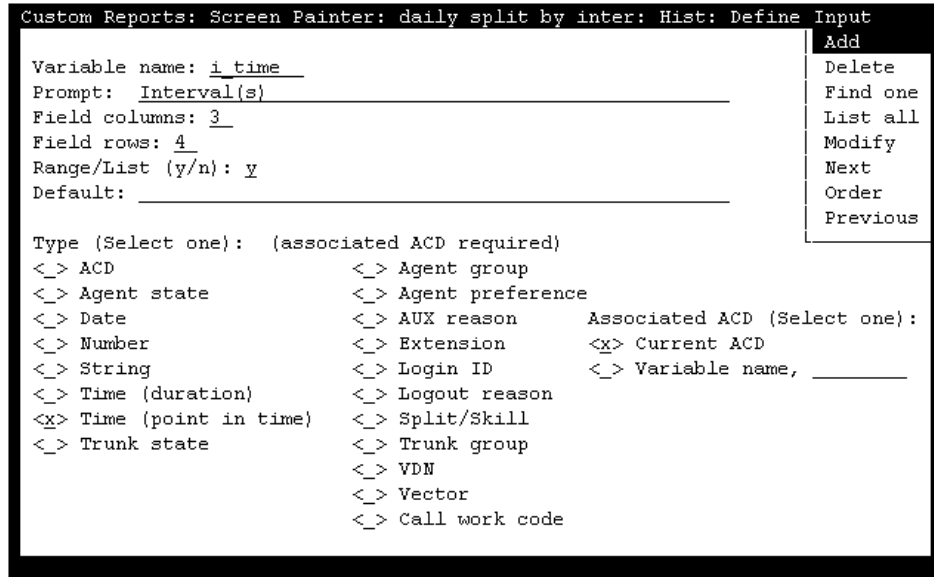
Access the Define Input window

To define report input fields, use the **Define Input** window (see the following figure). You must complete a **Define Input** window for each input field. When you are done, you will have created a **Report Input** window. When you or another user prepares to run your custom report, this input window is displayed with the field prompts and the input fields you defined (like those shown in the previous figure).

- On Screen Painter, select the `Define input` action list option.

The system displays the **Define Input** window.

The Define Input window



Define the variable name

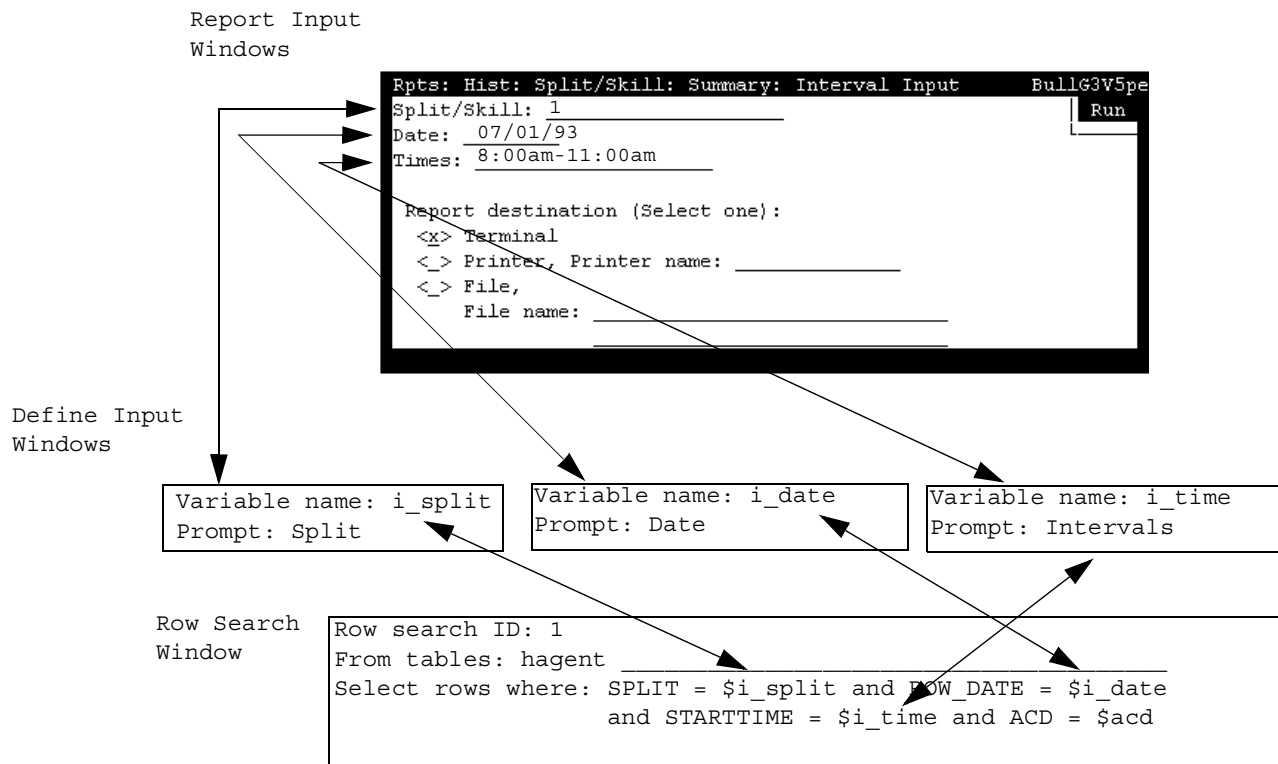
Enter a name of up to eight alphanumeric characters in the `Variable name` field. You must use this exact variable name again in the **Row Search** window when you define your row search conditions (see the [Defining the rows of data for a report](#) on page 96 section in this chapter). The variable name links the report input field to the row search conditions. This link enables CMS to use the values a user enters when running the report to search the database for appropriate report data.

If you copy a report (via Get Copy), that report's input fields and row search conditions are also copied. Before entering any variable names, you may first want to `List all` to see the report input fields that are already defined and the variable names they use. If you then add, delete, or change a variable name for a report input field, you must also add, delete, or change that variable name in the row search conditions.

You cannot `List all` or `Find one` in the **Define Input** window by searching on multiple fields. For a `Find one` search, CMS uses only the entry in the `Variable name` field. CMS ignores the other fields. For a `List all` search, CMS ignores all fields.

The following shows an example of how the report input fields are linked to a report's search conditions.

How a Variable Links the Report Input and Row Search



In the example, the user enters a split number of 1, a date of 07/01/93, and intrahour intervals from 8:00 a.m. to 11:00 a.m. CMS identifies 1 as the value for variable name `i_split`, 07/01/93 as the value for variable name `i_date`, and 8:00 a.m. to 11:00 a.m. as the values for variable name `i_time`. CMS then searches the specified database items (`SPLIT`, `ROW_DATE`, and `STARTTIME`) in the Intrahour Agent (`hagent`) table for rows that have those fields. Finally, CMS extracts data from those rows and displays the data in the report's fields.

Enter a field prompt

In the `Prompt` field, enter a name of up to 50 characters to be displayed next to the input field on the **Report Input** window. Because you can use blanks, your prompt can be more than one word.

This name should describe the information (what split/skill, what date, what time, e-mail) a user must enter in the field when ordering the report. For example, if you want the user to enter a date, "Date" would be an appropriate prompt. However, if the user can enter more than one date in the field, "Dates" would be more appropriate.

Define the number of field columns and rows

The size of the input field is determined by the product of the numbers entered in the `Field columns` and the `Field rows` fields on the **Report Input** window. The maximum product of the two numbers you enter here cannot exceed 50. If the user will order the report with names (for example, split names) instead of numbers, make sure the field is large enough for the user to enter the complete name (up to 20 characters). If the user can enter a range of values, make sure the field is large enough for any range the user might possibly enter.

Define the field as single value or range/list

Enter `y` in the `Range/List` field of the **Define Input** window to allow the user to enter a range or list of values in the input field.

If you enter `n`, the user will be able to enter only one value in the input field when ordering the report. For example, if you define a “Date” input field so that the report will show data for only one day, type `n`. If you define a “Times” or “Intervals” input field so the report can show data for multiple intrahour intervals in a day, type `y`.

Note:

If you specify a range/list for a variable name in the **Define Input** window, then in the **Row Search** window you must use the equals sign (=) in the “where” clause for that variable name. See [Defining the rows of data for a report](#) on page 96.

Provide a default value for the field

Enter a value of up to 50 characters in the `Default` field. This value is displayed in the input field when the user first accesses the **Report Input** window. The user can then choose to overwrite this value with another value or order the report with this value.

You can also leave the `Default` field blank. In this case, the input field will be blank when the user accesses the **Report Input** window.

Select a field type

Enter `x` to select an item in the `Type` list. The field type tells CMS what kind of values it should expect the user to enter. Field types are listed in the following table.

Defining the data for a custom report

If CMS knows what to expect, CMS can do the following:

- Verify that the user's entries are valid system values and are values CMS can use to search the database tables
- Verify that the user has permissions to run a report for the entries
- Allow the user to enter names defined in the Dictionary subsystem

For example, if you define an input field for the user to select a split/skill for the report by assigning the "Split/Skill" field type to the input field, the following cases are possible:

- If the user enters a number, CMS can check, before searching the database, to see that the number is within system limits (for example, 1 to 60 for System 85/G2)
- The user can enter the name of the split/skill as defined in the Dictionary subsystem. CMS can check the `Dictionary: Split/Skill` list to find the split/skill number associated with the name.
- CMS can check to see that the user has read permission for the split/skill.

Report Input Field Types table

Type	Description
ACD	The user must enter an ACD number or name (as defined in the Dictionary subsystem).
Agent group	The user must enter an agent group name (as defined in the Dictionary subsystem).
Agent state	The user must enter an agent state name (standard or new name as defined in the Dictionary subsystem). Standard names are ACD, AUX, ACW, and so on.
Agent preference	The user must enter an agent call handling preference number or name.
AUX reason	The user must enter an AUX reason code name or number (as defined in the Dictionary subsystem).
Call Work Code	The user must enter a call work code name or number. Up to 6 call work codes may exist. See "Multiple Call Work Codes" in <i>Avaya CMS R3V11 Database Items and Calculations</i> , 585-780-702, for more information.
Date	The user must enter a date in mm/dd/yy format or as a relative number (for example, -7 for 7 days ago).
Extension	The user must enter an extension number of one to five digits (as administered for System 75/Generic 1/Generic 3) or three to five digits (as administered for System 85/Generic 2).

Type	Description
Login ID	The user must enter a login ID of one to nine digits (as administered for System 75/Generic 1/Generic 3) or four digits (as administered for System 85/Generic 2).
Logout reason	The user must enter a Logout reason code number or name (as defined in the Dictionary subsystem).
Number	The user must enter a number, which may include digits to the right of the decimal point. This type applies if your variable field asks for specific values about ACD performance (for example, number of ACD calls or percent within service level).
Split/Skill	The user must enter a split/skill number or name.
String	The user must enter a character string. Select this type only if one of the following is true: 1. Your variable field is linked to a custom database item that you identify in INFORMIX as a CHAR column. 2. Your variable field is linked to a standard database item that is a CHAR column, <i>and</i> you want to allow the user to do pattern searching when running the report. See Input Fields That Allow Pattern Matching on page 68.
Time (duration)	The user must enter a number, including decimals, of seconds. This type only applies if your variable field asks for specific values regarding ACD performance (for example, time in AUX work, average speed of answer, or average talk time).
Time (point in time)	The user must enter a specific time of day in hh:mm format, either as 24-hour time or with <code>am</code> or <code>pm</code> appended.
Trunk group	The user must enter the number or name of a trunk group.
Trunk state	The user must enter a trunk state name (standard name or new name as defined in the Dictionary subsystem). Standard names are <code>IDLE</code> , <code>SEIZED</code> , <code>QUEUED</code> , and so on.
VDN	The user must enter a Vector Directory Number of one to five digits (as administered for System 75/Generic 1/Generic 3) or three to five digits (as administered for System 85/Generic 2).
Vector	The user must enter a vector number or name.

Note:

The `Number` type allows the user to enter any number. The `String` type allows the user to enter any number, letter of the alphabet, or keyboard symbol in any format.

Defining the data for a custom report

Note:

The field type does not determine what database items the variable represents. The database items linked to the variable is specified in the **Row Search** window.

If you specify a `String` or `Number` field type, CMS does not accept any names (for VDNs, Splits/Skills, Login IDs, and so on) defined in the Dictionary subsystem. Also, CMS does not check permissions or system limits.

Input Fields That Allow Pattern Matching

CMS can search for values in certain database items according to wildcard search patterns. As a result, you can create a custom report that allows report inputs based on character strings, plus either `*` (matches 0 or more occurrences of any character) or `?` (matches on any single character). CMS then includes data for all items that match the character strings the user entered.

The standard database items that allow this type of searching are:

- VDN (the value is a VDN number)
- EXTENSION (the value is an extension number)
- LOGID (the value is an agent login ID)
- EQLOC (the value is a 9-digit trunk location number)
- CWC (the value is a call work code)
- ROW_DATE (the value is a date)

In addition, any custom database items that you define as CHAR columns in *INFORMIX* also allow this type of searching.

As an example of matching with `*`, if an input field were a `String` type and were associated with the LOGID database item, the user could enter `1*` and CMS would include data for all agents with login IDs that start with 1 (1, 10, 1238, 190, and so on, depending on the switch's administered login length). As an example of matching with `?`, if an input field were a `String` type and were associated with the VDN database item, the user could enter `21?0`, and CMS would include data for all VDNs that start with 21, end with 0, and have any single character displayed between the 21 and the 0 (2100, 2110, 2120, 2130, and so on).

Note:

If you select `String` for an input field, CMS does not check a user's inputs in that field for appropriate read permissions or valid switch parameters. If you want CMS to check permissions for a VDN input field, you must select the `VDN` field type. If you want CMS to check switch parameters for a VDN, login ID, extension, or call work code input field, you must select that field type, not `String`. In addition, if you select `String` for a field, the user will not be able to enter Dictionary names. So, again, if you want to let the user enter VDN, login ID, or call work code names to run a report, you must select that specific field type, not `String`.

Associate an ACD with the variable field

Enter an `x` in the `Associated ACD` list to associate the variable field with either the current ACD or a user-selected ACD. You must select an associated ACD if the input field you are defining is a type listed under the heading `(associated ACD required)`. These field types require an associated ACD because they are administered for each ACD. For field types not administered per ACD, CMS ignores any selection of an associated ACD.

Select `Current ACD` if either of the following conditions is true:

- You have only one ACD.
- You always want the report to show data for the user's current ACD.

Select `Variable name` if you want to let the user select the ACD. If you select `Variable name`, you must also enter a name of up to eight characters in the field next to the `Variable name` list item.

Using a variable name for the associated ACD is most useful when you are creating a multi-ACD report.

Note:

Select `Variable name` only if the users who will run the report have read permission for more than one ACD. (You can create such a report without knowing if the user has read permission for more than one ACD. If you do and the user does not have read permission, the user will not be able to view the report.)

Before you can select `Variable name` for an input field's associated ACD, you must define a separate report input field for the ACD number/name. This field must have:

- An assigned field type of `ACD`
- The same variable name you are assigning to the associated ACD

Save a variable input field

Select the `Add` action list option to save the definition of the variable input field

Note:

`Add` saves newly defined input fields. If you have previously saved an input field definition and you are changing it, you must use `Modify` instead.

To define more input fields, press **CTRL + z** to clear the **Define Input** window, and repeat task 2 ([Define the variable name](#) on page 63) through task 9 ([Save a variable input field](#) on page 70).

If you are defining a real-time report, you cannot and do not need to define an “Refresh Rate in Seconds” input field. CMS automatically puts this field in the **Report Input** window.

Note:

If you are defining an historical report, you cannot and do not need to define fields for “Report Destination.” CMS puts this field in the **Report Input** window automatically.

Defining the order in which input fields are displayed

On the **Report Input** window, CMS displays your input fields in the same order you defined them in. However, you have the option of changing this order.

To change the order in which the input fields are displayed, perform the following:

1. After you have defined and saved all of your input fields, select the `Order` action list option.

The **Define Input: Order** window is displayed. The window displays the prompts for each input field you have defined, as shown in the following figure.

The Define Input: Order window



2. Enter 1 next to the prompt you want to display first on the **Report Input** window. Enter 2 for the second prompt, 3 for the third, and so on.
3. Select the `Modify` action list option to save the display order.

The **Define Input: Order** window closes, and the cursor returns to its previous position on the **Define Input** window.

Changing report input fields

To change the report input fields:

1. On Screen Painter, select the `Define input` action list option.
The **Define Input** window is displayed.
2. Enter a name in the `Variable name` field, and select `Find one`.
The defined characteristics of the variable name are displayed.

Before entering any variable names, you may first want to do a `List all` to see what report input fields you have already defined. If you copied an existing report design, report input fields defined for that report are also copied and available in the **Define Input** window.

Note:

You cannot do a `List all` or a `Find one` search on multiple fields in the **Define Input** window. For a `Find one` search, you can only have an entry in the `Variable name` field. The other fields are ignored. For a `List all` search, all fields are ignored.

Defining the data for a custom report

3. Change data in any fields except `Variable name`, and select the `Modify` action list option.

`Successful` is displayed in the window's status line to indicate that the input field definition has been changed.

Note:

If you want to change a variable name, you must delete the variable. Then add a new one.

Defining report fields

A report consists of fields of data. Defining those fields is the central task of creating a custom report.

To define a field, you must specify the following items:

- The specific data that goes in the field.
- The position of the field
- The length of the field
- The s of the field's data

Screen Painter window legend

If you copy the design of an existing report, the fields on Screen Painter is displayed filled with `x`'s, `v`'s, or `h`'s.

- `x`'s indicate that the field is *discrete*. That is, the field is displayed as a single field in the report because, based on the row search conditions assigned to the field, CMS finds only one value.
- `v`'s indicate that the field is repeated *vertically* in the report. That is, the field is displayed as a column of fields because, based on the row search conditions assigned to the field, CMS finds multiple values.
- `h`'s indicate that the field is repeated *horizontally* in the report. That is, the field is displayed as a row of fields because, based on the row search conditions assigned to the field, CMS finds multiple values.

See the [Assign a row search ID to report fields and bars](#) on page 110 for illustrations of discrete and repeated fields.

To define a field, perform the followings tasks in the following order:

1. [Define the position and length of a field](#) on page 73
2. [Define the field's data expression](#) on page 74

3. [Define the tables for calculation names](#) on page 81
4. [Justify data in the field](#) on page 81
5. [Define the field format](#) on page 81
6. [Save the field definition](#) on page 85

Defining report fields also includes the following topic:

- [Changing a field definition](#) on page 86

Define the position and length of a field

To define the position and length of a field:

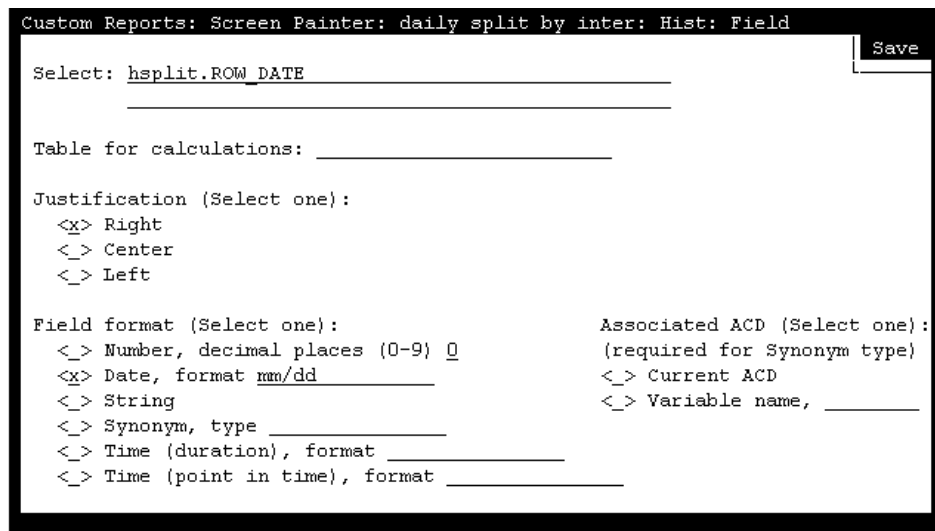
1. On Screen Painter, position the cursor where you want a field to begin, and select **Field** from the action list.

The cursor returns to its original position, and the following message is displayed:
 Move cursor to define opposite corner of field and press RETURN.

2. Move the cursor using the arrow keys to define a field length, and press **Enter**. Be sure the field is long enough to contain the data. If the field is too short for a value, the report shows asterisks (*) in the field or, if the data is a word, cuts letters off.

The field is displayed as a question mark (?) followed by x's. The question mark indicates that you have not yet assigned a Row Search ID to the field. The **Field** window is displayed.

The Field Window



Define the field's data expression

In the `select` field (see the above figure), enter a data expression to tell CMS two things:

- What table columns should supply data to the field
- How to manipulate that data

CMS picks out values from a table with *both* row and column identifiers. CMS identifies rows of data according to the user's input and the row search conditions you define (see [Defining the rows of data for a report](#) on page 96). CMS identifies columns according to the data expression you define here.

You can enter the following types of data expressions:

- Database items
- Constants
- Calculations
- Calculation names
- Agregate functions
- Count
- Data from more than one table

These expressions are described below.

Database items

A database item is the name of a column of data in a table, either standard or custom. When you enter a database item, you must always add the name of a table and a period (.) as a prefix. The format is as follows:

`<table name>.<database item>`

Examples:

`dsplit.ACDCALLS`

`hagent.STARTTIME`

`ctkgrp.NUMINUSE`

Standard database items – Standard database items are listed in the Dictionary subsystem as having all upper-case letters (as in the preceding examples).

A standard database item can store:

- Identifiers (for example, `SPLIT`, `VDN`, `LOGID`, and so on)
- Timed data (for example, `ACDTIME`, `ABANTIME`, `AUXOUTIME`, and so on)

- Event counts (for example, `ACDCALLS`, `INTERFLOWCALLS`, `ABNCALLS`, and so on)
- For real-time and agent trace reports, current state data (for example, `WORKMODE`, `DURATION`, `NUMINUSE`, and so on).

See [Database Items and Calculations](#) on page 175 for a description of database tables and items including the exceptions, forecast, and login/logout tables. See [Advanced report design](#) on page 141, for more information about custom reports that include exceptions and forecast data.

Standard database items are often shared by more than one table. For example, `ABNCALLS` can identify a column in the Current Interval Split, Daily Split, or Intrahour Agent tables (or many other tables).

Note:

CMS can determine the exact database item only when it is identified with a table.

Custom database items – You must enter a custom database item with the custom table name as a prefix, exactly as you defined it in the Dictionary subsystem. The data identified by a custom database item depends entirely on the data you enter for the item in the custom table. See [Advanced report design](#) on page 141.

Constants

A constant is the name of a fixed numerical value (whole number or decimal) that you define in the Dictionary subsystem. Constant names can be up to 20 characters long. A constant could represent a per-minute usage rate for trunks, a daily or hourly wage rate, or a service objective (like number of abandons, number of ACD calls, or percent within service level). A constant could also represent an average for the estimated dollar loss of an abandoned call, which could then be used to calculate daily loss of revenue due to abandoned calls. No standard constants exist in CMS when it is first installed. Therefore, you must define every constant you want to use.

Using constants makes sense only if you have a fixed value that you want to use under one or both of the following conditions:

- The constant is a value that you will use in a number of different custom reports (for example, an average wage rate).
- You would not be able to remember the numerical value, but could remember a name assigned to the value (for example, for the \$9.00 hourly wage rate for an agent called Smith, you could have a constant called `Smithwage`.)

Note:

The CMS real-time database allows only whole numbers in queries. If you need a value to be a decimal (for example, 9.5), use whole numbers and division to arrive at the correct number (so, in order to have 9.5 in a query, you would use `19/2` as the query entry).

Calculations

A calculation is a combination of database items and arithmetic operators. You can also include constants in a calculation.

The arithmetic operators are:

+	add
-	subtract
*	multiply
/	divide
()	perform first

Some examples of calculations are:

```
dsplit.ACDCALLS/dsplit.ACDDTIME
```

```
hagent.AUXOUTTIME+hagent.ACWOUTTIME
```

```
100*((cagent.I_ACDDTIME+cagent.I_ACWTIME)/cagent.I_STAFFTIME)
```

Arithmetic operations are generally performed in order from left to right. However, multiplication and division operations are performed before addition and subtraction operations, unless the addition or subtraction operations are enclosed in parentheses. Operations in parentheses are always performed first. If more than one set of parentheses is used, the operation in the set farthest to the left is performed first. If one set of parentheses is inside of another set, the operation of the inner set is performed first.

Calculation names

A calculation name is a name that can substitute for the actual calculation. The calculation name can be a standard name (used in standard reports) or a name you define. You cannot append a table name to a calculation name. Therefore, you must specify a table name in the `Table for calculations` field.

Note:

CMS differentiates between uppercase and lowercase letters in calculation names. Therefore, be sure you enter the wanted calculation name *exactly* as it is displayed in the Dictionary subsystem.

A calculation name normally reflects the purpose of the calculation. As a result, entering a name is an easier, more meaningful way to define data for a report field. More importantly, if you use a calculation name in many custom reports and later decide to change the calculation, you can simply make your changes once in the Dictionary subsystem. CMS then applies those changes to every report that uses the calculation name.

For example, if you use the standard calculation name <PERCENT_ACD_TIME>, which represents the calculation $100*((I_ACD_TIME+I_ACW_TIME)/I_STAFF_TIME)$, but do not want to include the ACWTIME in the calculation, you can change the calculation in the Dictionary subsystem so that <PERCENT_ACD_TIME> represents $100*(I_ACD_TIME/I_STAFF_TIME)$. Then, any report that uses the calculation name PERCENT_ACD_TIME reflects the new calculation.

 **Important:**

Changing the calculation for a standard calculation name will affect any standard report, as well as any custom report, that uses that calculation name.

At times, using calculation names helps save space in the `Select` field so you can create more complex calculations. For example, if you wanted to know the average time agents spent on all extension calls (both incoming and outgoing), you might have to add the following calculation:

```
(csplit.ACWINTIME + csplit.AUXINTIME + csplit.ACWOUTTIME +
csplit.AUXOUTTIME) / (csplit.ACWINCALLS + csplit.AUXINCALLS +
csplit.ACWOUTCALLS + csplit.AUXOUTCALLS)
```

Unfortunately, the `Select` field is not long enough to enter the complete calculation. However, you could define in the Dictionary subsystem two separate calculation names for each half of the calculation.

For:

```
(csplit.ACWINTIME + csplit.AUXINTIME + csplit.ACWOUTTIME +
csplit.AUXOUTTIME),
```

you could enter, in the Dictionary subsystem, the calculation name:

```
TIME_ON_NON-ACD_SUM with the assigned calculation (ACWINTIME +
AUXINTIME + ACWOUTTIME + AUXOUTTIME).
```

Likewise, for:

```
csplit.ACWINCALLS + csplit.AUXINCALLS + csplit.ACWOUTCALLS +
csplit.AUXOUTCALLS),
```

you could enter the calculation name:

```
NON-ACD_CALLS_SUM with the assigned calculation (ACWINCALLS +
AUXINCALLS + ACWOUTCALLS + AUXOUTCALLS).
```

As a result, you can enter the following calculation in the `Select` field:

```
TIME_ON_NON-ACD_SUM/NON-ACD_CALLS_SUM
```

Then, you can enter the table name `csplit` in the `Table for calculation` field.

Important:

You should not add table names to your custom calculations in the Dictionary subsystem. Doing so makes the assigned calculation name less flexible for use in custom reports. Also, if you append table names to the Dictionary calculation and then also assign a table name to the calculation name in the **Field** window, the report will fail.

Aggregate functions

An aggregate function is a prefix attached to a database item, a calculation, parts of a calculation, or a calculation name. When you define an aggregate function, you must place the database item or calculation in parentheses (as in: `max(dspllit.ACDTIME/dspllit.ACDCALLS)`).

Note:

In real-time reports, fields with aggregate functions cannot share a set of row search conditions with non-aggregate fields. And for historical reports, special considerations exist when you assign the same row search conditions to both aggregate functions and other types of data expressions. See [Repeating aggregate function values](#) on page 171.

An aggregate function can be one of four types. Each type retrieves a different value from the data.

max

The max aggregate function retrieves the highest value for a calculation or database item over the time frame of the report.

For example, if the Intrahour Split table contained data (as shown in the following figure) and you entered `max(hspllit.ACDCALLS)` for a field in a report and then ran the report for Split 1 for all intervals on 07/02/93, CMS would find all rows shown in bold. However, CMS would display only the value 418 (shown in the box), which is the maximum ACD calls in any single interval on 07/02/93. Likewise, if you entered `max(ACDTIME/ACDCALLS)` for the field, CMS would display the value 101.53 (which is the highest average talk time in any single interval on 07/02/93).

Sample Intrahour Split Table Data

DATE	STARTTIME	SPLIT	ACDCALLS	ABANDONS	ACDTIME	ABNTIME
070193	1000	2	391	31	19768	603
070193	1000	3	142	10	9786	203
070193	1100	1	480	39	33389	789
070193	1100	2	491	22	26789	549
070193	1100	3	297	15	12530	402
070293	0800	1	399	36	37651	1452
070293	0800	2	299	20	29602	7616
070293	0800	3	138	13	11523	2569
070293	0900	1	400	46	36178	1745
070293	0900	2	300	33	24303	1109
070293	0900	3	225	12	15628	367
070293	1000	1	394	40	40002	1322
070293	1000	2	323	34	29881	1188
070293	1000	3	105	14	12115	704
070293	1100	1	418	41	34819	1256
070293	1100	2	246	30	21173	980
070293	1100	3	100	18	10281	589
070393	0800	1	417	34	37856	1340
070393	0800	2	247	24	26308	1299

min

The min aggregate function retrieves the lowest value for a calculation or database item over the time frame of the report.

For example, using the previous example, if you entered `min(hsplit.ACDCALLS)` instead of `max(hsplit.ACDCALLS)` for the field and then ran the report for Split 1 for all intervals on 07/02/93, CMS would display only the value **394** which is the smallest number of ACD calls in any single interval on 07/02/93.

sum

The sum aggregate function retrieves the sum of all values for a calculation or database item over the time frame of the report.

For example, if the Intrahour Split table contained data (as shown in the previous figure) and you enter `sum(hsplit.ACDCALLS)` for a field in a report, then for Split 1 and all intervals on 07/02/93, CMS would take the values for `hsplit.ACDCALLS` and add them up to display only the value **1611**. Likewise, if you entered `sum(hsplit.ABANDONED+hsplit.ACDCALLS)` for the field, CMS would display only the value **1774**, which is the total of all ACD calls and abandons for Split 1 on 07/02/93.

Defining the data for a custom report

avg

The avg aggregate function retrieves the average of all values found over the time frame of the report. Using the sample table shown in the previous figure, if you enter `avg(ACDCALLS)` for a field and run the report for Split 1 for all intervals on 07/02/95, the value 402.75, which is the average of 399, 400, 394, and 418, are displayed.

count(*)

The `count(*)` expression tells CMS to count the number of rows in a table that match certain row search conditions (as defined in the **Row Search** window). For example, if you want the number of agents in a split that had more than five extension-out calls, the **Row Search** window would have a row search statement like:

```
Select rows where: SPLIT = 1 and  
                   (ACWOUTCALLS+AUXOUTCALLS) > 5
```

This statement means, "Find rows of data where the SPLIT value is 1 and total extension-out calls, for both ACW and AUX states, is greater than 5." Then, by entering `count(*)` in the `Select:` field, the report field would count the number of rows that match, and display that number in your report.

Do not append a table name to the beginning of `count(*)`.

`count(*)` is always a number of matching rows and makes sense only if you want to track some specific measure of performance by ACD elements (for example, the number of agents currently logged into a split, the number of trunks that were occupied for more than 80% of the time, the number of VDNs that had over 30 abandoned calls in an intrahour interval).

`count(*)` allows you to create fields that act as exception counts.

Data from more than one table

A calculation can merge data from more than one table in a report field.

For example, you may want the percentage of a split's ACD calls that an agent handled in a day. Thus, you can enter a calculation that merges data from the Daily Agent and Daily Split tables, as in the following example.

```
dagent.ACDCALLS/dsplit.ACDCALLS
```

When you merge data from two tables, you must define your row search conditions in a special way. See [Selecting rows from more than one table](#) on page 163.

Note:

You cannot use calculation names for a field in which you merge data from two tables, and you cannot merge data in real-time reports.

Define the tables for calculation names

Enter a table name in the `Table for calculations` field only if you entered a calculation name in the `Select` field. The table name tells CMS in what table to look for the database items in the calculation.

Note:

The `Table for calculations` field is necessary because you cannot append a table name to a calculation name in the `Select` field.

For example, look at the following entries:

```
Select: AVG_POS_STAFF
Table for calculation: hspllit
```

These entries mean “Take the calculation defined in the Dictionary subsystem for <AVG_POS_STAFF>, which is `I_STAFFTIME / (INTERVAL*60)`, and apply the `hspllit` table name to the database items.” In effect, the two fields make the calculation `hspllit.I_STAFFTIME / (hspllit.INTERVAL*60)`.

Justify data in the field

Select, from the `Justification` list, the way you want CMS to line up data when the data is displayed in the field. Normally, numerical data is right-justified so that the right hand side lines up in a column. Names are normally left-justified so that the first character of each name is lined up. However, you may choose any of the three options for any type of data.

Define the field format

Enter an `x` to select an item in the `Field Format` list. You must also complete the field associated with the list item.

The format type and the format you specify in the associated field tell CMS how to display the values it finds for the field. However, the format you select depends on the type of data CMS will display. The format options are as follows:

Number

Select `Number` if the field will display a number of events, an average, or a percentage. You must also specify a number of decimal places for the field. Enter `0` if you do not need decimal places displayed. If the field's expression were `ACDCALLS`, you would select `Number` and enter `0` in the field. However, if the field expression were to generate an

Defining the data for a custom report

average, such as the average staffed positions per interval, $I_STAFFTIME / (INTERVAL * 60)$, you may want to include decimal places.

When you run the report, the decimal point and the decimal places will use up spaces in the field. For example, if the field contains six spaces and you specify three decimal places for the field, then data will be displayed with two characters to the left and three characters to the right of the decimal point (for example, 12.344).

Date

Select `Date` if the field expression is `ROW_DATE`. You must also specify a date format, with appropriate punctuation. You can select a single format or a combination of formats. The available formats are:

- `mm` = Numerical month (for example, 12 for December)
- `MMM` = Month represented by three letters (for example, APR for April).
- `YY` = Year as two digits (for example, 94)
- `YYYY` = Year as four digits (for example, 1994)
- `dd` = Numerical day of the month (for example, 31)
- `jjj` = Day of the year in the Julian calendar (for example, 151 for May 31)
- `www` = Day of the week as three letters (for example, THU)

String

Select `String` for those database items whose data CMS identifies as character strings, not numbers. (Each of these items is identified as being a CHAR column type in INFORMIX terminology.) Even though these items store numbers, CMS searches for values as if the items stored nonnumeric symbols and alphabetic words, as well as numbers.

Database items for which you might select `String` are as follows:

- `VDN` (the value is a VDN number)
- `EXTENSION` (the value is an extension number)
- `LOGID` (the value is an agent login ID)
- `EQLOC` (the value is a 9-digit trunk location number)
- `CWC` (the value is a call work code)
- Custom database items with the **CHAR** column type

`String`, as used here, does not have the same meaning as string-value database item, as defined for the Dictionary subsystem. For the purposes of custom report design, Dictionary names for string-value database items are referred to as `Synonyms`, and include names for agents, splits, VDNs, trunk groups, and vectors. In fact, for the `VDN` and `LOGID`

database items, you may want to select `Synonym`, not `String`, since you may have assigned names to VDNs and login IDs in the Dictionary subsystem.

Synonym

Select `Synonym` to display a name defined in the Dictionary subsystem, instead of the value stored in the database tables. You must also enter the *Dictionary name type*.

See “Dictionary” chapter in *Avaya CMS R3V11 Administration, 585-215-515*, for a complete description of synonym types.

The type must correspond to the database item you enter in the `Select` field. The types you enter are as follows:

Report field	Type	Database item
ACD entities	acd agname tkgrp split vdn vector ^a aux_rsn logout_rsn cwc	ACD LOGID TKGRP SPLIT VDN VECTOR AUXREASON LOGOUTREASON CWC
Agent states	workmode ag_orig ag_dir ag_dest ag_pref	WORKMODE ORIGIN DIRECTION DESTINATION PREFERENCE
Trunk states	tkstate tk_pri tk_qtype tk_vpri ^a tk_dir all_busy	TKSTATE PRIORITY QUETYPE PRIORITY DIRECTION ALLINUSE
Split states	slvl_chg per_chg	SVCLEVELCHG PERIODCHG

Time (duration)

Select `Time (duration)` if the field expression will display a length of time. You must also enter a time format with the appropriate punctuation.

Defining the data for a custom report

Durations (for example, `ACDTIME`) are stored as a number of seconds. However, you can choose to display time as minutes and seconds, or even hours, minutes, and seconds.

The time formats available are:

<code>ss</code>	Display time as the number of seconds. Enter as many s 's as needed to display the seconds. If the number of seconds can reach six digits, enter ssssss .
<code>mm</code>	Display time as the number of minutes. Enter as many m 's as needed to display the minutes. If the number of minutes can reach six digits, enter mmmmm .
<code>hh</code>	Display time as the number of hours. Enter as many h 's as there are digits needed to display the hours. If the number of hours can reach three digits, enter hhh .
<code>mm:ss</code>	Display time as minutes and seconds. The minutes count is increased by one and the seconds count is reset to 00 when the seconds count reaches 60. Specify more than two digits for minutes if the minutes will exceed 99. For example, if you enter mmmm:ss , 2822:35 (2822 minutes and 35 seconds) might display in the report.
<code>hh:mm</code>	Display time as hours and minutes. The hours count is increased by one and the minutes count is reset to 00 when the count reaches 60. Specify more than two digits for hours if hours will exceed 99. For example, if you enter hhh:mm , up to 999:59 can display in the report.
<code>hh:mm:ss</code>	Display time as hours, minutes, and seconds. The minutes count is increased by one when the seconds count reaches 60. The hours count increases by one when the minutes count reaches 60. With this format, you can increase the digits for hours if necessary, but not the minutes digits.

Time (point in time)

Select `Time (point in time)` if the field expression will display a point in time (for example, `10:34am`). Enter a time format with the appropriate punctuation.

You can use one of the following formats:

HH	The hour only, in military time (24-hour clock). For example, 15 equals 3:00 p.m.
hh	The hour only, according to a 12-hour clock. For example, 3 could mean 3:00 a.m. or 3:00 p.m. For this reason, if you use hh, you should also add am (hham).
mm	The number of minutes after the hour only.
ss	The number of seconds into the minute.
HH:mm:ss or HH:mm	24-hour clock time, either to the second or to the minute.
hh:mm:ssa m or hh:mmam	12-hour clock time, with AM or PM attached, either up to the second or up to the minute.

Save the field definition

Select the `Save` action list option.

The **Field** window closes, and `Successful` is displayed in Screen Painter's status line to indicate the field definition has been added.

To define additional fields, repeat task 1 ([Define the position and length of a field](#) on page 73) through task 6 ([Save the field definition](#) on page 85).

Note:

You must assign a Row Search ID to the field before your field definition is truly complete. When you do, the question mark (?) will change to that ID number. See the "[Defining the rows of data for a report](#) on page 96" section in this chapter.

Changing a field definition

To change a field definition:

1. On Screen Painter, place the cursor on the field you want to change, and select `Field`.

The cursor returns to the field and rests on the last space of the field. The following message is displayed on Screen Painter status line: `Move cursor to define opposite corner of field, press RETURN.`

2. If needed, move the cursor using the arrow keys to either make the field longer or shorter, and press **Enter**.

The **Field** window is displayed.

3. Overtyping any data in fields you want to change, and select `Save`.

The **Field** window closes, `Successful` is displayed in Screen Painter status line, and the cursor returns to the field you just changed.

Defining bars in a report

Note:

You can define bars in a custom report only if you have purchased the CMS Graphics feature. If you have not purchased the Graphics feature, the `Bar` action list option is not available.

You may want a report to display data as bar graphs instead of numbers. Defining a bar or bars in a report is similar to defining fields, except in the way you define the format. To define a bar's format, you must specify the following items:

- The position and length of the bar
- The direction of the bar — horizontal or vertical
- The thresholds that cause the bar to change color
- The scale of the bar.

The bar's legend

If you copy the design of an existing bar graph, the bars are displayed filled with `xs`, `vs`, or `hs`.

- `xs` indicate that the bar is discrete. The bar is displayed as a single bar in the report because, based on the row search conditions assigned to the bar, CMS finds only one value.
- `vs` indicate that the bar is repeated vertically in the report. The bar is displayed as a series of bars, one over the other, because, based on the row search conditions assigned to the bar, CMS finds multiple values.
- `hs` indicate that the bar is repeated horizontally in the report. The bar is displayed as a series of bars, side by side, because, based on the row search conditions assigned to the bar, CMS finds multiple values.

See [Assign a row search ID to report fields and bars](#) on page 110 for illustrations of discrete and repeated bars.

To define Bars in a report perform the following instructions in the order indicated:

1. [Define the position and length of a bar](#) on page 88
2. [Define the bar's data expression](#) on page 89
3. [Define the Tables for Calculation names](#) on page 90
4. [Define the bar direction](#) on page 90
5. [Define the bar scale](#) on page 90

Defining the data for a custom report

6. [Define the maximum graph value](#) on page 91
7. [Define the first threshold](#) on page 92
8. [Define the second threshold](#) on page 93
9. [Select normal or reversed thresholds](#) on page 93
10. [Save the bar definition](#) on page 94

Defining bars in a report also includes the following topic:

- [Changing a bar definition](#) on page 95

Define the position and length of a bar

To define the position and length of a bar:

1. On Screen Painter, position the cursor where you want a bar to begin, and select the `bar` action list option.

The cursor returns to its original position, and the following message is displayed:
`Move cursor to define opposite corner of bar and press RETURN.`

2. Move the cursor using the arrow keys to define the length and width of the bar, and press **Enter**.

A question mark (?) is displayed in the upper left corner of the bar. The question mark indicates that you have not yet assigned a Row Search ID to the bar.

The system displays the **Bar** window:

The Bar window (with sample input)

```

Custom Reports: Screen Painter: daily split by inter: Hist: Bar
Select: hsplit.ACDCALLS
Table for calculations: _____
Bar direction (Select one):          Scale (Select one):
< > Horizontal                       < x > Scale with tick marks
< x > Vertical                         < > Scale without tick marks
                                       < > No scale
Maximum graph value (Select one):    First threshold (Select one):
< > Fixed _____                 < x > None
< x > Variable name i_maxqr         < > Fixed _____
                                       < > Variable name _____
Second threshold (Select one):       Reverse threshold colors (y/n): n
< > None
< > Fixed _____
< x > Variable name i_thresh

```

Define the bar's data expression

Enter a data expression in the `Select` field to tell CMS two things:

- What table columns should supply data to the bar
- How to manipulate that data.

The rules for this `Select` field are identical to those of the `Select` field for the **Field** window. However, the following types of database items do not make sense for bars:

- Identifiers (for example, `SPLIT`, `VDN`, `LOGID`, and so on)
- Current state data (for example, `WORKMODE`, or `DURATION`)
- Constants (unless they are part of a calculation).

Also, if a bar's expression is a database item that stores a number of seconds, the bar normally shows time as seconds. However, you can make the bar represent minutes by dividing the database item by 60.

In addition, to complete your definition of bar data, you must, as for field data, define row search conditions for the bars. This includes whether a bar you define will be repeated to display multiple bars for multiple values. See [Defining the rows of data for a report](#) on page 96.

Define the Tables for Calculation names

Enter a table name in the `Table for calculations` field only if you entered a calculation name in the `Select` field. The table name tells CMS in what table to look for the database items in the calculation.

Note:

The `Table for calculations` field is necessary when using calculation names because you cannot append a table name to a calculation name in the `Select` field.

Define the bar direction

Enter `x` in the `Bar direction` list to select either a horizontal or vertical format for the bar. `Vertical` means the bar's length is oriented up and down. `Horizontal` means the bar's length is oriented left and right.

Define the bar scale

Enter `x` to select an option in the `Scale` list.

- `Scale with tick marks`

The scale is displayed in the report as a line, segmented by evenly spaced marks (see the following figure). For a vertical scale, a tick mark is displayed for each vertical character space. For a horizontal scale, a tick mark is displayed at every fifth horizontal character space.

- `Scale without tick marks`

The scale automatically is displayed in the report as a line parallel to the bar (see the following figure). The line will be a fixed length equal to the maximum length of the bar. In this way, the end of the scale always represents the maximum graph value you define.

- `No scale`

The bar does not have a scale (see the following figure). You may want this option if the scale defined for another bar applies to the bar you are currently defining. For example, in the following figure, the scale for the `ACD Calls` bar could apply to the `Abandons` bar.

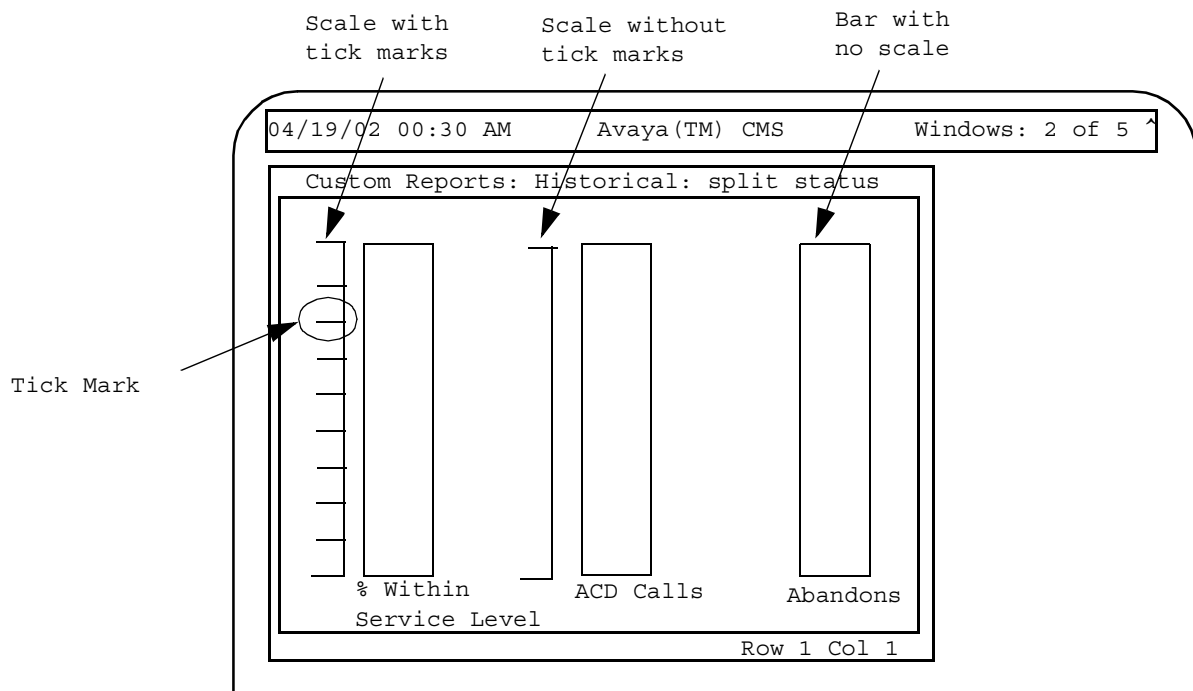
A scale defined for one bar is displayed in correct relation to other bars only if the following are true:

- All bars are parallel, have the same maximum length, and have the same starting points
- All bars have the same maximum graph value
- All bars display the same units (number of calls, averages, percentages, number of seconds, and so on)

Note:

Do not enter any text or fields in the column immediately to the left of a vertical bar. And, do not enter any text or fields in the row immediately above a horizontal bar.

Bars — With and without scales



Define the maximum graph value

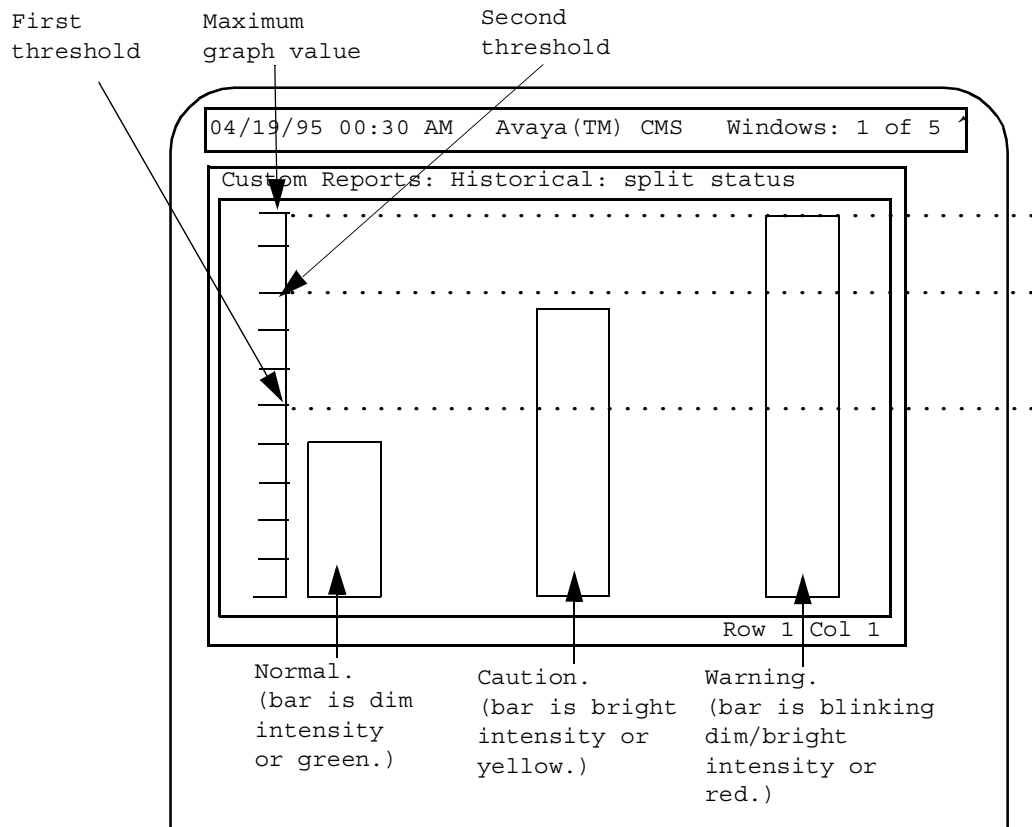
Enter **x** in the Maximum Graph Value list to select either a fixed or variable maximum graph value. The maximum graph value is the value that the bar represents when the bar is at its maximum length or height (see the following figure). The value must always be a whole number or decimal.

If you select **Fixed**, you must also enter, in the accompanying field, the value the bar should represent when the bar is at its maximum length or height.

Defining the data for a custom report

If you select `Variable name`, you must also enter, in the accompanying field, a variable name that references a report input field. Thus, selecting `Variable name` allows the user to enter a maximum graph value for the bar when ordering the report. The variable name you enter must be identical to a variable name defined in the **Define Input** window.

Thresholds bar graph



Define the first threshold

Enter `x` in the `First threshold` list to select a fixed threshold, variable threshold, or no threshold. The first threshold identifies the point at or above which the bar changes color — normally to indicate a caution condition (see the previous figure). The first threshold should have the lower value of the two thresholds. The value must always be a whole number or decimal.

If you select `None`, the bar does not have a first threshold at which the bar changes color.

If you select `Fixed`, you must also enter, in the accompanying field, the value at or above which the bar changes color.

If you select `Variable name`, you must also enter, in the accompanying field, a variable name. The variable name, which references a report input field, allows the user to enter a first threshold value for the bar when ordering the report. The variable name you enter must be identical to the variable name you assign to a report input field (see [Defining fields for the Report Input window](#) on page 61).

Define the second threshold

Enter `x` in the `Second threshold` list to select a fixed threshold, variable threshold, or no threshold. The second threshold identifies the point at or above which the bar changes color — normally to indicate a warning condition (see the previous figure). The second threshold should have the higher value of the two thresholds. The value must always be a whole number or decimal.

If you select `None`, the bar does not have a second threshold at which the bar changes color.

If you select `Fixed`, you must also enter, in the accompanying field, the value at or above which the bar changes color.

If you select `Variable name`, you must also enter a variable name in the accompanying field. The variable name, which references a report input field, allows the user to enter a maximum graph value for the bar when ordering the report. The variable name you enter must be identical to the variable name you assign to a report input field (see [Defining fields for the Report Input window](#) on page 61).

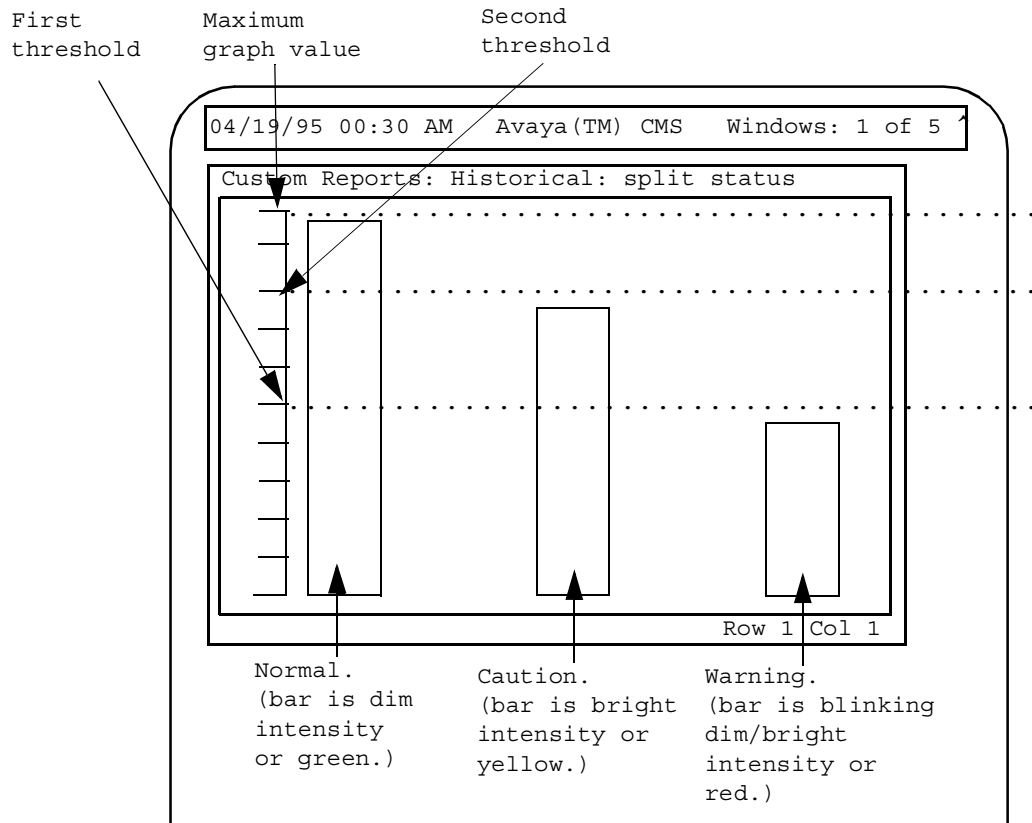
Select normal or reversed thresholds

Enter a `y` or `n` to select reversed threshold colors or normal threshold colors. `n` means the bar changes to a caution color at the first threshold and changes to a warning color at the second threshold.

Enter `y` if you want to reverse the meanings of the thresholds. With meanings reversed, the bar is a normal color when it is above the second threshold. The bar changes to a caution color when the bar is at or below the second threshold but is above the first threshold. The bar changes to a warning color when the bar is at or below the first threshold.

Reversed colors would be appropriate for a bar that represents the percentage of calls answered within service level (see the following figure). In this case, you would want the bar to be a normal color when the percentage is high, a caution color when the percentage goes down, and a warning color when the percentage is very low.

Thresholds reversed bar graph



Save the bar definition

Select the `Save` action list option.

The **Bar** window closes, and `Successful` is displayed in Screen Painter status line to indicate the bar definition has been added.

To define additional bars, repeat task 1 ([Define the position and length of a bar](#) on page 88) through task 9 ([Select normal or reversed thresholds](#) on page 93).

Note:

You must assign a Row Search ID to the bar before your field definition is complete. When you do, the question mark (?) changes to that ID number. See [Defining the rows of data for a report](#) on page 96.

Note:

If a bar will be a repeated bar (as defined with the **Row Search** window), you cannot define any other bars in the direction that the bar will repeat. That is, if the bar will be repeated vertically, no other bars (or text or fields) can be displayed directly below the bar. If the bar will be repeated horizontally, no other bars (or text or fields) can be displayed directly to the right of the bar.

Changing a bar definition

To change a bar definition:

1. On Screen Painter, place the cursor on the bar you want to change, and select `Bar`.

The cursor returns to the bar and rests on the lower right corner of the bar. The following message is displayed on Screen Painter status line: Move cursor to define opposite corner of bar and press RETURN.

2. If needed, move the cursor using the arrow keys to either make the bar bigger or smaller, and press **Enter**.

The **Bar** window is displayed.

3. Overtyping any data in fields you want to change, and select `Save`.

The **Bar** window closes, `Successful` is displayed in Screen Painter status line, and the cursor returns to the bar you just changed.

Defining the rows of data for a report

To complete the definition of a report's fields/bars, you must define the rows of the tables that supply data to the fields/bars. To do this:

- Using the **Row Search** window (see the following figure), define the criteria needed to find the appropriate rows of data. Each set of criteria is stored by row search ID.
- Assign the row search IDs to the appropriate fields/bars.

Row search criteria are values for either *database items* or *calculations*. In most cases, your criteria will specify variable names rather than specific values for the database items or calculations. These variable names allow CMS to use the values entered in the **Report Input** window in its row search criteria. From the rows CMS finds, report data is retrieved for the report fields. See [How CMS stores and retrieves data](#) on page 23.

Note:

If you copy the design of an existing report, the row search criteria and input fields (as defined in the **Define Input** window) are copied. If you then delete or change a variable name in the **Row Search** window, you must delete or change that variable name in the **Define Input** window.

To define the rows of data for a report, perform the following tasks in the order indicated:

1. [Access the Row Search window](#) on page 97
2. [List the Report Input Variables](#) on page 97
3. [Select a Row Search ID](#) on page 98
4. [Select tables](#) on page 98
5. [Select rows in the tables](#) on page 101
6. [Select a field/bar type](#) on page 105
7. [Select a Sort type](#) on page 107
8. [Select a sort order for data](#) on page 107
9. [Save your row search conditions](#) on page 109

Defining the rows of data for a report also includes the following topics:

- [Assign a row search ID to report fields and bars](#) on page 110
- [Changing row search conditions](#) on page 115
- [Changing the row search-field assignment](#) on page 115

Access the Row Search window

- On Screen Painter, select the `Row search` action list option.

The system displays the **Row Search** window:

The Row Search window

```

Custom Reports: Screen Painter: daily split by inter: Hist: Row Search
Row search ID: 0
From table(s): hagent
Select rows where:
  SPLIT=$1_domain and ROW_DATE=$1_date and STARTTIME=$
  itime and ACD=$acd
Field/bar type (Select one):
  <_> Discrete
  <X> Repeated vertically, spacing 1
  <_> Repeated horizontally, spacing __
Sort type (Select one):
  <X> Ascending
  <_> Descending
Order by: STARTIME
Assign fields
Delete
Find one
List inputs
Modify
Next
Previous
Remove fields

```

List the Report Input Variables

To list the report input variables:

1. Select the `List inputs` action list option to see the variable names previously defined on the **Define Input** window.

The **List Inputs** window is displayed.

2. Print the window's contents via the **Commands** screen-labeled key and `Print window` option.

3. Press **Exit** to return to the **Row Search** window.

The **List Inputs** window closes and the cursor returns to the **Row Search** window.

Note:

If you defined report input fields in the **Define Input** window (or you copied a report design that has report input fields), your row search criteria use the variable names for those input fields. Conversely, to use a variable name in your row search criteria, an input field with that variable name must first be defined in the **Define Input** window.

Select a Row Search ID

From the **Row Search** window, enter a number from 0 to 9 in the `Row search ID` field. The ID identifies the set (or one of the sets) of row search conditions you are using in the report. Thus, for a single report, you can use ten different sets of conditions to select rows of data.

You can create a new set of conditions from scratch or use `Find one` with the `Next/Previous` actions to view and/or change an existing set of conditions. (If you have already assigned row search conditions to a field/bar on Screen Painter, the row search ID is displayed as the first character in that field/bar.)

If you are going to use multiple tables, at least one “join” clause must be displayed in the Row Search ID assigned to the field.

A “join” clause makes the values that CMS searches on the same in both tables. Therefore, the data extracted from the rows in both tables is related.

A “join” clause has the following format:

```
tablename1.item1 = tablename2.item1
```

where `item1` is a database item that the tables have in common.

Note that there are different types of “join” clauses.

See [Advanced report design](#) on page 141, and your INFORMIX documentation for more information on “join” clauses.

Select tables

From the **Row Search** window, in the `From tables` field, enter the names of the tables whose rows supply data. Use a comma to separate multiple table names.

Example:

```
From tables: hagent,dagent_____
```

If you are going to assign this row search ID to a particular report field/bar, the names in the `From tables` field must include the table names that you assigned to the report field.

Note:

If a report field merges data from two tables, you must include both table names in this field. See [Selecting rows from more than one table](#) on page 163.

The CMS database table names are in the following tables.

Real-Time table names

Name	Data stored
csplit	Split/Skill data for the current interval
psplit	Split/Skill data for the previous interval
cagent	Agent data fro the current interval
pagent	Agent data for the previous interval
ctkgrp	Trunk group data for the current interval
ptkgrp	Trunk group data for the previous interval
ctrunk	Trunk data for the current interval
ptrunk	Trunk data for the previous interval
cvector	Vector data for the current interval
pvector	Vector data for the previous interval
cvdn	VDN data for the current interval
pvdn	VDN data for the previous interval
ccwc	Call Work Code (CWC) data for the current interval
pcwc	CWC data for the previous interval

Historical table names

Name	Data stored
hsplit	Split/Skill data for each intrahour interval
dsplit	Split/Skill data summarized by day

Defining the data for a custom report

Name	Data stored
wsplit	Split/Skill data summarized by week
msplit	Split/Skill data summarized by month
hagent	Agent data for each intrahour interval
dagent	Agent data summarized by day
wagent	Agent data summarized by week
magent	Agent data summarized by month
ag_actv	Agent trace
haglog	Agent login/logout
htkgrp	Trunk group data for each intrahour interval
dtkgrp	Trunk group data summarized by day
wtkgrp	Trunk group data summarized by week
mtkgrp	Trunk group data summarized by month
htrunk	Trunk data for intrahour interval
dtrunk	Trunk data summarized by day
wtrunk	Trunk data summarized by week
mtrunk	Trunk data summarized by month
hvector	Vector data for each intrahour interval
dvector	Vector data summarized by day
wvector	Vector data summarized by week
mvector	Vector data summarized by month
hvdn	VDN data for each intrahour interval
dvdn	VDN data summarized by day
wvdn	VDN data summarized by week
mvdn	VDN data summarized by month
hcwc	CWC data for each intrahour interval
dcwc	CWC data summarized by day
wcwc	CWC data summarized by week

Name	Data stored
mcwc	CWC data summarized by month
call_rec	Call record data
agex	Agent exceptions
spex	Split exceptions
tgex	Trunk group exceptions
vecex	Vector exceptions
vdnex	VDN exceptions
inkex	Link down exceptions
mctex	Malicious call trace exceptions
f_cday	Forecast current day configuration data by split/skill
f_cdayrep	Current day forecast data by split/skill

See *Avaya CMS Database Items and Calculations*, 582-780-702, for a description of these tables and the database items they contain.

Select rows in the tables

In the `Select rows where:` field, enter a selection criteria statement to tell CMS how to select data from the table. The statement specifies values for one or more database items or calculations.

Note:

To ensure a reasonable run time for your report, the database items you specify in the `Select rows where:` field should include index items. For a historical report, you should especially include a “where” clause with the `ROW_DATE` database item. If your row search is based on items that are *not* indexes, your report may take a very long time to run. To check that your row search items are indexes, see *Avaya CMS Database Items and Calculations*, 582-780-702, for a description of these tables and the database items they contain.

Note:

Your row search criteria *must always* include the selection of an ACD. See [“Where” clause for selecting rows from an ACD](#) on page 104.

Basic “Where” clause

A basic clause has the following format: `Expression Relational Operator Value`
The `Expression` can be a database item or calculation. The `Value` is a whole number.
Relational operators available for a “where” clause are as follows:

<code>=</code>	equal to
<code>< ></code> or <code>!=</code>	not equal to
<code>></code>	greater than
<code>>=</code>	greater than or equal to
<code><</code>	less than
<code><=</code>	less than or equal to

Note:

Do not try to enter calculation names. They do not work in the `Select rows where` field.

Note:

Standard database items consist of upper-case letters only.

As an example of a basic “where” clause, if you are creating a real-time report using data from the Current Interval Split table and you have defined three report fields for the report:

Split: (the `SPLIT` database item)

ACD Calls: (the `ACDCALLS` database item)

Average Talk Time: (the calculation `ACDTIME/ACDCALLS`)

Your “where” clause might be:

```
Select rows where: SPLIT = 5
```

When you run the report, CMS finds the row in the table (see the following figure) for Split 5 and fills in the report fields with data from that row (in bold in the figure).

Sample Current Interval Split table

SPLIT	ACDCALLS	ABANDONS	ACDTIME	ABNTIME	
1	443	48	36898	988	. . .
2	234	37	20012	777	. . .
3	111	20	13111	400	. . .
4	652	59	53442	1058	. . .
5	451	32	27635	644	. . .
6	93	11	15321	245	. . .
7	509	43	35401	851	. . .
8	391	31	19768	603	. . .
9	142	10	9786	203	. . .
10	480	39	33389	789	. . .

Thus, the report fields show the following data:

Split: 5

ACD Calls: 451

Average Talk Time: 61 (the result of 27635/451)

Note:

This example of row search criteria would also include the selection of an ACD. See [“Where” clause for selecting rows from an ACD](#) on page 104” later in this section.

“Where” clause with variable

The previous examples create *hardcoded* row search conditions. That is, when you run the report, CMS always searches for the values you entered in the “where” clause. However, instead of a hardcoded value, you can enter a *variable name* in a clause. A *variable name* tells CMS to search for whatever values you or another user choose when you run the report. You must define a variable on the **Define Input** window before using it in a “where” clause. The variable name then links a report input field to the “where” clause that uses the values entered.

Defining the data for a custom report

Note:

To see the variable names you previously defined on the **Define Input** window, select the `List inputs` action list option. See [List the Report Input Variables](#) on page 97.

In a clause with a variable name, you must always enter a dollar sign (\$) in front of the variable. The format is as follows:

```
Expression Relational Operator $variable
```

As with a basic “where” clause, the `Expression` can be a database item or calculation. The relational operators available are the same as those available for a basic “where” clause.

Look at the following “where” clause:

```
Select rows where: SPLIT = $splitvar
```

This “where” clause tells CMS to search for rows with the `Split` value the user enters when ordering the report. The example clause presupposes that the variable name, “splitvar,” has been defined on the **Define Input** window.

Multiple “Where” clauses

To put two or more clauses in a statement, use `and`, `or`, or `Use and` to define two or more clauses where CMS finds only rows that meet all conditions. For example, the following statement searches for rows where splits had an average speed of answer greater than 30 seconds and abandons greater than 100.

```
Select rows where: ANSTIME/ACDCALLS > 30 and ABANDONS > 100
```

Use `or` to define two conditions where CMS finds rows that meet either condition but not necessarily both. For example, the following statement searches for rows where splits had too many abandoned calls or too many extension-out calls.

```
Select rows where: ABANDONS>15 or AUXOUTCALLS+ACWOUTCALLS>7
```

“Where” Clause with a Range/List Variable

If a variable name, as defined in the **Define Input** window, has been assigned the `Range/list` option, your “where” clause must use the equals sign (=) with the variable name.

“Where” clause for selecting rows from an ACD

In your “where” statement, you must always include a clause to select the ACD. If you always want a report to find data for the user's current ACD, append `and ACD = $acd` to the “where” statement, as shown in the following example:

```
Select rows where: SPLIT = $splitvar and ROW_DATE = $datevar and  
ACD = $acd
```


If you use the variable name `acd`, you do not need to define the variable in the **Define Input** window. CMS always understands `acd` to be the current ACD. However, if you want, you can define a different variable name for the `ACD` database item so the user can specify the wanted ACDs when ordering the report. You can also hardcode the ACD in a “where” clause, as in the following example.

```
Select rows where: ACD = 1
```

“Where” clause for excluding rows of data

If you want to exclude Split 5 from the report, but include all other splits, you might enter a “where” clause as follows:

```
Select rows where: SPLIT != 5
```

or

```
Select rows where: SPLIT <> 5
```

Select a field/bar type

From the **Row Search** window, in the `Field/var type:` field enter `x` to select `Discrete`.

Select the `Discrete` type if CMS will find only one value for each report field/bar to which you are assigning this Row Search ID. CMS will find only one value if the field/bar is an aggregate function (SUM, AVG, MIN, or MAX), or if *both* of the following conditions are true:

- You enter a “where” statement that is so specific that CMS finds only one row.
- On the **Define Input** window, you select `n` for Range/list for all variables used in the “where” statement. For example, if you select the Daily Split (`dsplit`) table and enter the following “where” statement:

```
Select rows where: ROW_DATE = $datevar and SPLIT = $splitvar and
ACD = $acd
```

and you select `n` for Range/list for both the `splitvar` and `datevar` variables, CMS will find a single row containing the date and split the user enters when ordering the report.

Note:

If you are assigning the row search ID only to fields and bars that contain aggregate functions (sum, max, min, or avg), you will normally select the `Discrete` type. See [Repeating aggregate function values](#) on page 171.

Repeated vertically

Select `Repeated vertically` to display a column of multiple field values or a vertical series of bars, one for each value.

If you select `Repeated vertically`, you must also enter a number in the `Spacing` field. This number tells CMS how many lines to go down to display each value. `1` means to display a value on every line. `2` means to display a value on every other line.

Note:

If you select `Repeated vertically`, you cannot define any fields directly under a repeated field.

Repeated horizontally

Select `Repeated horizontally` to display multiple field values in row format or a horizontal series of bars, one for each value.

If you select `Repeated horizontally`, you must also enter a number in the `Spacing` field. This number tells CMS how many characters to move horizontally from the beginning of one value to the beginning of the next. This means that the spacing you enter must include the blank spaces between fields/bars and the width of a field/bar. For example, if a field/bar is four characters wide and you enter `8` in the `Spacing` field, CMS displays each value with four blank characters in between.

Repeated values, whether repeated horizontally or vertically, apply only if CMS finds multiple values for the report fields. CMS finds multiple values if *one* of the following conditions exists:

- Your “where” statement specifies one or more ranges of values.
- On the **Define Input** window, you entered `y` for Range/list for at least one variable.
- Your “where” statement is general enough to select multiple rows.

One example of a general “where” statement for the `dsplit` table would be:

```
Select rows where: ROW_DATE = $datevar and ACD = $acd
```

Since no split values are specified, CMS will display, for a user-specified date, a value for every split in the ACD.

If, based on your “where” statement and Define Input entries, CMS finds multiple values, but you select `Discrete`, the report displays only the first value CMS finds for each report field.

Note:

If you select `Repeated horizontally`, you cannot define any fields directly to the right of a repeated field.

Select a Sort type

From the **Row Search** window, in the `Sort type:` field, enter `x` to select either ascending or descending order for values of the database items. Ascending order means CMS displays data from the lowest to the highest values. Descending order means CMS displays data from the highest to the lowest values.

Continuing with the previous example, if the `Order by` database item is `ROW_DATE` and you choose a descending order, the data will be listed as shown in the table below. For dates and times, lowest values are those dates/times farthest in the past.

Sample of data ordered by date in descending order

DATE	SPLIT	ACDCALLS
10/12/99	1	7
10/12/99	2	6
10/12/99	3	5
10/11/99	1	25
10/11/99	2	50
10/11/99	3	41
10/10/99	1	40
10/10/99	2	36
10/10/99	3	30

Select a sort order for data

From the **Row Search** window, in the `Order by:` field, enter a database item (with its table name) to specify how multi-row data should be sequenced in the report. CMS orders the rows of data by the values for the database item. For example, you might enter `dsplit.ROW_DATE` in the `Order by` field. CMS would then display data by date, as shown in the following report.

Defining the data for a custom report

Sample of data ordered by date in ascending order

DATE	SPLIT	ACDCALLS
10/10/99	1	40
10/10/99	2	36
10/10/99	3	30
10/11/99	1	25
10/11/99	2	50
10/11/99	3	41
10/12/99	1	7
10/12/99	2	6
10/12/99	3	5

If, on the other hand, you enter `dsplit.SPLIT` in the `Order by` field, CMS displays data by split, as shown in the following report.

Sample of data ordered by split

DATE	SPLIT	ACDCALLS
10/10/99	1	40
10/11/99	1	25
10/12/99	1	7
10/10/99	2	36
10/11/99	2	50
10/12/99	2	6
10/10/99	3	30
10/11/99	3	41
10/12/99	3	5

If you leave the `Order by` field blank, CMS displays data in the report using the same sequence CMS uses to store the data in the table.

For historical reports only, you can enter more than one database item in the `Order by` field. The database items must be separated by commas. The effect of more than one sorting database item is that data will be ordered first by values found for the first sorting database item, then sorted by values for the second sorting database item, and so on.

For example, `Order by: dsplit.SPLIT,dsplit.ACDCALLS` would cause the data shown in the previous figure to be ordered as follows:

Sample of data ordered by split and ACD calls

DATE	SPLIT	ACDCALLS
10/12/99	1	7
10/11/99	1	25
10/10/99	1	40
10/12/99	2	6
10/11/99	2	36
10/10/99	2	50
10/12/99	3	5
10/11/99	3	30
10/10/99	3	41

Notice that the data is first sorted by split number, then by the number of ACD calls. As a result, the dates are displayed totally out of sequence.

Save your row search conditions

Select the `Modify` action list option.

`Successful` is displayed in the window's status line to indicate the Row Search conditions have been added.

After you have successfully saved your row search conditions, you can then assign the row search ID to report fields/bars.

Assign a row search ID to report fields and bars

To complete the definition of data for a field or bar, you must assign a row search ID to the field/bar.

Use the following steps to do this.

Note:

If a field already has an assigned row search ID (for example, a field that is part of a design you have copied), you must first remove the existing row search ID assignment. See [Changing the row search-field assignment](#) on page 115.

1. On Screen Painter, place the cursor on a field to which you want to assign a row search ID. To assign a row search ID to several fields at one time, place the cursor in a position from which you can define an appropriate block.

2. Select the `Row search` action list option.

The **Row Search** window is displayed.

3. Enter the wanted row search ID and select the `Find one` action list option.

The row search conditions for the ID are displayed.

4. Select the `Assign fields` action list option.

The **Row Search** window closes, the cursor moves to its original position `Move cursor to define a block and press RETURN` is displayed on the status line.

5. Move the cursor using the **Tab**, **Shift Tab**, or arrow keys. If the block you define contains one or more characters of a field/bar, CMS assigns the row search ID to that field/bar.

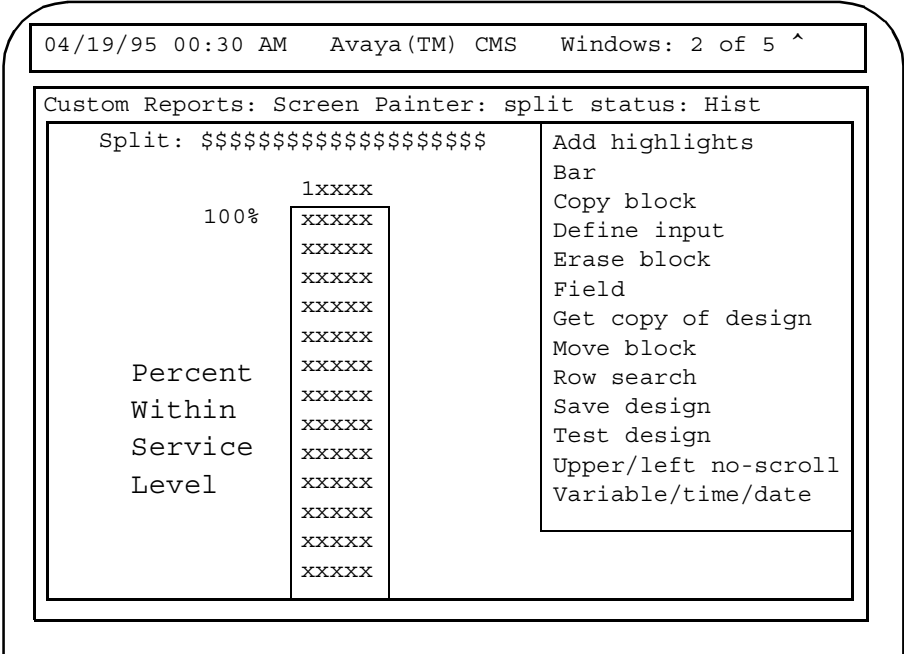
The cursor defines a block on your terminal in inverse video (or color).

6. Press **Enter**.

The ? in each field/bar changes to the row search ID to indicate the row search conditions have been assigned. Additional characters fill the field or bar as shown in the following figures.

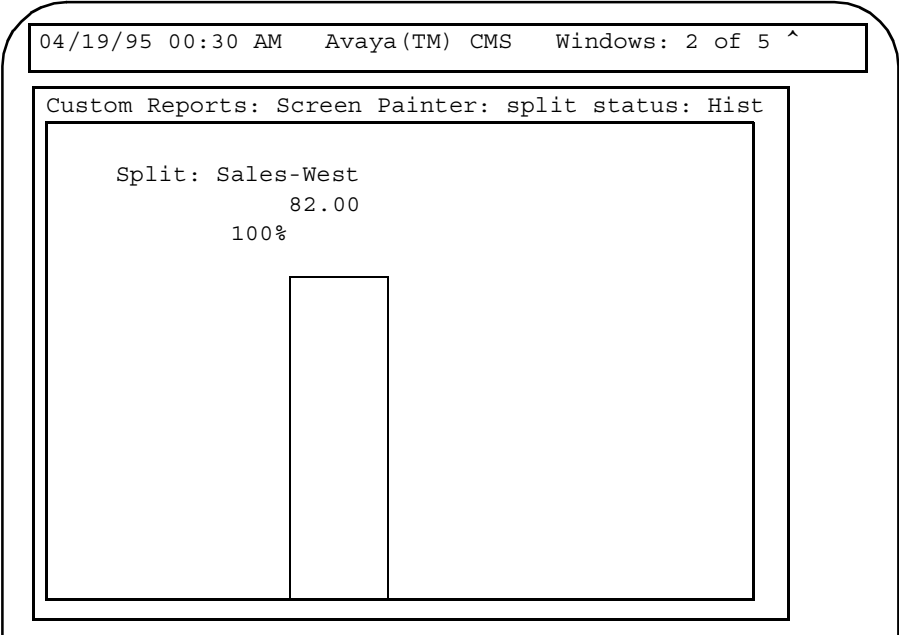
If your row search conditions specify discrete fields/bars, assigned fields are displayed with lowercase `x`'s and assigned bars are displayed with uppercase `X`'s as in the following figure:

Sample discrete field and bar design



A report with the design shown in the previous figure might be displayed as shown in the following figure:

Sample report with discrete field and bar



Defining the data for a custom report

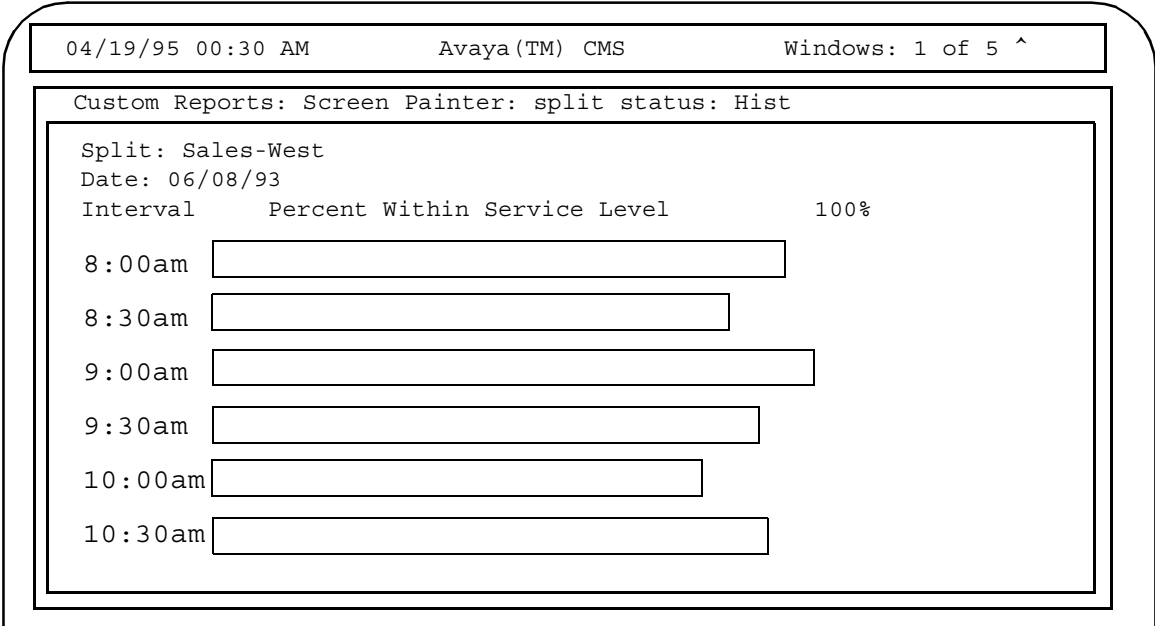
If your row search conditions specify vertically repeated fields/bars, assigned fields are displayed with lowercase v's and assigned bars are displayed with uppercase V's as shown in the following figure:

Sample field and bar design — vertically repeated

04/19/95 00:30 AM Avaya(TM) CMS Windows: 2 of 5 ^	
Custom Reports: Screen Painter: split status: Hist	
Split: \$	Add highlights
Date: \$\$\$\$\$\$\$	Bar
Interval	Percent Within Service Level
1vvvvvv	1VV
	100%
	Field
	Get copy of design
	Move block
	Row search
	Save design
	Test design
	Upper/left no-scroll
	Variable/time/date

A report with the design shown in the previous figure might be displayed as shown in the following figure:

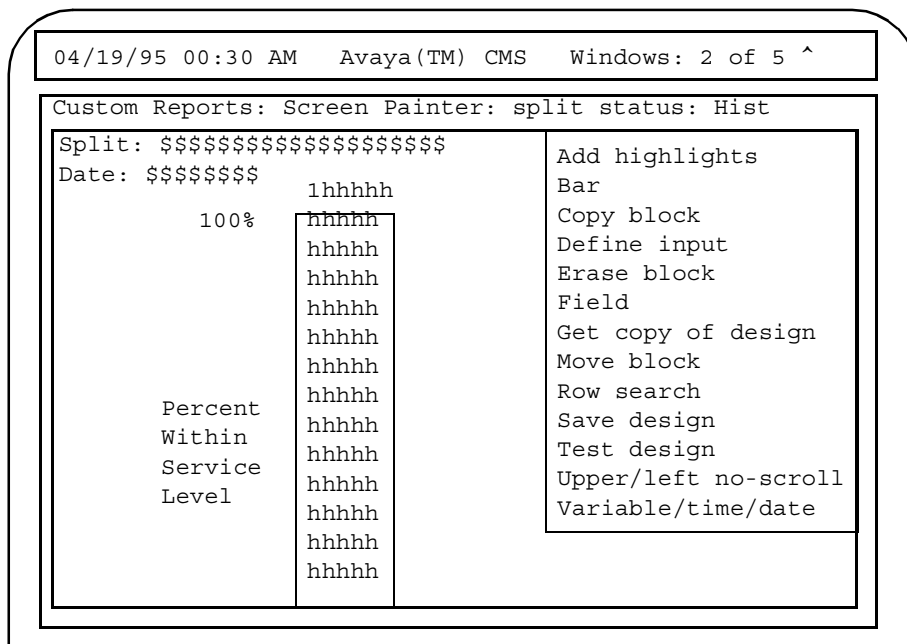
Sample report with vertically repeated field and bar



If your row search conditions specify horizontally repeated fields/bars, assigned fields are displayed with lowercase h's and assigned bars are displayed with uppercase H's as shown in the following figure:

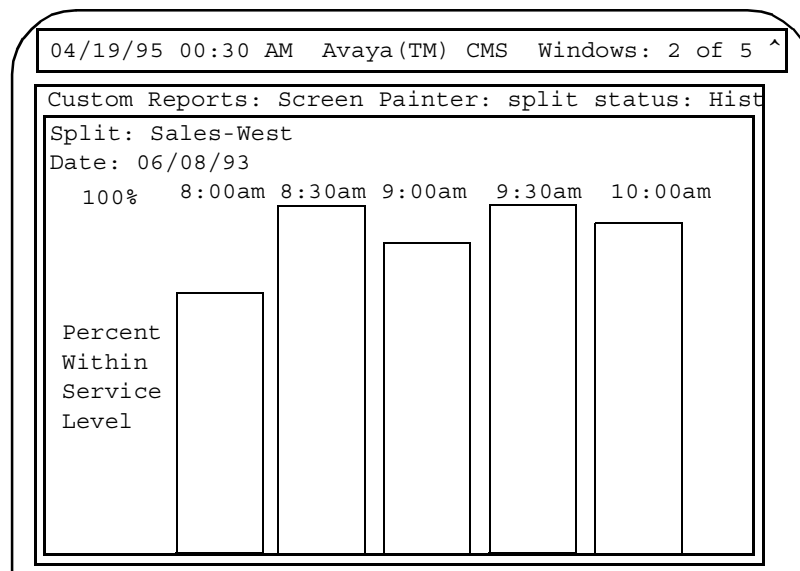
Defining the data for a custom report

Sample field and bar design — horizontally repeated



A report with the design shown in the previous figure might be displayed as shown in the following figure:

Sample report with horizontally repeated field and bar



Changing row search conditions

To change the row search conditions:

1. On Screen Painter, select the `Row search` action list option.

The **Row Search** window is displayed.

2. Enter a number from 0 to 9 in the `Row Search ID` field, and select the `Find one` action list option.

The row search conditions for the ID are displayed.

Note:

For a `Find one` search, only your entry in the `Row search ID` field counts. CMS ignores the other fields.

3. Change data in any fields, and select the `Modify` action list option.

`Successful` is displayed in the window's status line to indicate the row search conditions have been changed.

The changes apply to any fields to which you had previously assigned the `Row Search ID`.

Changing the row search-field assignment

To change the row search ID assigned to a particular field, you must first disassociate the field from the row search ID. You do this using the `Remove fields` action list option.

To change the row search-field assignment:

1. On Screen Painter, place the cursor on a field/bar from which you want to disassociate the row search ID. To disassociate a row search ID from several fields/bars at once, place the cursor in a position from which you can define a block that includes all appropriate fields/bars.

2. Select the `Row search` action list option.

The **Row Search** window is displayed.

3. Enter the wanted row search ID and select the `Find one` action list option.

The row search conditions for the ID are displayed.

4. Select the `Remove fields` action list option.

The **Row Search** window closes, the cursor moves to its original position on Screen Painter, and `Move cursor to define a block and press RETURN` is displayed on the status line.

Defining the data for a custom report

5. Move the cursor using the **Tab**, **Shift Tab**, or arrow keys. The block you define should contain all characters of each field/bar from which you are disconnecting the row search ID.

The cursor defines a block on your terminal in inverse video (or color).

6. Press **Enter**.

The row search ID in each field/bar is replaced by a question mark ? to indicate the row search conditions have been disconnected.

7. Assign a new row search ID to the fields/bars.

Defining fields to show run time/date and user inputs

The time or date when a report is run is not stored in any database table. Instead, CMS simply recognizes when it has finished processing the report, and if requested, displays this information on the report. Similarly, CMS knows what your current ACD is when you order the report and can display the current ACD name or number on the report.

To display the report's run-time, run-date, or the current ACD when you ordered the report, you must define a field using the **Var/Time/Date** window (see the following figure). The **Var/Time/Date** window also allows you to define fields that mirror your entries in the **Report Input** window. That is, CMS simply takes the values you enter for an input variable (as defined in the **Define Input** window) and displays those values on the report.

To define a field with one of these types of information, perform the following tasks in the order indicated:

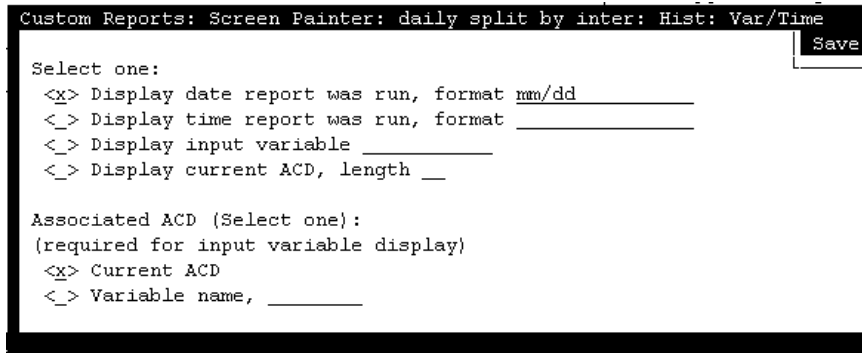
1. [Access the Variable/Time/Date window](#) on page 116
2. [Define the display type and format](#) on page 117
3. [Save the Var/Date/Time field](#) on page 118

Access the Variable/Time/Date window

On Screen Painter, place the cursor where the left end of the field should be displayed, and select `Variable/time/date`.

The system displays the **Var/Time/Date** window:

The Var/Time/Date window



Define the display type and format

Note:

You are given flexibility in defining the appearance of the date and time fields; however, only text matching the defined formats is converted into their equivalents. Any other text is simply displayed as entered.

To define the display type and format:

1. Enter an **x** to select a display type. You must also complete the associated field. The display options are:

date report was run – Select this option to display the date you ran the report. You must also specify a date format with appropriate punctuation in the associated field. You can enter any of the following date formats or combination of date formats:

mm	The numerical month.
MMM	The month represented by three letters.
yy	The year as two digits.
yyyy	The year as four digits.
dd	The numerical day of the month.
jjj	The day of the year in the Julian calendar.
www	The day of the week as three letters.

Defining the data for a custom report

Note:

An example of combined formats would be the standard date format mm/dd/yy. Or, you could enter just the day and month mm/dd.

`time report was run` – Select this option to display the time you ran the report. You must also enter a time format with the appropriate punctuation.

You can use any of the following time formats:

HH	The hour only, in military time (24-hour clock).
hh	The hour only, according to a 12-hour clock.
mm	The number of minutes after the hour only.
ss	The number of seconds into the minute.
HH:mm:ss or HH:mm	Military time, either to the second or to the minute.
hh:mm:ssam or hh:mmam	12-hour clock time, with AM or PM attached, either up to the second or up to the minute.

2. Verify that the format of your date and time entries are acceptable by accessing the help screen for both the date and time fields.
 - `input variable` – Select `input variable` to display data exactly as it is entered in one of the fields on the **Report Input** window. You must also enter, in the associated field, the variable name assigned to the report input field (on the **Define Input** window).
 - `current ACD` – Select `current ACD` to display the number or name of the ACD that was current when you ordered the report. You must also enter, in the associated field, the number of characters, 1 to 20, that the ACD field should have. If you have defined names in the Dictionary subsystem for your ACDs, then you may want to enter `20`, since this is the maximum length for Dictionary names.

Save the Var/Date/Time field

Select `Save`.

The **Var/Time/Date** window closes. CMS marks the field in one of the following ways:

- For a `date`, the format you defined is displayed (for example, mm/dd/yy).
- For a `time`, the format you defined is displayed (for example, hh:mmam).
- For an `input variable`, a string of dollar signs (\$\$\$) is displayed, with the number of dollar signs equaling the field length you assigned to the variable's input field on the **Define Input** window.
- For `current ACD`, a string of dollar signs (\$\$\$) is displayed, with the number of dollar signs equaling the length you specified in the **Var/Date/Time** window.

Saving your work

To save everything you have done so far, select `Save design` from Screen Painter. If you have defined something incorrectly, an error message will inform you of this. You must go back and correct any errors before saving.

Defining the data for a custom report

■ ■ ■ ■ ■ ■

Completing your custom report

Highlighting fields

For each individual Avaya Call Management System (CMS) custom report, you can administer how the screen displays the colors and brightness levels of the text, data, and background. You can also administer color, brightness, reverse video, and underlining to emphasize individual fields and text in the report.

Note:

You cannot change the way bars are displayed with the procedure that follows. However, you can change the bars' threshold colors via the **Commands** screen-labeled key and the `Options: Color` submenu selection.

To change the way the screen displays fields and text in your report, do the following steps:

1. On Screen Painter, place the cursor in a position where you want one corner of a block to be, and select `Add highlights`.

The cursor returns to its original position, and the following message is displayed on the status line: `Move cursor to define opposite corner of block, RETURN`.

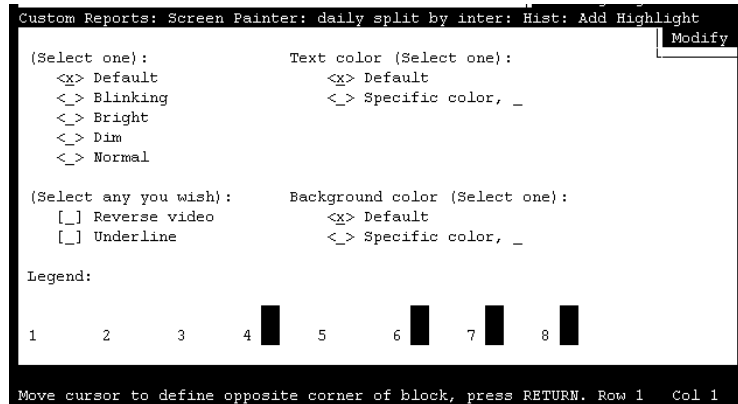
2. Move the cursor to a position where you want the opposite corner of the block to be. The block should include all field text you want to highlight.

The block you are defining becomes highlighted.

3. Press **Enter**.

The system displays the **Add Highlights** window:

The Add Highlights window



4. Select from the following options:

Select one:

Default	Reflects the text and background settings administered for this terminal.
Blinking	Causes the text/data in the defined area to blink (continuous alternation between dim and normal brightness or foreground/ background colors).
Bright	Makes the text/data in the defined area become bright. If your terminal does not have a bright capability, "bright" will equal "normal." For some color terminals, dim or bright settings may affect the colors selected.
Dim	Makes the text/data in the defined area become dim. If your terminal does not have a dim capability, "dim" will equal "normal." For some color terminals, dim or bright settings may affect the colors selected.
Normal	Makes the text/data in the defined area a brightness level between dim and "bright."
Select any you wish:	

Reverse video	Reverses brightness/color settings for text and background. The brightness and blinking options also affect the display of reverse video.
Underline	Draws a line under any text/data in the defined area. If you also select "Reverse video," the underline color/brightness is reversed.

5. Select the `Modify` action list option.

The **Add Highlights** window closes.

Defining stationary (no-scroll) areas

Many standard reports are bigger than the available space on your terminal. As a result, when you display the report, you must scroll the window to see all the data, either down or to the side. However, you will notice that some report text or data fields do not move. These stationary, or no-scroll, parts of the report are usually column headers, column totals, and row identifiers.

In the following report illustration, the shaded areas are no-scroll areas:

Sample no-scroll areas



No-scroll areas apply only to reports that you are viewing on your terminal. If you display the report on your terminal, almost half of the right side of the report is hidden from view. Thus, you have to scroll to the right and data on the left is removed off the left side of the window. But while you scroll the data, the agent on the left remain in place so you always know which agent the data is for.

And if you have more than 20 agents listed in the report, some rows of data at the bottom will be hidden. Thus, you have to scroll down to see the rows of data past 20 agents. Meanwhile, data at the top scrolls off the top of the window. However, the report title, the column headers, and the `Totals:` row stay in place.

In your custom report, you may want to assign areas as no-scroll areas. You can assign one no-scroll area on the left side of the report and one no-scroll area at the top of the report.

To define no-scroll areas:

1. On Screen Painter, select `Upper/left no-scroll`.

The cursor returns to the upper left corner of the report. The following message is displayed on the status line: `Move the cursor down and right. Press RETURN when finished.`

2. To define a no-scroll area at the top, move the cursor down the wanted number of lines. To define a no-scroll area on the left, move the cursor to the right.

CMS highlights the no-scroll area as you move the cursor.

3. Press **Enter** to save the no-scroll area.

Changing a no-scroll area

To change a no-scroll area:

1. On Screen Painter, select `Upper/left no-scroll`.

The cursor returns to a position at the edge of the top and/or left no-scroll areas. The following message is displayed on the status line: `Move the cursor down and right. Press RETURN when finished.`

2. To change a no-scroll area at the top, move the cursor up or down the wanted number of lines. To change a no-scroll area on the left, move the cursor to the right or left.

As you move the cursor, CMS highlights the no-scroll area that you add or removes the highlight for the no-scroll area you delete.

3. Press **Enter** to save your changes.

Saving the report design

Before you exit Screen Painter, you must save your report design. If you do not save the design, all the work you did since accessing Screen Painter will be lost, *including* any work you did with secondary windows. You must save the design, even if you successfully test it with the `Test design` action list option.

You cannot save a design that does not test successfully because there are errors. *Do not* run a report design until you have corrected any errors and it tests successfully.

To save your report design:

1. On Screen Painter, select `Save design`.

`Successful` may be displayed on Screen Painter status line.

If you did not define all necessary elements of the design, the **Save Design** window is displayed with a list of errors.

When there are errors in the design, certain items may be deleted from the design and the next time the design is read into Screen Painter, these elements will not be displayed.

2. If CMS displays errors, do the following:

- Note the errors
- Press the **Exit** screen-labeled key
- Fix the errors on Screen Painter

Note:

If you exit Screen Painter without first fixing errors found in the **Save Design** window, then the report items associated with the errors will be deleted from Screen Painter.

Note:

After you save your design, you can continue working on the design, test it, or exit Screen Painter and continue working on the design at a later time.

Testing the report design

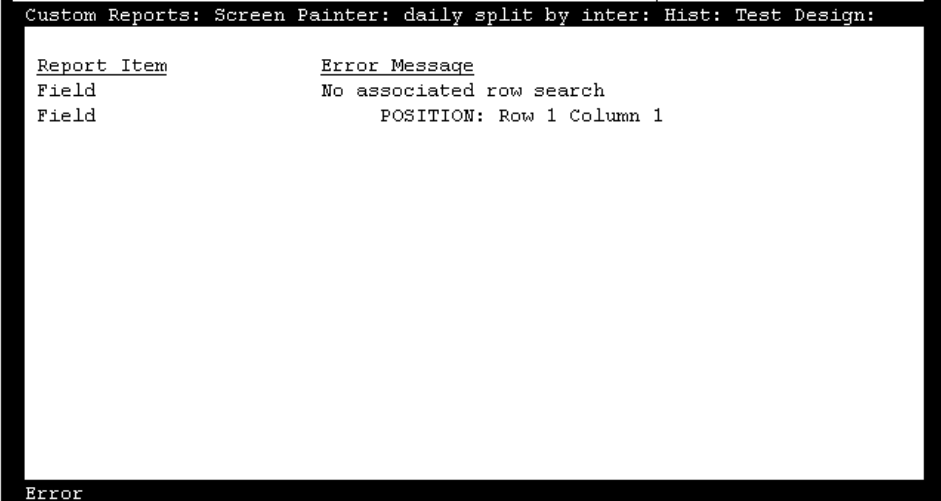
Instead of running a report and having it fail because you had errors in your design, you can test the design directly from Screen Painter. Testing your report design regularly can save you time.

To test a report design:

1. On Screen Painter, select `Test design`.

If your design has Phase One errors, a window listing those errors is displayed. See [Test Design Error Messages](#) on page 130 for a description of these errors. If your design has no Phase One errors, the **Test Design** window is displayed with a facsimile of the **Report Input** window.

Sample Test Design window - Phase one errors



The screenshot shows a window titled "Custom Reports: Screen Painter: daily split by inter: Hist: Test Design:". Inside the window, there is a table with two columns: "Report Item" and "Error Message". The table contains two rows of data. The first row shows "Field" under "Report Item" and "No associated row search" under "Error Message". The second row shows "Field" under "Report Item" and "POSITION: Row 1 Column 1" under "Error Message". At the bottom left of the window, the word "Error" is displayed.

<u>Report Item</u>	<u>Error Message</u>
Field	No associated row search
Field	POSITION: Row 1 Column 1

Error

Completing your custom report

Sample Test Design input window

```
Custom Reports: Screen Painter: daily split by inter: Hist: Test Design:
Split/Skill: _____ Test select
Date: _____
Interval(s)  ___
              ___
              ___
              ___

Report destination (Select one):
<x> Terminal
<_> Printer, Printer name: _____
<_> File,
    File name: _____
                _____
```

2. Complete the fields on the **Report Input** window, and select `Test select`.

A list of the row search conditions is displayed (see the following figure), with a list of any Phase Two errors. See [Test Design Error Messages](#) on page 130 for a description of these errors.

If you had Phase One errors, fix the errors indicated, and go back to Step 1.

If you have no errors, the `No errors found` message is displayed in the window:

Sample Test Design input window

```
Custom Reports: Screen Painter: daily split by inter: Hist: Test Design:

Select                                     Results
select dagent.LOGID , (dagent.I_ACWTIME    No errors found
+dagent.I_DA_ACWTIME) , dagent.I_RINGTI
ME , dagent.I_OTHERTIME , dagent.I_AUXTI
ME , dagent.I_AVAALLTIME , dagent.I_STAFF
TIME , dagent.ASSISTS , dagent.TRANSFERR
ED , dagent.HOLDCALLS , dagent.HOLDTIME/
dagent.HOLDCALLS  from dagent where ROW
_DATE = 35279 and SPLIT = 1 and ACD = 1
order by LOGID

select sum((dagent.I_ACWTIME+dagent.I_D   No errors found
A_ACWTIME) ) , sum(dagent.I_RINGTIME) ,
sum(dagent.I_OTHERTIME) , sum(dagent.I_A
UXTIME) , sum(dagent.I_AVAALLTIME) , sum(
dagent.I_STAFFTIME) , sum(dagent.ASSISTS
) , sum(dagent.TRANSFERRED) , sum(dagent
Successful                                22x75
```

3. If you have errors, do the following:

- Note the errors

- Press the **Exit** screen-labeled key
- Fix any errors
- Select `Test design` again
- Repeat Steps 1 and 2

Note:

For real-time reports the link to the switch must be up for the current ACD, and there must be data for the particular item you are selecting, such as Split 5.

If you have no errors, press the **Exit** screen-labeled key and continue with your design, or save the design and exit Screen Painter.

Test Design Error Messages

Test design error messages are divided into three categories:

- Phase 1 Error Messages (detected before the sample input screen is displayed)
- Phase 2 Historical Error Messages (require the sample input before occurring)
- Phase 2 Real-Time Error Messages (require the sample input before occurring).

Phase 1 error messages

The following table lists the phase 1 error messages alphabetically and includes a cause and a recommended solution for each message.

Phase 1 error messages table

Message:	<code>\$<variable name> not defined</code>
Cause:	The “where” clause contains a variable that is not defined.
Solution:	Define the variable using the define input action or remove the variable from the row search criteria.

Message:	<code>Cannot mix aggregates and nonaggregates in the select</code>
Cause:	You specified both aggregate columns and nonaggregate columns in the same select for real-time reports.
Solution:	Create two identical row search conditions and apply one to the aggregate columns and one to the nonaggregate columns.

Message:	<code>Cannot use the SYN function for order by</code>
Cause:	You tried to use a synonym to sort the output.
Solution:	Remove the SYN aggregate from the <code>Order by</code> field.

Message:	CMS system error - Check the error log
Cause:	A CMS system error occurred while the select executed. The error should be recorded in the error log.
Solution:	<p>Check the error in the error log to initiate corrective action.</p> <p>⚠ CAUTION:</p> <p>If you run a report that merges data from two tables (particularly tables with large amounts of data) into a single field and your <code>Select rows where</code> statement is not specific enough, you may get this error message. The specific cause may be that the number of selected rows is very large, and CMS does not have enough space to create temporary files. If this is the case, you should add additional "where" clauses to the row search criteria.</p>

Message:	CMS system error - Data collection off
Cause:	Avaya CMS cannot test the row search criteria while data collection is off.
Solution:	Turn data collection on and rerun test of report design.

Message:	CMS system error - Too much data retrieved - try a more restrictive search
Cause:	Too much data was retrieved with the given row search criteria.
Solution:	Add more conditions to the row search criteria so that fewer rows are retrieved.

Message:	CMS system error - Updating translations
Cause:	CMS cannot test the row search criteria while CMS is receiving the set of configuration data from the switch.
Solution:	Wait until configuration data has been sent. Then rerun the test of report design.

Completing your custom report

Message:	keyword AVG invalid in where clause
Cause:	You used the keyword AVG in row search criteria.
Solution:	Remove the keyword AVG from the row search criteria.

Message:	keyword BETWEEN invalid for real-time
Cause:	You used the keyword BETWEEN in row search criteria for a real-time report.
Solution:	Remove the keyword BETWEEN from the row search criteria.

Message:	keyword COUNT invalid in where clause
Cause:	You used the keyword COUNT in row search criteria.
Solution:	Remove the keyword COUNT from the row search criteria.

Message:	keyword MAX invalid in where clause.
Cause:	You used the keyword MAX in row search criteria.
Solution:	Remove the keyword MAX from the row search criteria.

Message:	keyword MIN invalid in where clause.
Cause:	You used the keyword MIN in row search criteria.
Solution:	Remove the keyword MIN from the row search criteria.

Message:	keyword SUM invalid in where clause.
Cause:	You used the keyword SUM in row search criteria.
Solution:	Remove the keyword SUM from the row search criteria.

Message:	keyword SYN invalid in where clause.
Cause:	You used the keyword SYN in row search criteria.
Solution:	Remove the keyword SYN from the row search criteria.

Phase 2 historical error codes

Phase 2 historical error codes contains the INFORMIX error codes most likely to be displayed for CMS historical reports. Each code includes a description of the error and the recommended corrective action.

These errors are reported in the following format:

INFORMIX error: <error number>

In addition, a circumflex (^) may be displayed in the listed Select statements to mark the location of an error.

Note:

If an error code is displayed that is not listed in this document, see the *INFORMIX SQL Relational Database Management System Reference Guide for INFORMIX SQL Version 4.10*.

Phase 2 historical error codes table

—201	<p>Description: A syntax error has occurred.</p> <p>Solution: Check that you have not misspelled an RDSQL statement, placed key words out of sequence, or included an INFORMIX-SQL reserved word in your query.</p>
—202	<p>Description: An illegal character has been found in the statement.</p> <p>Solution: Remove the illegal character (often a nonprintable control character) and resubmit the statement</p>
—203	<p>Description: An illegal integer has been found in the statement.</p> <p>Solution: Integers must be whole numbers from -2,147,483,647 to +2,147,483,647. Verify that you have not included a number with a fractional portion or a number outside the acceptable range. Verify also that you have not inadvertently entered a letter in place of a number (for example, 125p3 instead of 12503).</p>
—204	<p>Description: An illegal floating-point number has been found in the statement.</p> <p>Solution: Verify that you have not inadvertently entered a letter in place of a number (for example, 125p3 instead of 125.03).</p>

Completing your custom report

—206	<p>Description: The specified table name is not in the database.</p> <p>Solution: Verify the spelling of the table name in your statement.</p>
—217	<p>Description: Column <i>column-name</i> not found in any table in the query.</p> <p>Solution: Correct the spelling of the database item and ensure that the item exists in the database table. Verify the presence of required commas and quotes.</p>
—219	<p>Description: Wildcard matching may not be used with noncharacter types.</p> <p>Solution: Wildcards (*, ?) and characters enclosed in brackets [] can be used only with CHAR data types. Check the data type for the offending column.</p>
—220	<p>Description: There is no FROM clause in the query.</p> <p>Solution: You must include a FROM clause in the query. Check that you do not have an illegal character (\$, #, &, e-mail, or a CONTROL character) in the line prior to the FROM keyword.</p>
—223	<p>Description: Duplicate table name <i>table-name</i> in the FROM clause.</p> <p>Solution: Remove the redundant table name from the statement or use an alias to rename one of the tables.</p>
—228	<p>Description: cannot have negative characters.</p> <p>Solution: Check that you have not included a negative CHAR data type (for example, -a or -p) in your statement.</p>
—278	<p>Description: Too many ORDER BY columns; maximum is eight.</p> <p>Solution: Reduce the number of columns included in the ORDER BY clause to eight or fewer.</p>
—280	<p>Description: Total size of ORDER BY columns exceeds 120 bytes.</p> <p>Solution: Reduce the number of columns included in the ORDER BY clause so that the total number of characters is fewer than or equal to 120 (perhaps delete a CHAR column of 30 or more characters).</p>
—282	<p>Description: Found a quote for which there is no matching quote.</p>

	<p>Solution: Verify that all quoted strings are properly terminated with a quote.</p>
—284	<p>Description: A subquery has not returned exactly one value.</p> <p>Solution: Check data for the subquery. Restructure the subquery by adding more components in the WHERE clause so that only one value is returned.</p>
—297	<p>Description: The SELECT list may not contain a subquery.</p> <p>Solution: Remove the subquery from the SELECT list in the statement.</p>
—300	<p>Description: There are too many GROUP BY columns (maximum is eight).</p> <p>Solution: Reduce to eight or fewer the number of nonaggregate database items that are assigned the same row search ID as that assigned to an aggregate function.</p>
—301	<p>Description: The total size of the GROUP BY columns exceeds 120 characters.</p> <p>Solution: The total number of characters in all columns listed in the GROUP BY list exceeds 120 characters. Reduce the number of nonaggregate database items that are assigned to a row search ID that is also assigned to an aggregate function.</p>
—303	<p>Description: Expression mixes columns with aggregates.</p> <p>Solution: Restructure your query so that columns and aggregates are not included in the same expression.</p>
—309	<p>Description: ORDER BY database item must be included in a report field to which the row search ID is assigned.</p> <p>Solution: Check that database items included in the ORDER BY clause is displayed in the report and are assigned to row search ID.</p>
—324	<p>Description: Ambiguous database item.</p> <p>Solution: A database item in your row search criteria exists in more than one table also cited in your row search criteria. Prepend each database item with the appropriate table name.</p>
—352	<p>Description: Database item not found.</p> <p>Solution: Verify the spelling of the database item.</p>
—367	<p>Description: Sums and averages cannot be computed for character columns.</p>

Completing your custom report

	<p>Solution: Verify that you have not included a database item of a string type (VDN, LOGID, e-mail) in the aggregate function statement.</p>
—522	<p>Description: A database item in a field/bar does not exist in the table specified in the field's row search ID.</p> <p>Solution: Check the Select statement that has the error. The database item that does not exist in the table will be marked with a circumflex (^). Change or delete the database item or change the table in the field's row search ID.</p>
—809	<p>Description: RDSQL syntax error has occurred.</p> <p>Solution: Check that you have not misspelled an RDSQL statement, placed key words out of sequence, or included an <i>INFORMIX</i> SQL reserved word in your query.</p>
—1202	<p>Description: An attempt was made to divide by zero.</p> <p>Solution: Check that you are not attempting to divide a numerical column type by a character column type (for example. 16/Jones) or that the value of the divisor does not equal zero.</p>
—1203	<p>Description: Values used in a MATCH must both be type CHARACTER.</p> <p>Solution: Check that the values included in your MATCH condition are both CHAR types. Use an alternate comparison condition for nonCHAR types.</p>
—1204	<p>Description: Invalid year in date.</p> <p>Solution: Acceptable years are 0001 to 9999. If two digits are used, RDSQL assumes the year is 19xx. Check the value entered in the date field.</p>
—1205	<p>Description: Invalid month in date.</p> <p>Solution: Months must be represented as the number of the month (1 through 12). Check the value entered in the date field.</p>
—1206	<p>Description: Invalid day in date.</p> <p>Solution: Days must be represented as the number of the day (01 through 31). Check the value entered in the date field.</p>
—1226	<p>Description: Decimal or money value exceeds maximum precision.</p> <p>Solution: Increase the precision of the DECIMAL or MONEY field.</p>

Phase 2 real-time error codes

Phase 2 real-time error codes contains the real-time Database Manager error codes. Each code includes a description of the error and a recommended solution.

These errors are reported in the following format:

CMS Database Manager error: <error number>

In addition, a circumflex (^) is displayed in the listed Select statements to mark the location of an error.

Phase 2 real-time error codes table

—1	<p>Description: A syntax error has occurred.</p> <p>Solution: Check the select for misspelled keywords or keywords that are out of order.</p>
—2	<p>Description: An illegal character has been found in the select statement.</p> <p>Solution: Remove the illegal character (often a nonprintable control character).</p>
—3	<p>Description: The specified table name is invalid.</p> <p>Solution: Check the spelling of the table name and check for required commas in the <code>From tables</code> field.</p>
—4	<p>Description: An invalid column has been specified (it is not found in any of the specified tables).</p> <p>Solution: Check the spelling of the column names.</p>
—5	<p>Description: A mixture of aggregates and nonaggregates are being selected, and this is not allowed in real-time reports. (This error code can also mean mismatched types in comparison.)</p> <p>Solution: Create two identical row search conditions, and apply one to the aggregate columns and one to the nonaggregate columns.</p>
—6	<p>Description: Bad column in the order by clause.</p> <p>Solution: Verify that the column name in the order by clause is spelled correctly and that it is being selected by one of the fields included in this row search.</p>
—7	<p>Description: Bad index in order by clause.</p>

Completing your custom report

	<p>Solution: Order by clause must have a column in the “select” clause or a number that indicates a position of the column in the “select” clause.</p>
—8	<p>Description: Bad argument given to an aggregate function. For example, you cannot take the SUM or AVG of a character column.</p> <p>Solution: Check the arguments for the aggregates and be sure that data type is appropriate.</p>
—9	<p>Description: In the “Select” of one of the fields associated with this row search, an action is being performed with the wrong data types. For example, you cannot use arithmetic with character fields.</p> <p>Solution: Check for these types of errors in the fields associated with the row search.</p>
—10	<p>Description: Error with subquery.</p> <p>Solution: There may be a subquery in the “where” clause that CMS does not support. Check the subqueries. This typically happens with an Agent Group report (a “select” embedded within a “select”).</p>
—11	<p>Description: CMS system error.</p> <p>Solution: Check the error logs.</p>
—12	<p>Description: Memory allocation error.</p> <p>Solution: Check the error logs.</p>
—13	<p>Description: Query cannot select more than one table.</p> <p>Solution: Check the error logs.</p>

Running Custom Reports

You run custom reports using steps similar to steps you use to run standard reports. However, you run custom reports from the `Custom Reports Main Menu` option. Also, the **Report Input** window shows input fields you defined on the **Define Input** window for the report. For real-time reports, the **Report Input** window also automatically shows a `Refresh rate in seconds` field. For historical reports, the **Report Input** window automatically shows report destination fields.

To run Custom Reports if Global Dictionary/ACD Groups is not authorized or when the current ACD is set to non-group ACD:

1. Select the `Custom Reports Main Menu` option.

The Custom Reports submenu is displayed.

2. Select either the `Real-time` or `Historical` submenu option.

A submenu of custom reports, either real-time or historical, is displayed. The list includes all existing global reports and your private reports.

3. Select the wanted report.

The **Report Input** window for the report is displayed.

Note:

If more than 20 custom reports are available, you may need to scroll the submenu to find the report you want. Scroll down with the down arrow (↓). Scroll up with the up arrow (↑).

4. Complete the fields of the **Report Input** window, and select `Run`.

`Working` is displayed on the **Report Input** window status line. If the destination is the terminal, the report is displayed. If the destination is a printer or file, `Successful` is displayed.

To run Custom Reports if Global Dictionary/ACD Groups *is authorized*:

1. Select the `Custom Reports Main Menu` option.

The Custom Reports submenu is displayed.

2. Select either the `Real-time` or `Historical` submenu option.

A submenu of custom reports, either real-time or historical, is displayed. Each list, real-time or historical, includes a submenu that lists the reports. The lists display the reports that meet the following conditions:

- When you defined a report as `Single ACD Only`:
 - If you defined a report as a `Single ACD Only` and your current ACD is set to single ACD, the ACD report will be displayed in the list.

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- If you defined a report as a *Single ACD Only* and your current ACD is set to group ACD, the ACD report will not be displayed in the list.
 - When you defined a report as *ACD Group Only*:
 - If you defined a report as *ACD Group Only* and your current ACD is set to single ACD, the ACD report will not be displayed in the list.
 - If you defined a report as a *ACD Group Only* and your current ACD is set to group ACD, the ACD report will be displayed in the list.
 - When you defined a report as *Both Single ACD and Group ACD*:
 - If you defined a report as a *Both Single ACD and Group ACD* and your current ACD is set to single ACD, the ACD report will be displayed in the list.
 - If you defined a report as a *Both Single ACD and Group ACD* and your current ACD is set to group ACD, the ACD report will be displayed in the list.
3. Select the wanted report.

The **Report Input** window for the report is displayed.

Note:

If more than 20 custom reports are available, you may need to scroll the submenu to find the report you want. Scroll down with the down arrow (↓). Scroll up with the up arrow (↑).

4. Complete the fields of the **Report Input** window, and select `Run`.

`Working` is displayed on the **Report Input** window status line. If the destination is the terminal, the report is displayed. If the destination is a printer or file, `Successful` is displayed.

Note:

If your custom report is not listed, try changing your current ACD. For example, if you cannot find a custom report that you previously defined as a *ACD Group Only*, change the current ACD to a group ACD. Then your report will be listed.

■ ■ ■ ■ ■ ■

Advanced report design

Creating a custom data table

The section of the Avaya Call Management System (CMS) database that stores historical ACD data uses the INFORMIX SQL (ISQL) Relational Database Management System. All historical ACD data available for use in custom reports is stored in tables in the CMS database. You can access INFORMIX and the CMS database to build your own data tables to contain financial information, schedule information, product or service information, or any other type of information you want. You can then design historical custom reports to display the data, with or without ACD data.

You must choose the appropriate procedure to use depending on your CMS version:

If your CMS version is:	Then use the procedure:
R3V8 or earlier	Access the CMS database in INFORMIX SE on page 142
R3V9 or later	Contact Avaya Professional Services at: 1-877-927-6662

Note:

Instructions on the use of INFORMIX SQL are included in this document for convenience. These instructions are not intended as a substitute for the INFORMIX documentation. Except where noted, the standard rules of INFORMIX SQL apply, as documented in *INFORMIX-SQL Relational Database Management System User Guide* for INFORMIX SQL. If you purchased ISQL with CMS, the guide was delivered with your CMS software and documents.

 **CAUTION:**

CMS does not automatically check the database for disk space used by data in custom tables. As a result, you can inadvertently fill up your disk with custom data. When this happens, you can lose or damage custom data and ACD data. Therefore, if you create custom data tables, be careful to check the amount of disk space available regularly. See the “System Setup” chapter in the *CMS R3V11 Administration*, 585-215-515, document for more information on disk storage.

 **CAUTION:**

If you back up data using the **Maintenance — Backup Data** window, the data stored in custom INFORMIX tables will be saved, but the custom table definitions (table names, column names, data types, and so on) will not be saved. As a result, if you lose the custom table definitions because of a disk failure, power hit, or some other reason, you cannot restore these table definitions using the **Backup Data** window. Because the custom table definitions will be lost, you will not be able to restore the custom data that was saved using the **Backup Data** window.

For this reason, it is recommended that you make your own backups of the custom table definitions using the UNIX system/Solaris system. If you lose INFORMIX table definitions and/or custom data, you can restore the table definitions using UNIX, then restore the custom data. See the “UNIX System/Solaris System” chapter in *Avaya CMS Administration*, 585-215-515, for procedures on backing up data via the UNIX system.

To define custom data tables, perform the following steps in the order indicated:

1. [Access the CMS database in INFORMIX SE](#) on page 142
2. [Build the table](#) on page 143
3. [Add data to the table](#) on page 149

Creating a custom data table also includes the following topics:

- [Modifying a table](#) on page 152
- [Changing data in a table](#) on page 153

Access the CMS database in INFORMIX SE

To access the CMS database in INFORMIX:

1. Press the **Commands** screen-labeled key.

The **Commands** submenu is displayed.

2. Select the `UNIX` option.

All windows and menus close, and the UNIX prompt is displayed.

3. At the `$` prompt, type the following command:

```
DBPATH=/cms/db/inf
```

4. Press **Enter**.

5. Type:

```
export DBPATH
```

6. Press **Enter**.

The UNIX prompt is again displayed.

7. At the `$` prompt, type the following pathname:

```
/usr/informix/bin/isql
```

8. Press **Enter**.

The INFORMIX logo is displayed, followed by the **INFORMIX Main Menu**:

```
INFORMIX-SQL:  Form Report Query-language User-menu
Run, Modify, Create, or Drop a form.

----- Press CTRL-W for Help -----
```

Build the table

In INFORMIX, you can select menu items in one of two ways:

- Use the arrow keys (`→` or `←`) to move the cursor to the menu option. Then, press **Enter**.
- Type the first character of the menu option.

Note:

To escape from a step and go back to the previous step, press **Del**, depending on your keyboard.

Advanced report design

To build the table:

1. At the **INFORMIX Main Menu**, select **Table**.

The system displays the **Select Database** screen.

```
SELECT DATABASE >>
Choose a database with the Arrow Keys, or enter name, then pr
----- cms ----- Press CTRL-W for Help -----
CMS
```

2. Type `cms`, and press **Enter**.

The system displays the **Table** menu:

```
TABLE:      Create Alter Infor Drop Exit
Create a new table.
----- cms ----- Press CTRL-W for Help -----
```

3. Select **Create**.

The system displays **Create Table** screen:

```
CREATE TABLE >>
Enter the table name you wish to create with the schema editor.
----- cms ----- Press CTRL-W for Help -----
```

4. Type a name of up to 18 characters for the table you are building. The table name must begin with `c_` (a lowercase `c` and an underscore). For example, type `c_workcode`.

5. Press **Enter**.

The system displays the **Create Table** menu with a highlighted box beneath "Column Name."

```
CREATE TABLE c_workcode:      Add Modify Drop Screen Exit
Adds columns to the table above the line with the highlight.
----- Page 1 of 1 ----- cms ----- Press CTRL-W for Help -----

Column Name                    Type          Length  Index  Nulls
.....
.
.....
```


6. Select **Add**.

The system displays the **Add Name** screen:

```

ADD NAME >>
Enter column name. RETURN adds it. INTERRUPT returns to CREATE/ALTER menu.

----- Page 1 of 1 ----- cms ----- Press CTRL-W for Help -----

Column Name                                Type          Length  Index  Nulls
.....
.
.....
    
```

7. Type a name of up to 18 characters for the column you are adding. If needed you can use names of standard CMS database items only if you enter the name in lowercase letters in the Dictionary subsystem. The **Dictionary: Custom Items** window accepts only lowercase letters for custom item names that are the same as standard database items.

8. Press **Enter**.

The system displays the **Add Type** screen:

```

ADD TYPE c_workcode : Char Number Serial Date Money date-Time Interval
Prints any combination of letters, numbers, and punctuation.

----- Page 1 of 1 ----- cms ----- Press CTRL-W for Help -----

Column Name                                Type          Length  Index  Nulls
cwc                                         .....
.
.....
    
```

9. Select the type of data that the field will store.

Data types table

Char	Character (CHAR) columns store any combination of letters, numbers, and symbols.
Number	Numeric columns store numbers. The numbers stored can be one of the following five types: Decimal. A decimal is a number that contains a decimal point. Smallint. A Smallint column stores integers from -32,767 to +32,767. Integer. An Integer column stores integers from -2,147,483,647 to +2,147,483,647. Smallfloat. A Smallfloat column stores floating point numbers with up to seven significant digits. Float. A Float column stores floating point numbers with up to 14 significant digits.
Serial	Serial columns store a unique sequence number in each row of the table.
Date	Date columns store calendar dates with the format mm/dd/yy.
date-Time	Not supported by CMS Custom Reports. However, it is supported by INFORMIX. You must type T in order to select date-Time. A date-Time column allows you to specify a <i>database</i> qualifier of year, month, day, hour, or minute.
Interval	Not supported by CMS Custom Reports. However, it is supported by INFORMIX. An interval column allows you to specify an interval qualifier of year, month, day, hour, or minute.
Money	Not supported by CMS Custom Reports. However, it is supported by INFORMIX. If your data will be dollars and cents, you should use Decimal .

Note:

The additional prompts that are displayed differ depending on your selected data type.

- Complete the definition of the column by responding to the additional prompts that are displayed. Which prompts are displayed and in what order depends upon the data type you selected. The table below lists the possible prompts.

When you have responded to all of the prompts for the column, a new highlighted line is displayed in the table, and the `Add Name` field is again displayed at the top of the screen.

- Repeat steps 6 through 10 for each column you want to add.

Prompts for INFORMIX data types

Prompt	What to Do
PRECISION	Select either <code>Smallfloat</code> or <code>Float</code> . <code>PRECISION</code> is displayed for the <code>Float</code> type.
INDEX	Enter <code>y</code> if you want to make the column an index. <code>INDEX</code> is displayed for all types except <code>Serial</code> . A column with the <code>Serial</code> data type automatically becomes an index. Make the column an index only if the column will be used for row searches and the table will contain more than 200 rows of data.
DUPLICATES	Enter <code>y</code> if you want to allow the column to contain the same value in different rows. For example, if the column were to contain the last names of people, you would probably want to allow multiple entries (because, for example, you might have many different people with the last name of Smith). However, if you were creating a column of social security numbers, then you would enter <code>n</code> to prevent multiple entries of the same number. <code>DUPLICATES</code> is displayed for all types except <code>Serial</code> . Note: The <code>DUPLICATES</code> prompt is displayed if you answer yes to an <code>INDEX</code> prompt.
NULLS	Enter <code>y</code> if you want to allow the column to have rows with no values (versus requiring values). For example, if your table is a list of customer data and the column you are adding is for the customer's employer, you might want to allow the <code>NULL</code> value for the case where the person is unemployed. Enter <code>n</code> if you want to require a value in each row. <code>NULLS</code> is displayed for all types except <code>Serial</code> .

Advanced report design

Prompt	What to Do
ADD STARTING NUMBER	Enter the number that INFORMIX should use as a starting point for numbering rows. INFORMIX identifies the first row in the table with the number you enter. As each new row of data is added to the table, INFORMIX assigns that row the next number in the sequence. ADD STARTING NUMBER is displayed only for Serial.
NUMERIC	Type the first letter of the numeric you want: Integer, Smallint, Decimal, or Float.
LENGTH	Enter the number of digits the column will store for a single piece of data. LENGTH is displayed for Char and Decimal types
SCALE	Enter the number of digits that should be displayed to the right of the decimal point. The decimal digits, but not the decimal point, occupy part of the field length you specified in the LENGTH field. SCALE is displayed after the LENGTH for Decimal.

12. When you have added all columns, press **Enter** until the **Create Table** screen is displayed.

The system displays the Create Table menu:

```
ALTER TABLE c_workcode :   Add  Modify  Drop  Screen  Exit
Adds columns to the table above the line with the highlight.

----- Page 1 of 1 ----- cms ----- Press CTRL-W for Help -----

Column Name                Type           Length  Index  Nulls
cwc                         Char           16      Unique No
price                       Decimal        8.2                    No
.....
.
.....
```

13. Select **Exit**.

The `Build-new-table` menu is displayed.

```

Exit c_workcode:      Build-new-table  Discard-new-table
Builds a new table and returns to the Table Menu.

----- Page 1 of 1 ----- cms ----- Press CTRL-W for Help -----

Column Name          Type          Length  Index  Nulls
cwc                   Char           16    Unique  No
price                 Decimal         8.2           No
    
```

14. Select `Build-new-table`.

The `Table` menu is displayed. If no errors are found, then your table has been added. If errors are found, then you must go back to the `Alter Table` screen and correct these errors. You must then repeat steps 11 and 12 until the `Table` menu is displayed.

15. Select **Exit** to return to the **INFORMIX Main Menu**.

The **INFORMIX Main Menu** is displayed.

Add data to the table

To help you add data to the table, you must first create a data entry form associated with your table. For more information about forms, see “Creating Your Own Forms” in the *INFORMIX-SQL Relational Database Management System User Guide*. For more information about adding data, see “Entering Data,” in the same document.

To add data to the table:

1. On the **Main Menu**, select `FORM`.

The system displays the `FORM` menu:

```

FORM:      Run  Modify  Generate  New  Compile  Drop  Exit
Use a form to enter data or query a database.

----- cms ----- Press CTRL-W for Help -----
    
```

Advanced report design

2. Select GENERATE.

The system displays the GENERATE FORM screen:

```
GENERATE FORM >>
Enter the name you want to assign to the form, then press Return.

----- cms ----- Press CTRL-W for Help -----
```

3. Enter a name (up to ten characters) for the form associated with your table. (If possible, use the same name as the table you created.) Press **Enter**.

The system displays the CHOOSE TABLE screen:

```
CHOOSE TABLE >> c_workcode
Choose the table to be used in the default form.

----- cms ----- Press CTRL-W for Help -----

workcode
```

4. Enter the name of the table you want to enter data for, and press **Enter**.

The system displays the Table-selection-complete menu:

```
GENERATE FORM:   Table-selection-complete   Select-more-tables   Exit
Continue creating a default form with the selected tables.

----- cms ----- Press CTRL-W for Help -----
```

5. Select Table-selection-complete.

The screen form specification was successfully compiled is displayed when processing of the form is complete, then the FORM menu is displayed.

6. Select Run.

The system displays the **RUN FORM** window and the table you selected:

```
RUN FORM >>
Choose a form with Arrow keys, or enter a name, and press Return.

----- cms ----- Press CTRL-W for Help -----

workcode
```

7. Press **Enter**.

The system displays the **PERFORM** menu:

```

PERFORM: Query Next Previous View Add Update Remove Table Screen...
Searches the active database table.                ** 1: c_workcode table**
cwc          [                ]
price       [                ]
    
```

8. Select **Add**.

The cursor moves to the first column in the table.

9. Enter data for the first column of the table, and press **Enter**.

The cursor moves to the next column.

Note:

If you get an error message, you may have entered data in the wrong format.

10. Repeat Step 9 for each column.

11. Press **Esc** to save the row of data.

Row added is displayed. The row of data has been added to the table and saved.

12. Repeat Steps 8 through 11 for each row of data you want to add.

13. Type **e** (for Exit) three times to exit **INFORMIX**.

The system displays the **UNIX** prompt.

14. Press **Ctrl + b**.

The **CMS** windows and menus that were displayed before you accessed **UNIX** are displayed again.

Note:

To design a custom report that uses data from the table, you must also enter the column names (database items) in the **Dictionary: Database Item: Custom Items** window.

 **CAUTION:**

CMS does not automatically check the database for disk space used by data in custom tables. As a result, you can inadvertently fill up your disk with custom data. When this happens, you can lose or damage custom data and **ACD** data. Therefore, if you create custom data tables, be careful to regularly check the amount of disk space available. See *Avaya CMS R3V11 Administration*, 585-215-515, for more information on disk storage.

Modifying a table

To add, change, or delete columns in an existing table:

1. On the **INFORMIX Main Menu**, select `Table`.

The system displays the `Select Database` screen.

2. Press **Enter**.

The system displays the `TABLE` menu.

3. Select `Alter`.

The system displays the `ALTER TABLE` screen. A list of existing tables is also displayed.

4. Enter the name of the table you want to change, and press **Enter**.

The system displays the **ALTER TABLE** menu.

Adding a column

To add a column:

1. Select `Add` to add a new column.

The system displays the **ADD NAME** screen.

2. Complete the fields for the new column.

3. Press **Del** when you have finished adding the columns, and go to [Deleting a column](#) on page 153.

The system displays the **ALTER TABLE** menu.

Changing a column

To change a column:

1. Select `Modify`

The system displays the **MODIFY NAME** screen.

2. Use the arrow keys to select a field to change.

3. Press **Del** when you have finished changing the columns, and go to Step 3 of "[Deleting a column](#) on page 153" in this section.

The system displays the **ALTER TABLE** menu.

Deleting a column

To delete a column:

1. To delete a column, use the arrow keys to move the cursor to the column. Select `Drop`.
The system displays the `REMOVE` screen.
2. Select `YES` to remove the column.
The column is removed, and the system displays the `ALTER TABLE` menu.
3. At the `ALTER TABLE` menu, select **Exit** when you are finished changing the table.
The system displays the `Build-new-table` menu.
4. Select `Build-new-table` to save your changes. Select `Discard-new-table` to ignore your changes.

Note:

If you change columns in a table, then you may have to rebuild the form assigned to the table.

Changing data in a table

To add, change, or delete data in an existing table:

1. On the **INFORMIX Main Menu**, select `Form`.
The system displays the **FORM** menu.
2. Select `Run`.
The system displays the `RUN FORM` screen and a list of forms.
3. Enter the name of a form, and press **Enter**.
The system displays the **PERFORM** menu.

Adding rows of data to a table

To add rows of data to a table:

1. Select `Add`.
The system displays the table's column fields with the cursor in the first field.
2. Enter data in the fields. Use **Enter** or **Tab** to move between fields.
3. Press **Esc** after you have added a row of data.
The system displays the **PERFORM** menu. The message `Row added` is displayed.

Changing rows of data in a table

To change rows of data in a table:

1. To change data in a row, display the data you want to change.
2. Select `Query`.
The system displays the table's column fields with the cursor resting in the first field.
3. Enter data in a column you want to search on, and press **Esc**.
The column fields fill with data for that row.
4. Select `Update`, and press **Enter**.
The system displays the `Update` screen.
5. Use the arrow keys to move the cursor to the data you want to change. Overtyping the data, and press **Esc**.
The system displays the **PERFORM** menu again. The message `This row has been changed` is displayed.

Deleting rows of data from a table

To delete rows of data from a table:

1. To change data in a row, display the data you want to change.
To do this, select `Query`.
The system displays the table's column fields with the cursor resting in the first field.
2. Enter data in a column you want to search on, and press **Esc**.
Press **Esc**.
The system displays the **PERFORM** menu.
3. Select `Remove`.
The system displays the **REMOVE ROW** screen.
4. Select `YES` to delete the row.
The row of data is removed. The message `Row deleted` is displayed.

Including Forecast data in a Custom Report

Forecasting is a separately purchased feature of CMS. If you have not purchased Forecasting, you cannot run forecasts and, therefore, cannot include forecast data in a custom report.

 **Important:**

For historical custom reports only, you can design reports that include current day forecast data. Only current day forecast data is available for custom reports because it is the only forecast data saved in the CMS database.

The steps for creating a custom report with forecast data are almost identical to the steps for creating any other custom report. As with any other type of data, you must specify the database items, the tables, the row search conditions, and the report input fields.

However, there are two differences:

- You *cannot* copy a standard current day forecast report on Screen Painter. The Current Day Forecast is not displayed if you select `List all` in the Get Copy of Design window.
- CMS stores current day forecast data in two separate tables:

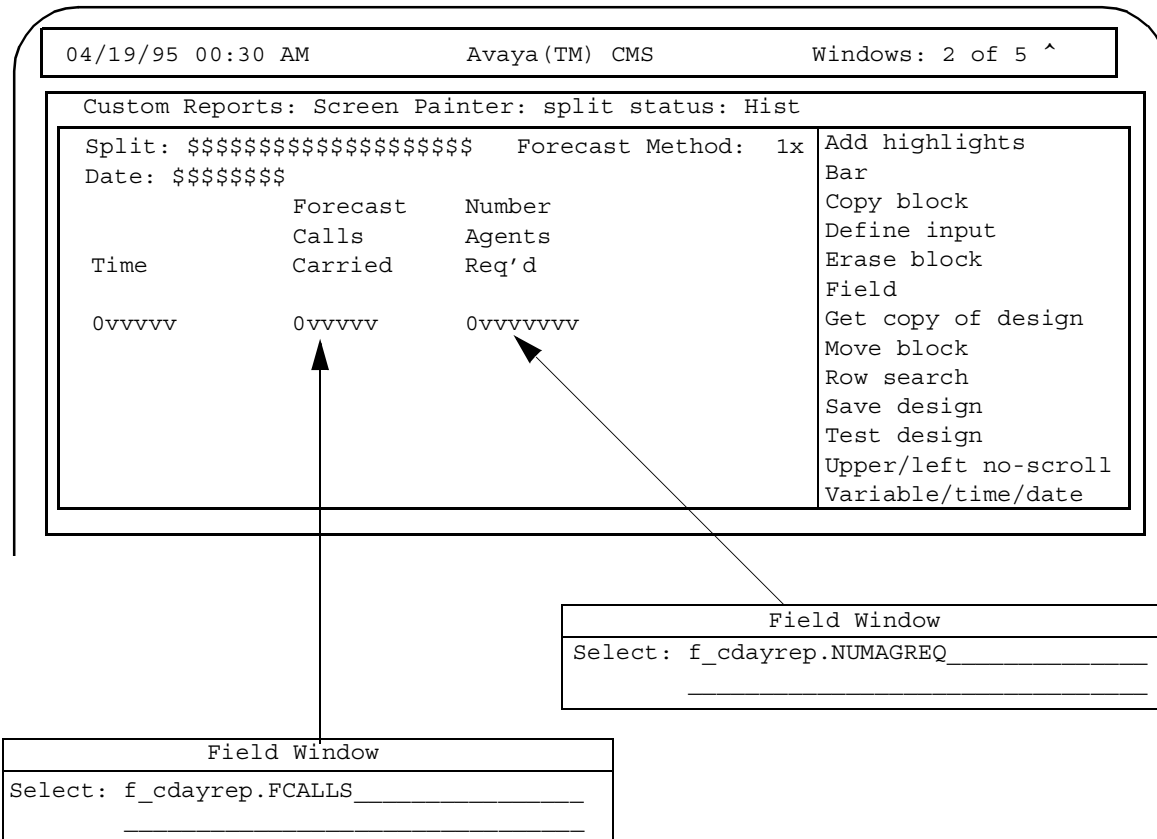
f_cday – This table primarily contains forecast administrative data entered in the Current Day Configuration window.

f_cdayrep – This table contains the agent positions required and forecast calls carried data, as well as objectives entered in the Call Handling Profiles window.

See the *Avaya CMS R3V11 Database Items and Calculations*, 585-780-702, for a complete list of the database items these tables contain. See the *Avaya CMS R3V11 Forecast*, 585-215-717, document for more information about Forecasting.

If you were to design a very abbreviated version of the current day forecast report, the design might look something like that shown in the following figure:

Sample Forecast report design



In the previous figure, Row Search ID 0 is assigned to the Time, Forecast Calls Carried, and Number Agent Req'd fields. The conditions for Row Search ID 0 might be as follows:

Row search conditions for Forecast data

```

Row Search Window
Row search ID: 0
From tables: f_cdayrep
Select rows where: ROW_DATE = $i_date and SPLIT = $i_split
                  and STARTTIME = $i_time and ACD = $acd
Field/bar type (Select one):
< > Discrete
<x> Repeated vertically, spacing 1___
    
```

Notice that, as in historical interval reports for splits, the statement in Row Search ID 0 searches for rows based on values for `STARTTIME`, `ROW_DATE`, and `SPLIT`.

In the previous report figure, Row Search ID 1 is assigned to the `Forecast Method` field. Notice also that the database item for this field is `FMETHOD`. `FMETHOD` is stored in the `f_cday` table, but is *not* stored in the `f_cdayrep` table. This is an example of how current day forecast data is divided between the two tables.

However, in the following figure, notice that Row Search ID 1 has row search conditions that are almost identical those in the previous figure:

Row search conditions for Forecast data

Row Search Window
<pre> Row search ID: 1 From tables: f_cday Select rows where: ROW_DATE = \$i_date and SPLIT = \$i_split and ACD = \$acd Field/bar type (Select one): <x> Discrete < > Repeated vertically, spacing 1___ </pre>

The only differences between Row Search ID 0 and Row Search ID 1 are the table selections and the field types. In this way, the data in the tables will match.

Note:

In the standard Current Day Forecast, **FMETHOD** normally displays a character string, either `Seasonal trending`, `Current trending`, or `No trending`. However, the CMS database actually stores a number to represent each method. So, if you include the **FMETHOD** database item in a report, CMS displays a number, not a character string, in the report (see *Avaya CMS R3V11 Database Items and Calculations*, 585-780-702, for a description of these numbers).

Note:

You can retrieve data from the Current Day Configuration Forecast (`f_cday`) table only if the appropriate call handling profile has been specified for the particular dates. For retrieval of data from the Current Day Forecast Report (`f_cdayrep`) table, Forecast Manager must have run for the particular date for which the report is run.

Including exceptions data in a custom report

⚠ Important:

For historical custom reports only.

You can design reports that include exceptions data. See the *Avaya CMS R3V11 Database Items and Calculations (585-780-702)* document for a description of the exceptions tables and the data they contain.

The steps for creating a custom report with exceptions data are almost identical to the steps for creating any other custom report. As with any other type of data, you must specify the database items, the tables, the row search conditions, and the report input fields. However, you cannot copy any standard exceptions report on Screen Painter. The exceptions reports are not displayed if you select `List all` in the Get Copy of Design window.

Also, in every exceptions table, the database item `EXTYPE` stores the types of exceptions that occurred. However, exception types are stored as numbers, not as character strings. If you want your report to list the types of exceptions that occurred, the types must be listed as numbers (see *Avaya CMS R3V11 Database Items and Calculations, 585-780-702*, for a description of these numbers). The following table shows an example of a VDN exceptions report:

VDN exceptions report

VDN Exceptions

ACD: burbank

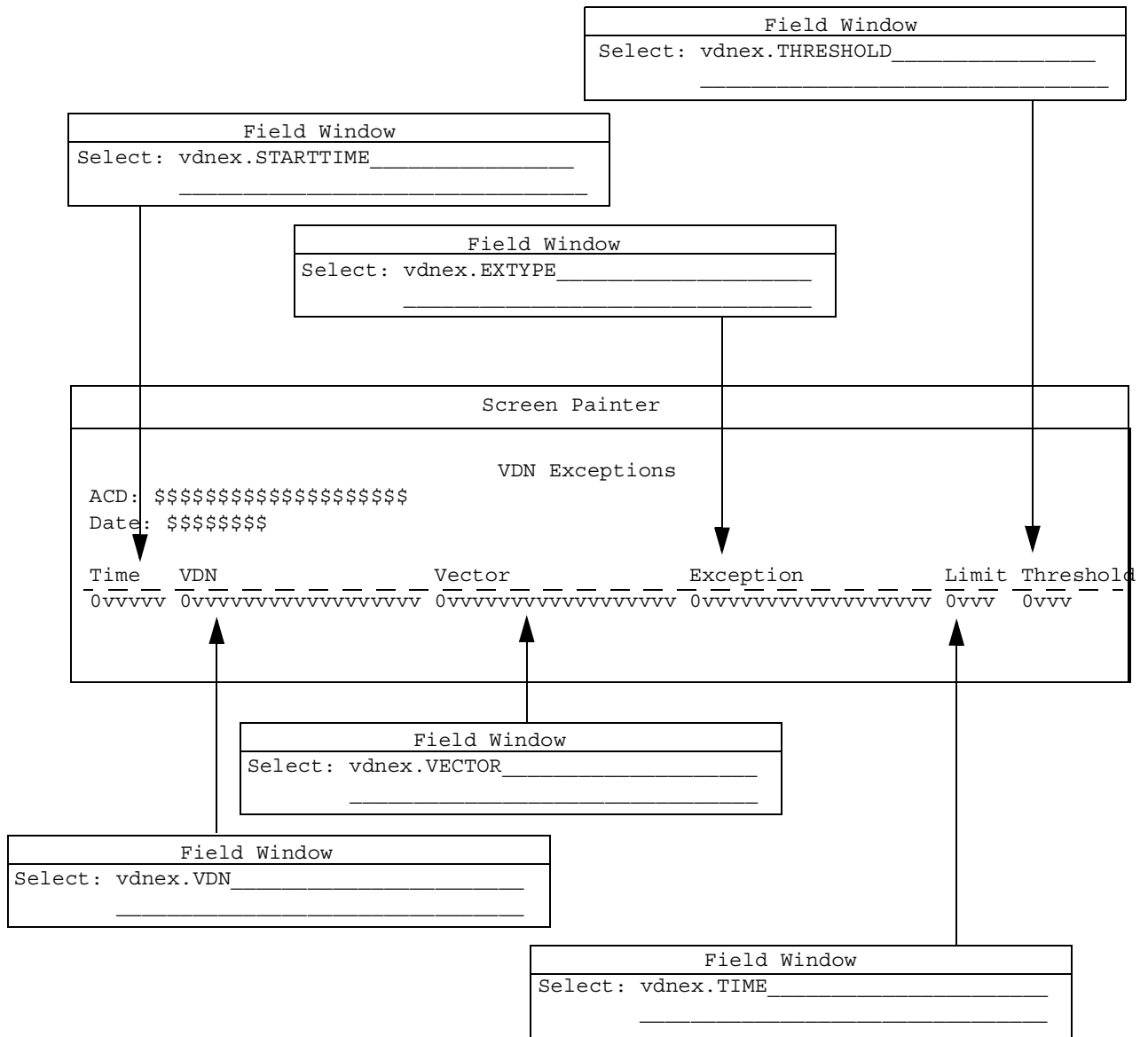
Printed 04/10/93 04:35 PM

Date: 04/09/93

Time	VDN	Vector	Exception	Time Limit	Threshold
09:16AM	Catalog Sales	Weekday Sales	Number calls abandoned in vector		20
09:24AM	Catalog Sales	Weekday Sales	Calls in ACD split queue		10
10:02PM	Catalog Sales	Weekday Sales	Calls disconnected		50

If you designed a custom exception report to replicate the standard VDN Exceptions Report, then the design might be displayed as shown in the following figure:

Custom exceptions report



Advanced report design

The previous figure is an example of the report that results from the design shown in the following figure:

VDN Exceptions Report

VDN Exceptions

ACD: burbank

Printed 04/10/93 04:35 PM

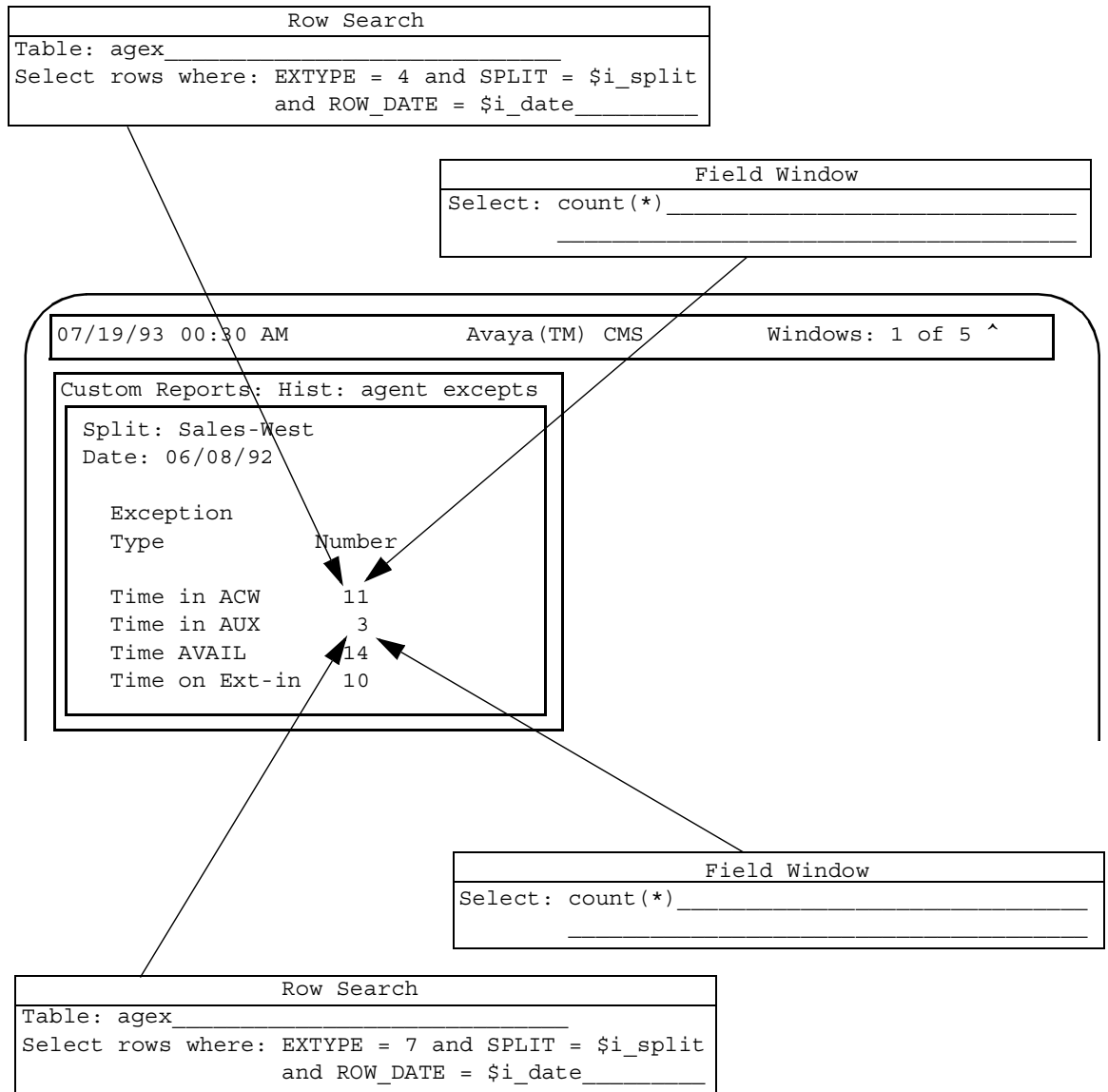
Date: 04/09/93

					Time	
Time	VDN	Vector	Exception	Limit	Threshold	
09:16AM	Catalog Sales	Weekday Sales	37	32	20	
09:24AM	Catalog Sales	Weekday Sales	37	30	10	
10:02PM	Catalog Sales	Off-hour Sales	76	73	50	

The report would be displayed this way because CMS exceptions tables store the exception types as numbers.

However, another way of designing an exception report would be to use `count(*)` for the exception field. You could then include a specific exception type as part of the row search as seen in the figure below. CMS would then count the rows that had that exception type and display the total in the report.

Custom Exceptions Report



In the example above, the row search statement for the first field searches for exception type #4 (Time in ACW) for a particular date and split. Because the field is `count(*)`, the field displays the total number of rows that had exception type #4 for the date and split.

Similarly, the row search statement for the second field searches for exception type #7 (Time in AUX) for a particular date and split. Again, because the field is `count(*)`, the field displays the total number of rows that had exception type #7 for the date and split.

Advanced report design

Note:

For retrieval of data from an exceptions table, you can only retrieve data for those exceptions that have been turned on for the particular split, agent, etcetera, that have actually occurred and have not been deleted from the database because they exceeded the storage parameters for exceptions.

Selecting rows from more than one table

Important:

For historical reports only.

You can merge data from two tables into a single report field. You can, for example, take the number of ACD calls a single agent handled (where data is taken from the `dagent` table) and divide by the total ACD calls handled by the agent's split (where data is taken from the `dsplit` table). Or, you can take the ACD calls a split handled in an intrahour interval (where data is taken from the `hsplit` table) and divide by the total ACD calls the split handled for the day (where data is taken from the `dsplit` table).

To merge data from two tables into a single report field:

- The two tables *must* have at least one database item in common. Typically, the database items in common are indexes.
- Both table names must be entered in the `Table` field of the Row Search ID assigned to the field.
- For custom historical reports you can use data from more than one table and use the same row search ID for multiple tables.
- At least one "join" clause must be included in the Row Search ID assigned to the field. A "join" clause searches for the same value for the same item in both tables. In this way, the data extracted from the rows in both tables will be related.

A "join" clause has the following format:

```
tablename1.item1 = tablename2.item1
```

where `item1` is a database item that the tables have in common.

- You *must* prepend the table name to each database item included in the `Select rows where:` statement. This rule applies to all database items, even those that are not in a "join" clause.
- A "join" clause must use a database item that is also included with a regular "where" clause (one that directly assigns a value or variable name to the database item).

Note:

The syntax of a *join* clause is similar to that in standard INFORMIX SQL syntax. See the *INFORMIX-SQL Relational Database Management System User Guide* for INFORMIX SQL.

CAUTION:

If you run a report that merges data from two tables (particularly tables with large amounts of data) into a single field and your `Select rows where:` statement is not specific enough, you may get an error message when you test the design. The specific cause may be that the number of selected rows is very large, and CMS does not have enough space to create temporary files. If this is the case, you should add additional “where” clauses to the row search criteria.

Often, you need several “join” clauses in a Row Search criteria statement. For example, you must first specify row search values for either the `hagent` or `hsplit` table if you define a report field that contains the following data expression:

```
hagent.ACDCALLS/hsplit.ACDCALLS
```

You might enter the following “where” clauses:

```
hsplit.SPLIT = $i_split and hsplit.ROW_DATE = $i_date and  
hsplit.STARTTIME = $i_time and hsplit.ACD = $acd
```

Note:

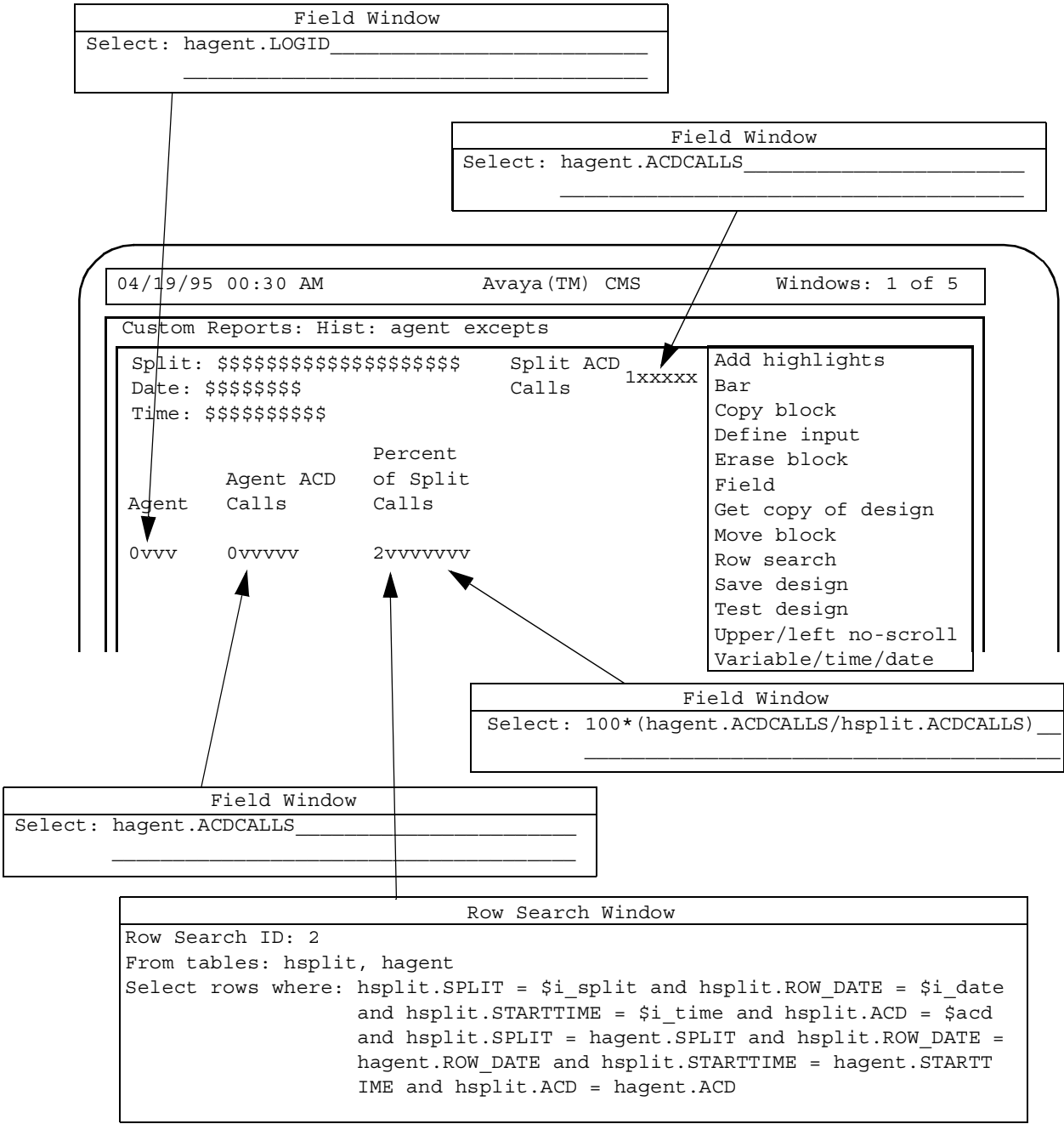
Notice that table names are prepended to each database item.

You must then specify join clauses so that the rows found in one table are related to the values found in the other table. In the following example, you would add *join* clauses (shown in bold) for every regular “where” clause:

```
hsplit.SPLIT = $i_split and hsplit.ROW_DATE = $i_date and  
hsplit.STARTTIME = $i_time and hsplit.ACD = $acd and  
hsplit.SPLIT = hagent.SPLIT and hsplit.ROW_DATE =  
hagent.ROW_DATE and hsplit.STARTTIME = hagent.STARTTIME and  
hsplit.ACD = hagent.ACD
```

The report design shown in the figure below illustrates how this row search selection would affect data in a report:

Report design with data from two tables merged in a field



Notice that the Percent of Split Calls field merges data as discussed in our example. Also notice that Row Search ID #2, which is assigned to the Percent of Split Calls field, contains the row search statement as discussed in our example.

Advanced report design

To illustrate the effect of *join* clauses, the report design in the previous figure includes the Agent ACD Calls and Split ACD Calls fields. Notice that each field uses a database item that is also included in the Percent of Split Calls field.

When the report is run, the Percent of Split Calls field, for each agent in the selected split, divides that agent's ACD calls by the total ACD calls for the split, then multiplies by 100 to give a percentage. Thus, as in the figure below, if agent 1000 had 23 ACD calls, and the split Sales-West had 412 ACD calls, the Percent of Split Calls for agent 1000 would be 5.583 ($100 * [23/412]$).

Sample report with merged data

04/19/95 00:30 AM Avaya(TM) CMS Windows: 1 of 5 ^		
Custom Reports: Hist: split status		
Split: Sales-West		Split ACD
Date: 06/08/93		Calls
Time: 8:00am		
Agent	Agent ACD Calls	Percent of Split Calls
1000	23	5.583
1004	18	4.369
1005	18	4.369
1009	21	5.097
1010	24	5.825
1012	23	5.583

Alternative row search conditions

For your row search conditions, you will most often use the “where” clauses (See [Defining the data for a custom report](#) on page 61). However, several additional “where” clause formats are available. *Alternative row search conditions* describes those formats.

Selecting rows based on a range of values

If you want a range of splits included in the report, you might use two “where” clauses as in the following example:

```
Select rows where: SPLIT >= 1 and SPLIT <= 5
```

Then, when you run the report, CMS finds rows for Splits 1 through 5, as shown in the following figure:

Sample use of ranges in Where clauses

SPLIT	ACDCALLS	ABANDONS	ACDTIME	ABNTIME	
1	443	48	36898	988	
2	234	37	20012	777	..
3	111	20	13111	400	
4	652	59	53442	1058	..
5	451	32	27635	644	
6	93	11	15321	245	..
7	509	43	35401	851	
8	391	31	19768	603	..
9	142	10	9786	203	
10	480	39	33389	789	..

Note:

In most cases, the easiest way to specify a range is to define a report input field that accepts a range. See [Selecting rows based on a range of values](#) on page 167 for more information.

Using apostrophes for some database item values

Some database items require that, if you hardcode values in a “where” clause, you enclose the values in apostrophes ('), as shown in the following example.

```
Select rows where: ROW_DATE > '07/01/93'
```

Values of standard database items that you must enclose in apostrophes are:

- VDN (the value is a VDN number)
- EXTENSION (the value is an extension number)
- LOGID (the value is an agent login ID)
- EQLOC (the value is a 9-digit trunk location number)
- ROW_DATE (the value is a date in mm/dd/yy format)
- CWC (the value is a call work code of 1 to 16 digits)

Also, you must enclose in apostrophes hardcoded values for any custom database items you define as CHAR or DATE columns in *INFORMIX*.

For historical reports only, an alternative format for these database items is:

```
Expression matches 'value'
```

In this type of clause, `matches` is the same as `=`. However, this type of clause lets you use wildcard searches. That is, within the apostrophes, you can use an asterisk (*) or a question mark (?).

The asterisk (*) matches any and all characters, including blanks and no characters. Look at the following examples:

```
Select rows where: EQLOC matches '01*'
```

This clause finds all rows where the EQLOC value begins with 01, which would mean all trunks for module 01. Thus, 010012020, 010211110, and 011023100 are values that would match.

```
Select rows where: ROW_DATE matches '*/01*'
```

This clause finds all rows where the ROW_DATE value has 01 as its dd (day of the month). That is, the clause searches for the first day of each month. Thus, 01/01/93, 04/01/93, and 10/01/92 are values that would match.

Note:

Actually, `*/01*` would also find all dates, if they had passed, in the year 2001 (for example, 01/22/01, 08/03/01, and 11/31/01).

The question mark (?) matches any single character. Look at the following examples:

```
Select rows where: EXTENSION matches '444?'
```


This clause finds all rows where the EXTENSION value is four digits and has 444 as the first three characters. Thus, 4441, 4440, and 4449 would match. However, 444 would not match.

```
Select rows where: LOGID matches '?000'
```

This clause finds all rows where the LOGID value is four digits, begins with any number, and ends with "000." Thus, 4000, 5000, and 9000 would match. 000 would not match.

You can use `not` in a "matches" clause to exclude rows. For example, you may want to exclude a range of login IDs from your report with a clause like the following:

```
Select rows where: LOGID not matches '2*'
```

This clause finds all login IDs except those starting with "2." If you have 4-digit login IDs, login IDs from 2000 to 2999 would be excluded.

Using string-value database items

String-value database items contain numerical data that the Dictionary subsystem translates to display current states or state changes. For example, a report field using the string-value database item `WORKMODE` displays `AVAIL`, `ACD`, `ACW`, and so on, depending on what state the particular agent is currently in. However, tables store states as numbers, not strings. When you run a report, CMS simply substitutes the character strings for the numerical values. This process is identical to the substitution of names for split numbers, trunk group numbers, vectors, and so on.

If you want to use string-value database items in a "where" clause, you must specify numerical values, not string values.

For example, if you want a current real-time agent report that lists data only for agents on extension-in or extension-out calls, you can select the Current Interval Agent table and enter a statement as follows:

```
Select rows where: SPLIT = $splitvar and WORKMODE > 10 and
WORKMODE < 60
```

This statement finds rows for a user-specified split where the agent state is one of the following:

- `ACWIN` (numerical value of 20)
- `ACWOUT` (numerical value of 30)
- `AUXIN` (numerical value of 40)
- `AUXOUT` (numerical value of 50)

See *Avaya CMS R3V11 Database Items and Calculations*, 585-780-702, for a complete list of row search values for string-value database items.

Other available formats for “Where” clauses

For historical reports only, you can specify a list of hardcoded values using the following format:

```
Expression in (list of values)
```

As with a basic “where” clause, the `Expression` can be a database item or calculation. The values you list in the parentheses must be separated by commas. Also, you must use apostrophes for those values that normally require them. For example, the following “where” clause specifies three dates for the report:

```
Select rows where: ROW_DATE in ('07/01/93',  
'07/08/93', '07/15/93')
```

The following “where” clause specifies three splits for the report:

```
Select rows where: SPLIT in (1,7,22)
```

For historical reports only, you can also exclude rows using a list of values by adding `not` to the clause. Using `not` can be extremely useful if you want to exclude, for example, lunch time intrahour intervals from your intrahour historical reports, as shown in the following example:

```
Select rows where: STARTTIME not in (1130, 1200, 1230).
```

Repeating aggregate function values

Normally, a field (or bar) that contains an aggregate function (`sum`, `max`, `min`, or `avg`) displays just one value. This is true no matter what your “Select rows where” criteria are. Therefore, you would normally select “discrete” as the field/bar type in the row search ID assigned to aggregate functions.

However, you may at times want CMS to display multiple values for an aggregate function. *In historical reports only*, CMS can display multiple values for an aggregate function. For CMS to do this, the aggregate function *must* share a row search ID with one or more fields that do not have an aggregate function.

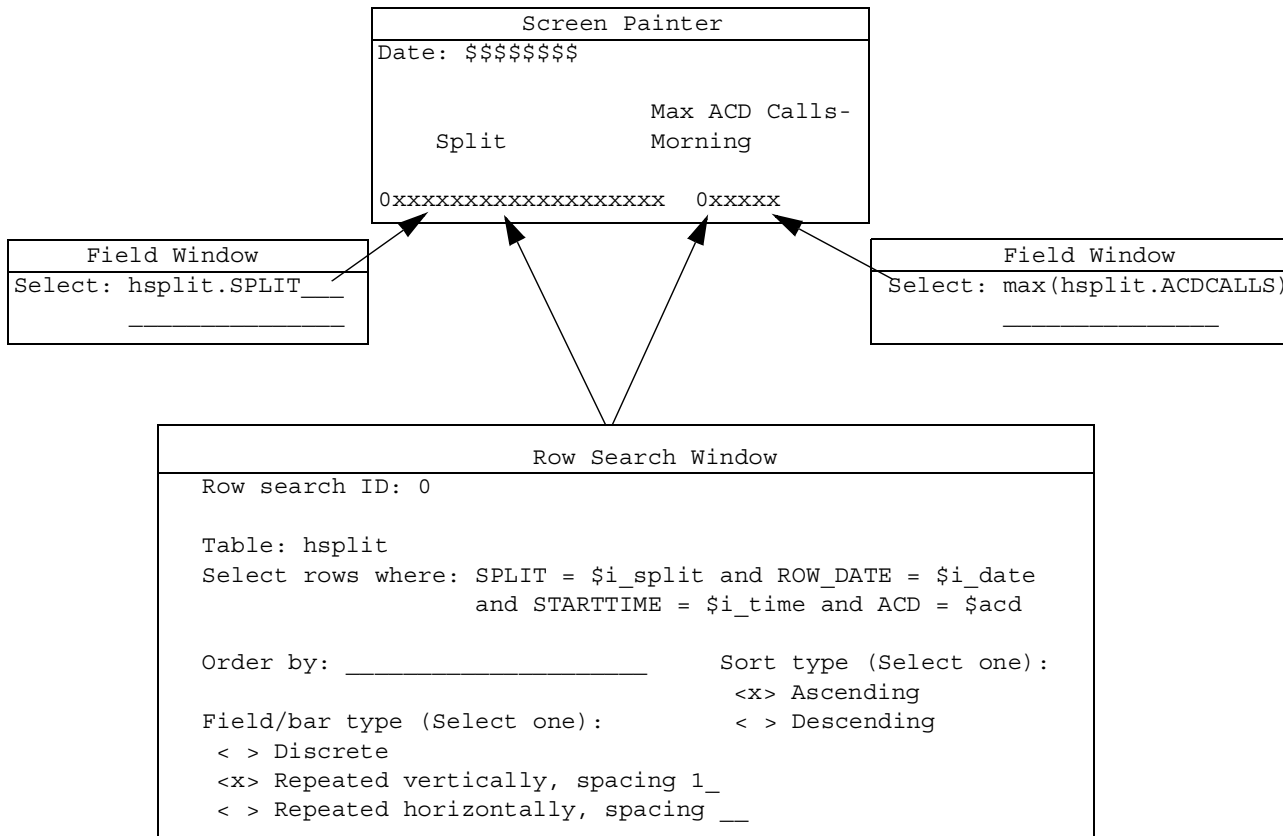
For example, you may want a report (see figure below) that shows the maximum (`max`) ACD calls in an interval for each of a variety of splits.

Repeated aggregate function report

Date: 07/01/93	
	Max ACD Calls-
Split	Morning
1	652
2	491
3	297

This report would have the following design:

Sample Report Design for Repeated Aggregate functions



According to the design, CMS searches the Intrahour Split table for the splits the user ordered when running the report (Splits 1, 2, and 3 in our example). CMS also searches for date (07/01/93 in our example) and the maximum ACD calls (in boxes) in the selected range of intrahour intervals for each of the selected splits.

Sample row search of grouped aggregate functions

DATE	INTERVAL	SPLIT	ACDCALLS	ABANDONS	ACDTIME	ABNTIME
070193	0800	1	443	48	36898	988
070193	0800	2	234	37	20012	777
070193	0800	3	111	20	13111	400
070193	0900	1	652	59	53442	1058
070193	0900	2	451	32	27635	644
070193	0900	3	93	11	15321	245
070193	1000	1	509	43	35401	851
070193	1000	2	391	31	19768	603
070193	1000	3	142	10	9786	203
070193	1100	1	480	39	33389	789
070193	1100	2	491	22	26789	549
070193	1100	3	297	15	12530	402
070293	0800	1	399	36	37651	1452
070293	0800	2	299	20	29602	7616
070293	0800	3	138	13	11523	2569
070293	0900	1	400	46	36178	1745
070293	0900	2	300	33	24303	1109
070293	0900	3	225	12	15628	367
070293	1000	1	394	40	40002	1322
070293	1000	2	323	34	29881	1188
070293	1000	3	105	14	12115	704
070293	1100	1	418	41	34819	1256
070293	1100	2	246	30	21173	980
070293	1100	3	100	18	10281	589
070393	0800	1	417	34	37856	1340
070393	0800	2	247	24	26308	1299
070393	0800	3	141	14	12567	688
070393	0900	1	444	43	39003	1001

CMS would then display the values found in the report. However, notice in the previous figure that CMS found four rows with the `SPLIT` value of 1, four rows with `SPLIT` value 2, and four rows with `SPLIT` value 3, but displayed each value only once in the report. This is because the aggregate function `max(hsplit.ACDCALLS)` field shares the same row search ID with the `hsplit.SPLIT` field.

If the `hsplit.SPLIT` field and the `max(hsplit.ACDCALLS)` fields were assigned different row search IDs (with each ID having identical criteria), the report for Splits 1, 2, and 3 would show data as shown in the figure below:

Group values

Date: 07/01/93	
	Max ACD Calls-
Split	Morning
1	652
1	
1	
1	
2	
2	
2	
2	
3	
3	
3	
3	

The display of a value only once to represent multiple occurrences of the same value is called grouping and can be done only when sum, max, min, or avg values are listed based on the unique values found for other fields. The rules for grouping data are:

- If you assign a row search ID to one or more aggregate function fields, you may assign the same row search ID to a maximum of eight nonaggregate fields.
- Assigning the same row search ID to both aggregate functions and nonaggregate fields makes sense only if the nonaggregate fields contain identifier data (split numbers, login IDs, dates, interval start times, vector numbers, and so on).
- If you assign the same row search ID to both aggregate functions and a nonaggregate field, the report displays a single value for each unique value found for the nonaggregate field (that also matches the row search criteria). If multiple rows contain the same value, then CMS still lists the value once. For this reason, only identifier fields should have the same row search ID as aggregate functions.
- If you assign the same row search ID to aggregate functions and more than one nonaggregate field, then the report displays a single row of data for each unique combination of values for the nonaggregate fields.

Database Items and Calculations

Please refer to *Avaya CMS Database Items and Calculations, 585-780-702*, for full descriptions of the database items and calculations available through the Avaya Call Management System (CMS) software.

Glossary

ACD Group	An administratively-defined set of ACDs that serves as the scope of multi-ACD administration and reporting.
ACD Group Only	When you select this report option, you are defining a report which will contain summarized information regarding ACDs that are members of an ACD Group. Queries for ACDs defined for this report will contain aggregate data of all the member ACDs within the ACD Group. For example, if an Agent Report for Agent 5001 for an ACD Group named "Sales" is required and "Sales" is an ACD Group which contains ACD members ACD 1 and ACD2, the report will contain an aggregate of Agent 5001's Split/Skill information from both ACD 1 and ACD 2. Upon running the report, you must set your current ACD as a Group ACD or you will not see your report in either the Custom Reports > Historical or Real-time submenus.
Access permissions	Permissions assigned to a CMS user so that user can access different subsystems in CMS or administer specific elements (splits/skills, trunks, vectors, e-mail) of the ACD. Access permissions are specified as read or write permission. Read permission means the CMS user can access and view data (for example, run reports or view the Dictionary subsystem). Write permission means the CMS user can add, modify, or delete data and execute processes.
Administrator, CMS	A CMS user who has permissions for most or all parts of CMS. In Custom Reports, a CMS Administrator can access the designs of all custom reports, even those of which the administrator is not the owner.
Aggregate function	A prefix (avg, max, min, or sum) attached to a database item, calculation, parts of a calculation, or a calculation name. An aggregate function normally displays a single value that is determined from a group of selected values.
Ascending	Listed with the lowest values first and the highest values last. With time and dates, the oldest values are listed first.
Associated ACD	The ACD associated (or assigned to) an input field, as defined in the Define Input window. When an input field is associated with an ACD, the values the user enters into the field will apply to that ACD only. For example, if an input field requiring a split number also has associated ACD #1, the selected split number will be a split in ACD #1.

Bar	
Bar	A representation of data in the form of a bar that gets longer or shorter as values go up or down. A horizontal bar grows and shrinks horizontally. A vertical bar grows and shrinks vertically.
Block	A rectangular area on Screen Painter that you define and use to quickly rearrange report fields, bars, and text.
Block editing	Defining and using a block to copy, move, or delete fields, bars, and text in a report design.
Both Single ACD and ACD Group	When you select this report option, you are defining a report which can contain data useful information for reporting either at single ACD and/or ACD Group level. Upon running the report, your current ACD can be a single ACD or a Group ACD. Your report will be available in the Custom Reports > Historical or Real-time submenus regardless of your current ACD setting.
Calculation	A calculation is also a formula consisting of database items, numbers, and arithmetic operators (+, -, /, *, and ()). A calculation can also include constants.
Calculation name	A name for a calculation, either a standard CMS calculation name or a name that you define in the Dictionary subsystem. A calculation name can be useful if you need to use the same calculation for field/bar definitions in multiple custom reports. Then, if you need to change the calculation, you can change it once in the Dictionary, and all custom reports that use the calculation name will reflect the change.
Call-based items	The category of database items in CMS that are committed to the database after the call completes. If a call starts and ends in different intrahour intervals, all of the call-based data is recorded in the interval in which the call completed. Most database items are call-based.
Call Management System (CMS)	A software product used by business customers that have Avaya telecommunications switches/ECS and receive a large volume of telephone calls that are processed through the Automatic Call Distribution (ACD) feature of the switch/ECS. The CMS collects call-traffic data, formats management reports, and provides an administrative interface to the ACD feature in the switch/ECS.
CMSQL	A tool that allows direct queries of the historical database. This tool is the interactive interface typically used to view the INFORMIX database. For CMS purposes, CMSQL is used instead of INFORMIX SQL.

Column	A column is a part of a table that stores a particular type of data (a number of events of a certain type, a length of time spent on a certain type of event, the time an event happened, a numerical identifier of an ACD entity, or the current status of an ACD entity). Database items are the names of columns. Examples are ACDCALLS, ACDDTIME, SPLIT, STARTTIME, WORKMODE, and so on.
Constant	A name you assign in Dictionary to a fixed numerical value. A constant can be useful if you need to use the same numerical value for field/bar definitions in multiple custom reports. Then if you need to change the value, you can change it once in Dictionary, and all custom reports that use the constant will reflect the change.
Count(*)	An expression you can enter in the <code>select</code> field in the Field or Bar window. <code>count (*)</code> tells CMS to count the number of rows in a table that match certain row search conditions (as defined for the assigned Row Search ID) and display the total in the field/bar.
Custom database item	A database item (column name) which you have included in a custom INFORMIX table and which you have identified to CMS in Dictionary.
Current Interval	Represents the current intrahour interval which can be 15, 30, or 60 minutes. The current interval is part of the real-time database.
Custom report	A report that you create and design using the Custom Reports subsystem.
Daily Data	Interval data that has been converted to a 1-day summary.
Data expression	An expression you enter in the <code>select</code> field of the Field or Bar window to define the data and manipulation of that data for display in a field or bar.
Database	A group of files that store ACD data according to a specific time frame: current and previous intrahour real-time data and intrahour, daily, weekly, and monthly historical data.
Database items	The names for specific types of data stored in one of the CMS databases. A database item may store ACD identifiers (split numbers or names, login IDs, VDNs, e-mail) or statistical data on ACD performance (number of ACD calls, wait time for calls in queue, current states of individual agents, e-mail). Examples are ACDCALLS, ACDDTIME, SPLIT, WORKMODE, and so on.
Database tables	CMS uses these tables to collect, store, and retrieve ACD data. Standard CMS items (database items) are names of columns in the CMS database tables.

Date format**Date format**

The standard format for entering dates on CMS reports. Acceptable formats are:

Month/day/year (for example, 3/21/96)

A “-” offset based on today's date (for example, -1 for yesterday)

Separating individual data entry items using a semicolon (for example, 3/21/96;3/23/96;3/25/96)

Entering ranges by placing a hyphen between entries (for example, 3/21/96-3/25/96).

When you specify a date for a weekly report, that date must correspond to the week start day selected in the System Setup—Storage Intervals window. If the date and day do not match, the message *No records found* displays in the status line.

The month start date must be the first day of the month.

Define Input Window

The secondary window you access on Screen Painter to define fields for the report's Report Input window.

Descending

Listed with the highest values first and the lowest values last. With time and dates, the most recent values

Design

The physical layout of a custom report, as well as the definition of the report's fields, bars, input window, and row search criteria.

Direction (Bar)

The direction in which a bar grows and shrinks, either horizontally or vertically.

Discrete field/bar

A field or bar for which a single value will be found and displayed.

Dictionary

A CMS subsystem that can be used to assign names to various call center elements such as login IDs, splits/skills, trunk groups, VDNs and vectors. These names are displayed on reports, making them easier to interpret. Dictionary also allows customized calculations to be created for use in reports.

Entity

A generic term that refers to one of the following: Agent, Split/Skill, Trunk, Trunk Group, VDN, or Vector.

Exception Reports

Display occurrences of unusual call-handling events.

Field

A space designated in a custom report to display a specifically-defined piece of ACD data. Data is displayed in a field as characters in specific format (that is, as time with am/pm, as decimal, as date, and so on).

Global access

The ability for other CMS users to run a custom report and to copy its design on Screen Painter.

Historical database	A database that contains intrahour records for up to 62 days in the past, daily records for up to 5 years in the past, and weekly/monthly records for up to 10 years in the past for each CMS-measured agent, split/skill, trunk, trunk group, vector, and VDN.
Historical reports	Reports that display past ACD data for various agent, split/skill, trunk, trunk group, vector, or VDN activities.
INFORMIX	A relational database management system used to organize CMS historical data.
INFORMIX SQL	A query language tool that is used to extract data from an INFORMIX database. For the CMS historical database, CMSQL is used in place of INFORMIX SQL.
Index	A column (database item) that causes the values in a row to be related. For example, in the Current Interval Split table, <code>SPLIT</code> is an index. An index adds structure to the data in a table.
Input field	An input field is an area on a user window into which a CMS user enters one or more valid field values. For example, the valid values for the input field <code>split</code> are integers from 1 through 255 (Generic 3r Version 2 to Version 4) and split names that have been assigned in the Dictionary subsystem.
Input window	The window that is displayed when you are running a report so you can specify what data [what split/skill, what agents, what times, what dates, and so on] the report will display.
Interval-based items	A category of database items. These items generally represent the amount of time during a collection interval spent doing a particular activity. Interval-based items are updated throughout the collection interval and timing is restarted at the end of the interval. Interval-based items should only be used to show the amount of time in an interval for an activity or to calculate percentages of time spent in an interval. Interval-based items should not be used to calculate averages (such as average hold time).
Intrahour interval	A 15-, 30-, or 60-minute segment of time starting on the hour. An intrahour interval is the basic unit of CMS report time.
Justification	The lining up of data for a field such that in the report, the data is always centered, lined up on the left, or lined up on the right.
Maximum graph value	The value that a bar will represent when it is at its maximum length or height.

Measured

Measured A term that means an ACD element (agent, split/skill, trunk, trunk group, vector, VDN) has been identified to the switch as of interest to the CMS. The switch sends messages to CMS only for ACD elements that are measured. If the ACD element is not measured on the switch, no data is collected.

Monthly Data Daily data that has been converted to a monthly summary.

Multiuser Mode Any administered CMS user can log into CMS. Data continues to be collected if data collection is “on.”

Name (Synonym) fields Fields in which you may enter a name (synonym) that has been entered in the Dictionary subsystem (for example, names of agents, splits/skills, agent groups, trunk groups, vectors, VDNs).

Normal user A user that normally has access to a limited number of subsystems within CMS. A normal user cannot access a custom report design created by another user and can neither run nor copy the private reports of another user.

Owner The CMS user who created the design of a custom report.

Pattern matching Searching the database for data that partly or totally matches a set of characters, (letters, numbers, and symbols) entered by a user. For example, the user may enter *01*, and CMS might find the following types of matching data: 0001, split01, 22010, or 01444.

Previous Interval One intrahour interval. At the end of each intrahour interval, the contents of the current intrahour interval are copied to the previous intrahour interval portion of the real-time database.

Private access The restriction that only the owner of a custom report can run the report. Also, no other normal user can copy the report’s design. Private access does not restrict CMS administrators from running a private report or accessing its design.

Private report A custom that only the creator can access.

Read permission The CMS user with read permission can access and view data (for example, run reports or view the Dictionary subsystem). Read permission is granted from the User Permissions subsystem.

Real-time database Consists of the current and previous intrahour data on each CMS-measured agent, split/skill, trunk, trunk group, vector, and VDN.

Real-time reports	Reports that display current ACD call activity on agents, splits/skills, trunks, trunk groups, vectors, and VDNs for the current or previous intrahour interval. Current intrahour interval real-time reports are periodically updated as data changes during the interval. Previous intrahour interval real-time reports show data totals for activity that occurred in the previous intrahour interval.
Repeated horizontally	The specification that multiple values will be found for a field/bar and that the values will be displayed in a vertical series of fields or bars.
Repeated vertically	The specification that multiple values will be found for a field/bar and that the values will be displayed in a horizontal series of fields or bars.
Report type	The specification of a custom report as either a real-time or historical report.
Reversed thresholds	The reversal of thresholds so that the bar has the color of normal conditions when it is at its longest. With reversed thresholds, the bar will change from normal to caution to warning as the bar shrinks in length.
Row	A single horizontal line of data in a table. The data is related by the values of one or more columns. For example, each row of current real-time agent data contains data for a specific agent login ID.
Row search ID	The identification number of a set of row search conditions defined in the Row Search window. This number is assigned to fields/bars that will use the associated set of row search conditions. Therefore, the available row search IDs 0 to 9.
Row search window	The secondary window accessed on Screen Painter that you use to define row search criteria and assign row search criteria to field/bars.
Scale	A line, with or without tick marks, that is displayed in a custom report to provide a reference point for the approximate value of a bar as it changes length.
Screen Painter	The window that you use to design custom reports. Screen Painter has special properties that make its operation different from that of other windows.
Second threshold	A graph term for the upper limit you enter for a particular condition in a graph report. When this limit is met, the bars change color/intensity, indicating that a possible Warning condition exists.
Secondary window	A user window that is generated from a primary window. Secondary windows can be moved, sized, or scrolled and do not count in the user window count.

Select

Select The name of the first field in the Field and Bars windows. You enter the data expression you want for a report field/bar in the `Select` field.

Select rows where statement The row search criteria CMS uses to retrieve data from the database. `Select rows where` statements typically consists of several “where” clauses.

Single-User Mode Only one person can log into CMS. Data continues to be collected if data collection is “on.” This mode is required to change some CMS administration.

Single ACD Only When you select this report option, you are defining a report which will pertain only to information regarding a single ACD. If the single ACD is a member of an ACD Group, NO information about the ACD Group in which it is a member will be provided in this report. For example, if an Agent Split/Skill Report for Agent 5001 for ACD 1 is designed via the Screen Painter (and ACD 1 is defined in the ACD Group named “Sales”), the report will only display information for Agent 5001 for ACD1. Upon running the report, you must set your “Current ACD” as single a ACD or you will not see your report in the Custom Reports > Historical or Real-Time submenus.

Subsystem Each CMS Main Menu selection (for example, Reports, Dictionary, System Setup, Exceptions, along with Timetable and Shortcut, are referred to as subsystems.)

Sort order The order in which you want data to be displayed in a custom report. The sort order is always based on the values of one or more database items. Real-time reports allow the use of only one database item for sorting.

Sort type The order, ascending or descending, in which data should be displayed.

Standard database item A database item (column name) for a column in a standard CMS table. Standard database items are listed in the Dictionary subsystem.

String (Data format) A report field that displays data from a CHAR column. CHAR columns, which store data as characters, include `LOGID`, `VDN`, `CWC`, and so on.

String (Input field) An input field type that allows users to type character strings and pattern searches when running the report. Any input field that has the “string” field type must be associated in the Row Search window with a database item or table column that is a CHAR column. This includes `LOGID`, `VDN`, `CWC`, and other database items.

Structured Query Language (SQL) A language used to interrogate and process data in a relational database (such as INFORMIX). See INFORMIX SQL.

Subsystem	Each CMS main menu selection (for example, Reports, Dictionary, System Setup, Exceptions, e-mail) along with Timetable and Shortcut is referred to as a subsystem of the Call Management System.
Table	An array of columns and rows that stores data for a type of ACD element (split/skill, agent, trunk, and so on) and for a specific time frame (for the current intrahour interval, for past intrahour intervals, for past days, and so on).
Text	The words, numbers, and other characters you type directly onto Screen Painter to provide report titles, column headers, row identifiers, and other labels.
Threshold	A value at or above which CMS indicates a change in condition, either to a caution (first threshold) or a warning (second threshold) condition. Thresholds apply to bars in a report.
Tick marks	The marks on a scale defined for a bar in a report. Tick marks break a scale into segments to indicate increments of the bar's length relative to the maximum graph value.
Type (Input field)	The specification of how CMS is to validate a user's input values and format when ordering the report. That is, you can tell CMS to check for numbers, character strings (names), times, dates, specific ACD configuration values (split numbers, login IDs, and so on), e-mail
Type (Report)	The specification of whether a report is a real-time or historical report. You specify the type on the Report Select window.
Time Format	The standard format for entering times on CMS reports. Acceptable formats are: A 12-hour time format with AM/PM (for example, 7:30AM, 5:00PM). A 24-hour time format (for example, 7:30, 17:00). A "-" offset based on the current interval date (for example, -1 for the previous hour or -0:30 for the previous half hour interval).
User ID	The login ID for a CMS user. CMS links custom report designs to a user's user ID. That is, the owner of a report design is the user (identified by user ID) who created the design.
User Permissions	A CMS subsystem that allows the CMS administrator to define user access permissions.

Variable name**Variable name**

The name assigned to a report input field that will allow the user to enter values and have those values used to find data for the report. The variable name links the row search criteria to the report input fields so that the user's input values become the basis of the search for data.

Weekly Data

Daily data that has been converted to a weekly summary.

Where clause

An expression in the `Select rows where` field that specifies values for a single database item or calculation. A "where" clause has the format `Expression Relational operator Value`. A row search criteria statement can consist of multiple "where" clauses.

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