CA MICS® Resource Management Q&R Workstation

User Guide

Release 12.9.00

ca technologies

CA Technologies Product References

This document references the following CA product:

- CA MICS® Resource Management

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Contents

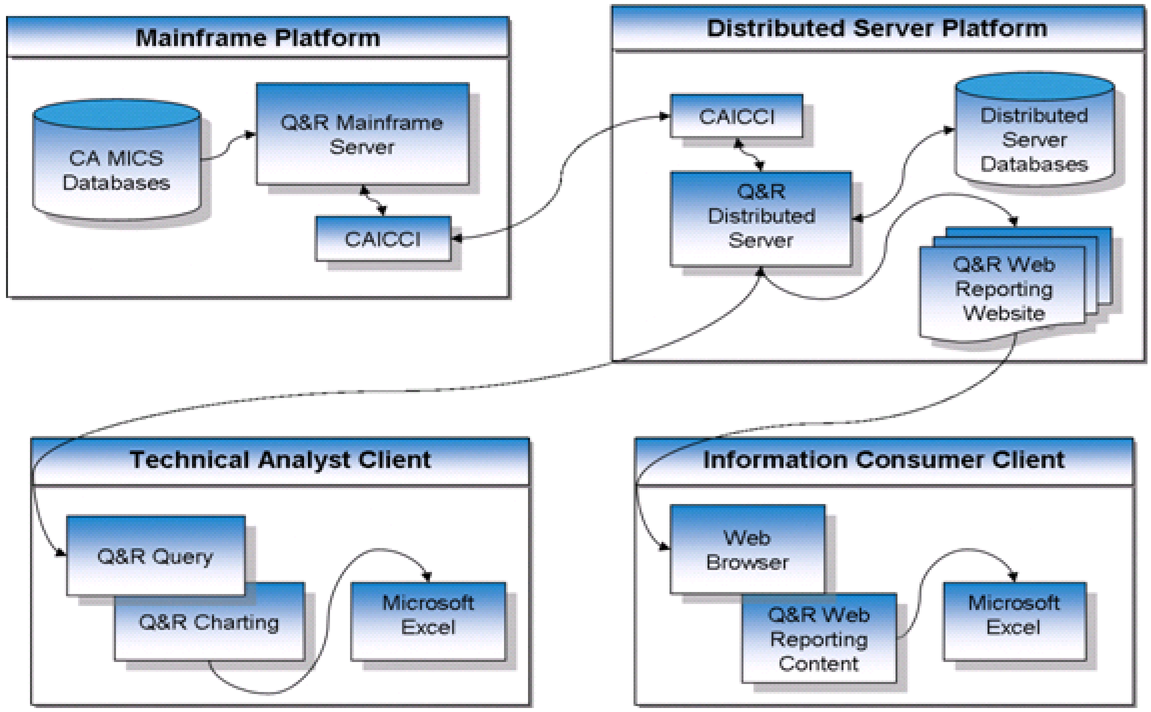
Chapter 1: Introduction

This guide provides instructions for using CA MICS® Resource Management Q&R Workstation. Using Q&R Workstation, you create queries to retrieve data stored in CA MICS complexes and SAS databases and create charts to help analyze that data.

This section contains the following topics:

Q&R Workstation Overview

Q&R Workstation provides easy access and flexible reporting facilities on your PC Workstation for use with CA MICS or any Statistical Analysis System (SAS) database on the mainframe. Query, reporting, graphing, and analysis tools are provided to help you meet the challenging task of enterprise management reporting in today's environment. Through its abilities to create queries and distribute the results using the Web and intranet, Q&R Workstation provides a unique and effective desktop reporting tool for resource management, performance management, capacity management, and accounting and chargeback data. In addition, it supports automated web publishing and desktop reporting with data gathered from the CA MICS and SAS databases.



Q&R Workstation Client Applications

Q&R Workstation includes the following client applications:

- Q&R Query
- Q&R Charting
- Q&R Web Reporting

These components are discussed in detail in this guide.

Additional Information Sources

The documentation and online help system contain information about the product features, procedures for performing queries, reporting, charting, and publishing, and descriptions of the menus, dialogs, and buttons specific to the Q&R Workstation applications.

Product documentation can be installed with the product and is available in PDF format. If installed, the documentation is available using the Microsoft Windows Start button. The online help system is installed with the product.

How to Navigate through Q&R Query

When using Q&R Query, you can use the pull-down menus or the toolbar buttons for most functions.

Toolbar Buttons

The toolbar buttons are mapped as follows:

New Query

Create a query.

Open Query

Opens an existing query.

Save Query

Saves the query to disk.

Smart Update Query

Invokes Smart Update on the current query. This button allows the user to update the file information or the data range selection for all the files in the query.

Validate

Checks the query for possible problems.

The Validate function can be used to check the files, keys, and elements of an existing query against the current meta database. Validate verifies the following items and identifies discrepancies for a user correction:

- All files in a query exist in the current meta database
- Keys are valid for the associated file
- Elements are valid for the associated file

Run Query

Submits the current query.

Query Status

Displays the status of Q&R queries.

Retrieve Output

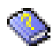
Shows the output available from queries that have been run.

Move Query to Production

Saves the Query to a member of a mainframe dataset where it is available for an inclusion in a MICF Job Stream.

Dictionary Entries

Displays a list of requested dictionary definitions and their status.



Help

Displays the Q&R Query help.

Menu Options

Most menu functions can be performed using toolbar buttons or shortcut keys.

Functions that do not have toolbar equivalents are:

- File, Save Macros—Saves the SAS code generated from your query to a query macro file (.QRM) on your local computer. This code can be moved to a query in a MICF user job stream so it can be run in production on the mainframe.

  Note: You can use the Move Query to a Production feature that moves to query code to a member of a mainframe dataset.

- File, Save As Template—Saves the steps of your query in template (.QRT) format so it can be used to create similar queries.
- File, Save Output—Saves the current output (.CSV) so that you can use it in an external program.
- File, Delete Query, Delete Template—Deletes a query definition file (.QRQ) or query template file (.QRT) from the disk.
- Options, Include Debug Information in SASLOG —Turns debugging messages on and off.

  When selected, debug information can be viewed in the SASLOG. Debug can be helpful in diagnosing problems in SAS code entered in a Data Derivation or User Code step.

  When not selected, debug information is omitted from the SASLOG

  Default: No

- Options, Settings:

  Options Tab

  Modify your Microsoft Excel directory path.

Select the following features:

- Use Smart Update—By default, Smart Update is active.

  When selected, Q&R Query automatically invokes Smart Update processing whenever a query is opened.

  Smart Update automatically identifies and helps to correct discrepancies between the existing queries and the current Meta Database. With Smart Update you can modify complex or unit values across all files in an existing query on the Q&R Mainframe Server.

- Log Viewer—By default, the option is NotePad. Use this option to select the viewer to use to display SASLOG and SASLIST output.

  Note: You can also use Wordpad, Notepad, Word, Textpad, Internet Explorer, or Notepad++ if the application is available in your local windows environment.

Logging Tab

The Q&R Debug Log records certain aspects of Q&R Query operation, server communications, and chart creation. CA Technical support may request that you enable logging so information from the log can be used to diagnose a problem at your site.

Enable Q&R Debug Logging

By default, Q&R Debug Logging is turned off and should only be enabled at the direction of CA Technical Support.

Retention Period

The number of days the Q&R Debug logs are retained. Logs older than specified by the retention date are automatically deleted at the start of a new Q&R Query session.

Default: 1

Range: 1 – 31

Logging Message Level

The message level is defined as 5 and is not modifiable.

Note: A new log is created with each execution of Q&R Query.

Logs are stored in C:\Users\userid\AppData\Local\CA\MICS Workstation\Client\Logs\MQRQueryLog-yyyymmdd hhmmss.log.

These logs can become extremely large and it is recommended that you do not turn on logging unless directed by CA Technical Support.

- Options, Extract data using long labels—By default, this option is active.

  When selected, the column names in the CSV output created by running a Q&R Query are long, descriptive element names.

  When not selected, the CSV output contains short (eight character) element names.

- Options, Run with completed query only—By default, this option is active.

  When selected, a query that contains validation errors will not run unless you approve the option to run it anyway.

  When not selected, the prompt is not displayed and the query is submitted to the mainframe.

- Options, Connect to a Q&R Distributed Server—Lets you change the Q&R Distributed Server to which you are connected.

  When selected, you will be prompted to close all currently open Q&R windows, and the Q&R Query Connect window is displayed. Fill in the IP address and port number of the Q&R Distributed Server you want to connect to. When you click Ok, you are connected to the new Q&R Distributed Server.

  Notes:

  - This server becomes the default server that is used the next time you start Q&R Query.
  - The Q&R Distributed Server that you are configured to and the status of the connection are displayed in the status bar of the Q&R Query window.
  - If your connection to the Q&R Distributed Server is disconnected, you can use this option or you can click the server name in the status bar.
  - To be certain that your Q&R Query environment is properly synchronized with the Q&R Distributed Server, all current Q&R Query windows are closed before a Q&R Distributed Server connection is established or reestablished. You are prompted to save any modified queries or view definitions before a new connection is made.

Chapter 2: Using Q&R Query

The Q&R Query component of Q&R Workstation is the primary tool for users to compose and run queries to get the data, and to view the results in charts and tables.

This section contains the following topics:

About Q&R Query

Q&R Query is a desktop application that lets you access mainframe data from your PC. You can perform all of the functions related to preparing data for analysis:

- Composing and running queries
- Retrieving and viewing query output

These functions are all accessed from the Q&R Query Welcome screen menu and toolbar.

Use This Function	**To...**
Compose a New Query	Create a new query
Open a Query	Modify and run an existing query
Run a Query	Submit a query to get data
Retrieve Output	Retrieve previously saved query output, export output content, and create charts

How to Use Q&R Query

Follow this path through Q&R Query to create queries and chart the results:

1. Compose a new query or open an existing one.

   You compose a query by combining query steps and tasks to produce the desired result. You can create a query by using the Compose a New Query option from the Welcome screen. Alternatively, you can use an existing query by:

   - Selecting Open a Query from the Welcome Screen or File Menu
   - Selecting CA MICS Query Library from the File Menu

2. Save the query definition.

   Saving the query saves any modifications that you have made since it was last saved. You can save a query at any time; limited validation is performed before a query is run.

3. Run the query.

   When you run a query, you are accessing the mainframe to get new data. This data is transferred from the mainframe to the Q&R Distributed Server.

4. Select and examine output.

   After the query output is available on the Q&R Distributed Server, you can use the Q&R Query Output Retrieval function to retrieve query output for use with Q&R Charting. Your query output is organized so you can easily identify it.

5. Explore, discover, and visualize data in Q&R Charting.

   Viewing the resulting output of a query is done through the Q&R Charting screen. The Q&R Charting screen lets you define how the output is presented by defining views. A view specifies which elements to present, the style of chart, titles, labeling, and so on.

6. Save the view definition.

   Views that you have created can be saved as part of the original query. This way, anytime you run this query, the presentation of the output is the same and the results are easier to compare.

7. (Optional) Export a query to run on a production basis.

   Any query can be included in your CA MICS production job stream to run regularly. Use the Move Query to Production option to save the query as a member of a mainframe data set where it is available for inclusion in a MICF Job Stream. Then log on to the mainframe under MICF using MWF;2.5 or MWF;2.6 and complete the panels as required.

Starting Q&R Query

You must first identify the Q&R Distributed Server that Q&R Query will use to access the mainframe. To do this, you will need Name (or IP address) and Port Number of the Q&R Distributed Server.

If you do not know this information, obtain it from your Q&R Administrator.

To start Q&R Query

1. Start Q&R Query by clicking the Windows Start button and selecting Programs, CA, Q&R Workstation, Q&R Query.

   The Start Q&R Query panel appears.

   Note: If Q&R is installed on the same machine as the Q&R Distributed Server, the Start Q&R Query panel will not appear so step 2 is not necessary. Q&R Query will automatically connect to the local server. If you need to connect to a different server, however, go to Options in the Q&R Query application, select Connect to a Q&R Distributed Server (see page 12), and follow the procedures in step 2.

2. Enter the Name (or IP address) and Port Number of the Q&R Distributed Server and click OK. Settings are saved and will be the default values next time you enter Q&R Query.

   IP Address

   Specifies the IP Address of the system running the Q&R Distributed Server. The IP Address can be written in standard notation or it can be written as a DNS name.

   Port Number

   Specifies the port number used by the Q&R Distributed Server.

   Default: 20368

   Note: Do not change this value unless your Q&R Administrator instructs you to.

   Next, the Q&R Query Welcome panel appears and you are ready to use Q&R Query.

Access and Run Sample Queries

Q&R Workstation delivers a set of sample queries that you can run as soon as the product is installed and configured. The sample queries provide a quick start for using the product and can produce immediate results with minimal effort. The sample queries can also be used as models for composing your own queries as you become familiar with the features and functions of Q&R Query.

Each sample query creates one or more report files that can be automatically charted or reported.

Note: If you modify a sample query, we recommend that you save the query with a new name. This ensures that your modified sample queries are not lost in the event you need to uninstall, reinstall or upgrade.

To access and run a sample query

1. Click Open a Query from the Welcome panel, from the toolbar, or select it from the File menu.

   The Open Query dialog appears.

2. Select CA MICS Query Library.
3. Select CASamples and select the query from the list displayed.

   The main Query panel opens, displaying the query you selected.

   Note: If the query contains references to Q&R input files that are no longer valid, the Change Input File Selection panel appears and you can select valid values.

4. Run the query by clicking Query from the Run menu or clicking the Run Query toolbar button.

   The Query begins running.

   Note: To return to the CASamples library in the future, select CA MICS Query Library from the File menu; then select the CASamples directory.

More information:

Display Query Status (see page 31)
How to Display Query Output (see page 33)

Access and View Sample Output

Q&R Workstation delivers sample output files that can be viewed as soon as the product is installed. The sample output lets you see the product capabilities without writing or running your own query.

Note: The sample output can be viewed even if you are not connected to a Q&R Mainframe Server.

To access the sample output:

1. Select Output Retrieval from:
   - File menu
   - Welcome panel
   - Query Status panel

     Note: You can start Output Retrieval from this panel and when it opens, the focus is placed on the specified output.

   The Q&R Query Output Retrieval panel appears displaying the output that you are authorized to access.

2. Select All in the date filter bar dropdown list.
3. To retrieve the query output, select CASamples, CA Sample Reports, User1 from the query tree.
4. Select the report and date you want to view, and select the output file.
5. Click Chart.

   The file is retrieved from the Q&R Distributed Server and the data appears in Q&R Charting.

More information:

How to Display Query Output (see page 33)

Access the CA MICS Query Library

Q&R Workstation delivers a library of analytic queries that process CA MICS data from the DB2, CICS, IDMS, IMS, MQS, RMF, SMF, TAPE, VCA, VM and Web components. These queries are designed to provide “out-of-the-box” value for CA MICS customers by generating useful graphics showing resource utilization, workload activity, processor configuration, and other metrics that are important to monitor at modern data centers.

The Q&R Workstation *Query Library Guide* explains the charts generated by each query and provides information about how to customize and extend the queries to meet individual customer requirements. These queries can be accessed by clicking on the CA MICS Query Library option under the FILE menu option.

Compose a New Query

A query is a series of steps and the associated tasks that are used to retrieve specific mainframe data for analysis.

Composing queries in Q&R Query is a simple matter of specifying the steps that are required to get the information you want. These steps let you specify where the information comes from, how to examine it, and what information to include in the output.

By default each step uses the output from the previous step. The steps are processed sequentially to produce the final output. After your query is ready, it can be run directly from within Q&R Query.

To compose a new query

1. Click the Compose a New Query button on the Welcome panel, or select New Query from the File menu or from the toolbar.

   The New Query panel appears.

2. Enter the information for the Name, Title, and Description fields.

   Name

   > Provides the query name. The system uses the name internally and also to create the directories and files that identify and manage the query output.
   >
   > Limit: 6 characters

   Title

   > Specifies the query title, a descriptive name for the query. The title is the default name for the query output.

   Note: The name and title are used to construct the default name of the query definition file that you can save for later use. Query definition files use the file extension QRQ.

   Description

   > An area where you enter a description of the query being created, letting you self-document your query. This information is visible while editing the query and can be useful for describing the intent of the query.

   Template

   > (Optional) Provides a starting point to create queries. The Finder button enables you to select a template that uses predefined steps and tasks.

3. After you enter this information, click OK to continue.

   The Q&R Query panel appears. You can define the steps and tasks you want to use in this query, or you can modify the supplied steps using a template.

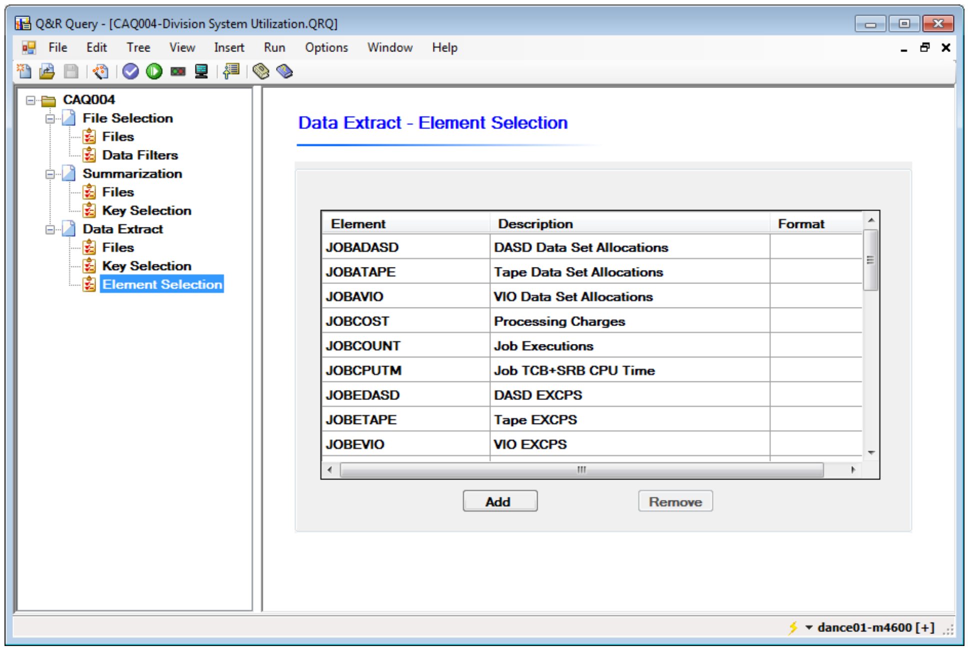
More information:

Q&R Query Tasks (see page 63)
Q&R Query Templates (see page 73)
Query Steps and Tasks (see page 21)

Q&R Query Panel

The Query panel appears when you compose a new query or open an existing query. This illustration shows how the panel looks after steps and tasks have been added. The contents of the panel depend on the query you have developed.

If this is a new query, this panel is empty until you add steps and tasks.



Query Tree View

> The tree view (left pane) shows the query hierarchy of steps and subordinate tasks.

Selected Task View

> The selected task view (right pane) lets you input the necessary information for your query.

When you select a step on the query tree, its associated tasks are displayed on the query tree and matching tabs are displayed in the right pane.

Query Steps and Tasks

Use the Q&R Query steps and their associated tasks to define the process to retrieve the data you want for your analysis.

Every query contains both steps and tasks. Each query step contains one or more query tasks. Each task supplies parameters to control the behavior of the step.

Each task appears under its associated step on the query tree. It also appears as a tab in the right pane.

You can apply the steps and tasks you want to use in a query to define the output. You can organize these steps in the order required to produce the appropriate output.

More information:

Q&R Query Tasks (see page 63)
Query Tasks (see page 24)
Query Steps (see page 22)

Query Steps

The query steps and their associated tasks that you can use to compose a query include the following:

File Selection

Specifies the input file to retrieve and creates a work file.

Input files can be retrieved from CA MICS complexes (1-99 cycles), date range or previous date period, external SAS files, or work files created from prior query steps.

Required task: Files

Optional tasks: Data Filters, Data Derivation, User Code

Merge

Creates a work file by combining data from two or more files based on common keys. Provides a "SUM" checkbox to pre-summarize the input files based on the desired common keys specified in Key Selection.

Required tasks: Files, Key selection

Optional tasks: Data Filters, Data Derivation, User Code

Concatenation

Creates a work file by appending two or more files to another. Provides a "SUM" checkbox to pre-summarize the input files based on the desired common keys specified in Key Selection. The input files can either be appended or interleaved.

Required tasks: Files, Key selection

Optional tasks: Data Filters, Data Derivation, User Code

Summarization

Summarizes data in a work file by the keys you specify in Key Selection. This step summarizes a CA MICS file using the CA MICS summarization macros or a SAS file using PROC MEANS or PROC SUMMARY. Using this step can help you to limit the number of output records.

Required tasks: Files, Key selection

Optional tasks: Data Filters, Data Derivation, User Code

SAS Code

Allows you to add your own free-form SAS code. For example, you can use a SAS code step to do a simple PROC PRINT of the elements in the query file. The SAS code is automatically saved with the query; however, you can optionally save the SAS code to user code file (.QRU) and import it into another query.

Required task: User Code

Optional tasks: None

Sort

Resequences a file, in the order specified, from either CA MICS or a SAS database.

Required tasks: Files, Key selection

Optional tasks: None

Data Extract

Produces a CSV output file for the query. Converts the work file to CSV format. Specify the input file from either a CA MICS or a SAS database to generate a CSV file.

You must have a Data Extract step to view your data in Q&R Charting.

Required tasks: Files, Key selection, Element selection

Optional tasks: None

Notes:

- On the Files tab, the separator field lets you specify the delimiter for your CSV files. Use a comma if your numeric values are displayed in US format (with a period for a decimal point). Use a semicolon if your numeric values are displayed in European format (with a comma as a decimal symbol).
- On the Key Selection tab, the order of the keys impacts the Q&R Charting presentation. Q&R Charting allows the last two keys to be selected for either the X-axis or as the stack variable in 2D Stacked by Key charts.

Statistics

Identifies the type of statistics to perform on selected elements and applies statistical calculations to the data using Proc Means. For example, Minimum and Maximum, and Mean. The output file has only the Keys and the Statistical elements.

Required tasks: Files, Key selection, Statistical Selection

Optional tasks: None

Query Tasks

Q&R Query provides the following query tasks to modify the behavior of a step:

Data Filters

Subsets the input file based on qualifications criteria you specify.

Data Derivation

Creates a new element to include in the query file. The Data Derivation definition is automatically saved with the query; however, you can optionally save it to data derivation file (.QRD) and import it into another query.

User Code

Input SAS code without restriction. The SAS code is automatically saved with the query; however, you can optionally save the SAS code to user code file (.QRU) and import it into another query.

Note: Q&R Query does not restrict nor validate your code. You can debug the user code by looking at the SASLOG after making sure that the Options menu, Debug (Yes) is set.

Files

Specifies the source of the data input to the query step.

Key Selection

Defines keys as a collection of one or more elements used to identify each record in the data. Q&R Query initially fills in this information based on the current key structure of the file. Key Selection defines the elements to be used as keys and the order in which they appear in the output. The order of the keys impacts the Q&R Charting presentation. Q&R Charting allows the last two keys to be selected for either the X-axis or as the stack variable in 2D Stacked by Key charts.

Element Selection

Defines which elements are included in the output CSV files.

Note: By default, key elements are included in the CSV formatted file.

Statistical Selection

Identifies the type of statistics to perform on the data. The statistical calculations are performed on the selected elements using Proc Means. For example, Minimum, Maximum, Means, Standard Deviation, and Variance.

Insert Query Steps

Insert query steps to select data and define the operations you want to apply to that data.

Query steps are the building blocks of your analysis and the order is dependent on the analysis you want to produce. For example, you do not need to start a query with the File Selection step. If you want to extract data from the CA MICS DAYS.HARCPU file, use the Data Extract step directly to perform the function. Likewise, if you want to merge two files and then extract information from the merged file, select and merge the files using the Merge step, and then use the Data Extract step to extract the data.

Each step can directly access CA MICS files, SAS files, or temporary files built from previous query steps. For example, during the Merge step, you can merge a CA MICS file with a temporary file created from a previous File Selection step.

Each query consists of one or more steps. Each step includes one or more tasks.

To insert a query step

1. From the Q&R Query dialog, highlight the query name or a step in the left panel. Right-click and select Insert Step.

   A list of the available step options appears.

2. Select the option you want to use and repeat for every step you want to include in the query.

   The selected step or steps are added to your query tree immediately following the highlighted step.

To remove a step, highlight it in the query tree and right-click to select Delete or select delete from the Edit pull-down menu.

More information

Q&R Query Tasks (see page 63)

Insert Query Tasks

Query tasks are specific substeps for selecting the parameters pertinent to that part of the step.

When you select a task on the query tree, it appears in the right pane.

By default, each step uses the data output from the previous step as input. Field values that can be extrapolated from the previous entries are automatically filled in by Q&R Query. When you initiate a change, such as adding or deleting an element, Q&R Query propagates the change throughout the query. If necessary, you can override the values by typing over the information provided.

To insert Query Tasks

1. From the Q&R Query panel, highlight the step name in the left panel. Right-click and select Insert Task.

   A list of the available task options appears.

2. Select the option you want to use.

   This task is now added to your query tree under its associated step.

3. Repeat this for every step to which you want to add tasks.

   When you have completed this procedure for every step, you have created your query.

Note: You can save an incomplete query to be completed at another time.

More information

Q&R Query Tasks (see page 63)

Validate a Query

Query validation helps identify problems, before running a query. Validation is automatically invoked as you edit your query or you can choose to execute it from the toolbar. It also checks each task for the following potential problems:

Tasks that should be visited for verification or completion

Example:

When you add a Summarization step after a File step, the Key Selection tasks will initially be displayed with a red X. The X indicates that you must visit the task and verify that the default key selections are appropriate for your query.

Clicking Validate on the toolbar clears the red Xs for tasks that need verification; however, we recommend that you check each task to verify the current selections.

Tasks that contain errors

Example:

When you load an existing query that contains elements that are no longer valid, the associated element selection task is marked with a red X. The X indicates that you must visit the task and remove or replace the invalid elements.

Correcting all the errors within the task, clears the red X. Clicking Validate on the toolbar now will not clear a red X that indicates an error.

Note: Validation does not prevent you from running or saving a query. Even if a query has validation errors, it can still be run and saved.

Save a Query

You can save a query for reuse at a later time. You can also save a query while you are still composing it, that is, you do not have to complete the query prior to saving it. Limited validation is performed on the fields while you are entering data; full validation is done when you run the query.

The query is saved locally, at your PC. It is not managed by the Q&R Distributed Server. You select the folder you want to save it to.

A query is saved as a file with a .QRQ extension. The .QRQ file contains all the steps, tasks, and data elements you selected when composing your query. If you have created views from this query, the .QRQ file also contains the view definitions from the chart.

To save a query

1. Click the Save Query button in the toolbar at the top of the Q&R Query panel.

   The first time you save a query, the Save Query As panel appears.

2. Choose the directory and file name you want to save the query under, and click Save.

   The query is saved and you are returned to the Q&R Query panel.

Modify a Query

After you save your query, you can modify any field available on any of the panels as follows:

- Change the query name, title, and description.
- Add, insert, or delete a step or task; for example, you can add a new sort step or change the output summarization.

- Change the label of a step or task.
- Change any input field for a task; for example, you can change the display format of an element or choose a completely different element.

Additionally, you can do the following:

- Delete the entire query.
- Save the query under a different name.
- Save the query as a template for composing new queries.
- Save the SAS macros generated for the query to run in a production job stream.

To modify an existing query

1. Click Open a Query from the Welcome panel, from the toolbar, or select it from the File menu.

   The Open Query dialog appears.

2. Select the query you want to modify.

   The main Query panel opens, displaying the query you selected.

   Note: If the query contains references to Q&R input files that are no longer valid, the Change Input File Selection panel appears and you can select valid values.

How Queries Are Run

After you compose your query, you can run it to receive current data from the databases you specified in the query. When you run a query, Q&R Query sends the query to the Q&R Distributed Server, which in turn sends it to the Q&R Mainframe Server. The data is received and stored by the Q&R Distributed Server.

After the query completes, it can be accessed using the Output Retrieval function on the Welcome panel or the Output button on the Query Status panel.

More information:

How to Display Query Output (see page 33)

Run a Query

You can run a query that is open on your screen or an existing query without opening it. As you compose or modify a query, you can run it from the Query panel by clicking Query from the Run Menu or clicking the Run Query toolbar button.

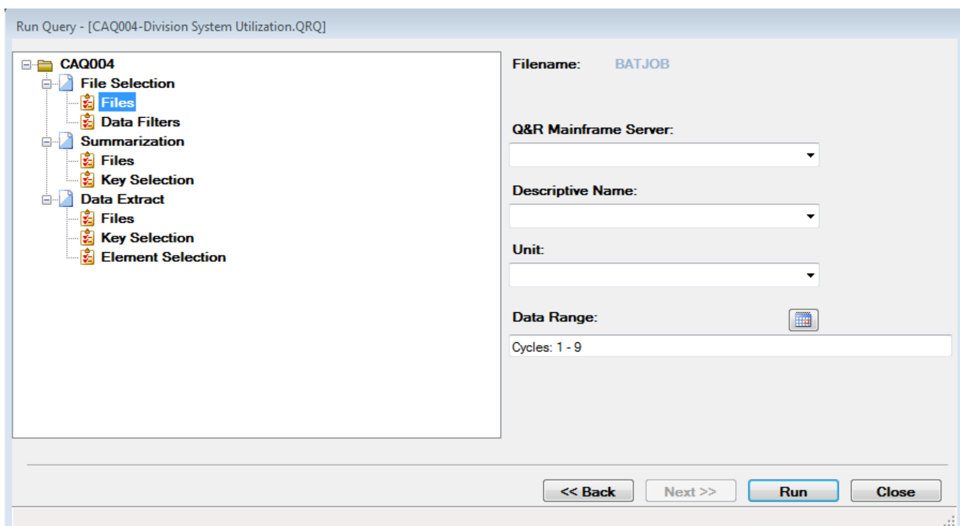
If you are required to enter your mainframe user ID and password to execute a query and this information has not been entered during the current Q&R Query session, an Enter Mainframe Credentials dialog will appear. Enter your mainframe user ID and password then click OK. The query submission will complete after authorization has been verified.

Note: Summarization steps and Data Filter tasks can be used to help limit the amount of data retrieved.

Run a Closed Query

You can use the Run Query facility to run a query that you have previously saved. You do not need to open the query to run it.

The Run Query facility lets you easily run a query against a different CA MICS or SAS database without creating multiple queries. You can use the pull-down menus to select the database you want to run the query against (Q&R Mainframe Server, Complex, Database Unit, and Cycles).



Note: When a query is open, the Run button runs the currently open query.

To run a closed query

1. Do one of the following to start the Run Query facility:
   - Select Run a Query from the Welcome panel
   - Select Query from the Run menu
   - Select the Run Query button on the toolbar.

   The Open Query dialog appears.

2. Select the query you want to run and click Open. You can select any existing query including the sample queries provided with this product.

   The Run Query dialog appears. It contains two areas:

   - The left pane displays the query you selected in tree view format. The initial focus of the tree is placed on the first File task of the query.
   - The right pane shows the input file name for the highlighted task and the associated parameters that you can override, including the following:

     Q&R Mainframe Server

     Names the Q&R Mainframe Server.

     Descriptive Name

     Specifies the descriptive name of the CA MICS complex or the non-CA MICS database identifier as defined in the Meta Database.

     Unit

     Specifies the CA MICS unit database ID. This parameter is not applicable to non-CA MICS SAS databases.

     Data Range

     Specifies the data range for the selected file. You can change the data range by clicking on the calendar button.

     Note: For CA MICS Unit level,files, the range can be selected by cycles, a date range, or a previous date period. CA MICS Complex Level files can be selected using cycles only.

   The Run Query dialog also has navigation buttons that you can use to traverse the query tree. You can view each of the input file definitions, run the query, save the query, or view Online Help.

3. To run the query immediately without overriding any file parameters, click the Run button (if it is enabled) on the Run Query dialog.

   Otherwise, click Next (if it is enabled) to step through each Files task and specify the overrides.

   The Query Job Parameters panel displays.

4. Select a job template for the query:
   - If you are not sure which template to select, contact your Q&R Administrator.
   - If you are required to enter your mainframe user ID and password to execute a query and this information has not been entered during the current Q&R Query session, enter the values.
   - If you do not plan to change templates, select the Do Not Show this dialog again checkbox to hide the panel.

   Once you have completed the dialog, click OK. The query submission will complete after authorization has been verified.

Note: You do not need to navigate through the entire query to run it. You can run the query as soon as the Run button is enabled.

Display Query Status

After you run a query, you can use the Query Status dialog to view the status of that query.

The query status panel operates independently of the main query panel. Therefore, you can monitor or view the status of a query while you perform other query functions.

To display the status of a query

1. Select Query Status on the toolbar or from the File menu.

   The Query Status panel appears.

2. On the Query Status panel, you can:
   - View the output by using the button at the bottom of the window, or double-click the selected query instance.
   - View the available SASLOG, SASLIST, or MICSLOG by using the buttons at the bottom of the window, or the right-click context menu.
   - Delete the output for the selected query instance or instances.

     The output files are removed from the server.
   - Cancel the query.
   - Sort the output.

     Click the column headers to sort by event, run date-time, query name, query title, Q & R mainframe server, user ID, template, JES job number, or JES job name.

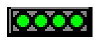
- Filter the Query Status list by query name, Mainframe Server name, or run date.
- Hover over the Query Status Icon to display the meaning of the traffic light icon.

The appropriate window opens depending on the option you selected.

More information:

Query Status Icon (see page 32)

Query Status Icon

The Query Status icon  illustrates the progress of the running query at various phases. Initially, each status indicator within the Query Status icon is white. As each phase completes, the color of the status indicator becomes either red or green, indicating the completion of the phase. Use the event column in conjunction with the Query Status icon to see the status of the query at a glance. The indicator descriptions are:

- White – phase has not started. Q&R query attempts to start or it retries to start
- Green – phase successfully completed
- Red – phase failed or was canceled
- Gray – phase not started due to query cancel. No retries are attempted.

Reading from left to right, the indicators designate Phase 1 through Phase 4:

- Phase 1 – Query accepted by the Q&R Mainframe Server

  This indicator should turn green shortly after the query is run. If it does not, see your Q&R Administrator.

- Phase 2 – Query started

  This indicator turns green when the Q&R Mainframe Server starts running your query.

- Phase 3 – Query ended

  This indicator turns green when the Q&R Mainframe Server finishes running your query.

  If the query fails, the light turns red. If this light is red, examine the SAS log to identify the cause of the problem.

- Phase 4 – Output is available on Q&R Distributed Server

  This indicator is green when the results are available on the Q&R Distributed Server.

More Information

Display Query Status (see page 31)

How to Display Query Output

The output files from running the query are automatically downloaded from the Q&R Mainframe Server to the Q&R Distributed Server for viewing. The output can include the SASLOG, SASLIST, MICSLOG, and the report data extract files.

Note: Be sure to select only the elements you need for reporting and summarize data where it is appropriate because some CA MICS files contain large numbers of elements and observations. Query design impacts output data retrieval time. Queries that retrieve large volumes of data take longer to download and consume excessive space on the system running the Q&R Distributed Server.

Retrieve Query Output

When the query output becomes available on the Q&R Distributed Server, you can use the Q&R Query Output Retrieval function to retrieve the query output. You can view the output using Q&R Charting to build graphs and reports.

Output Retrieval lets you do the following:

- Verify query output content, including keys, elements, and number of observations before retrieving data to your workstation.

  Note: If you have many observations, the output can take some time to load. If you have more observations than you need, add more summarization or data filtering in your query definition, then run the query again.

- Filter and sort the available output by date.
- Retrieve the query output from the Q&R Distributed Server to your workstation.
- Generate graphs and charts in Q&R Charting.
- View the CSV data without Charting in Q&R Data View.
- Open CSV Output using Excel.
- Save a copy of the query output on your workstation if desired.

Note: Q&R does not manage the local copies (that is, you cannot locate a saved copy through Output Retrieval).

To retrieve query output using the date filter

1. Select Output Retrieval from the File menu, the Welcome panel, or from the Query Status dialog.

   If you start Output Retrieval from the Query Status dialog, when the Output Retrieval dialog opens the focus is placed on the specified output.

   The Q&R Query Output Retrieval dialog appears and the output that you are authorized to access is displayed.

   - The left pane displays the report files that you can access in a query tree view. The selected query is highlighted.
   - The right pane shows the content of the report file including the number of keys and elements, the names of the keys and elements, and the total number of observations.

2. Apply the date filter.

   The toolbar at the top contains controls for the date filter. Do one of the following then click the Refresh (leftmost) button:

   - Select a predefined date range from the dropdown list
   - Specify any range in "YYYY-MM-DD" format in the "From:" and "To:" fields
   - Enter "*" into the fields to select everything.

   Note: The Sort Date button (next to Refresh) switches date ordering. You can view the data in ascending or descending order.

3. Retrieve the query output.

   Select the query from the query tree and click:

   - The Chart Button to chart the data
   - The Data Button to view the data

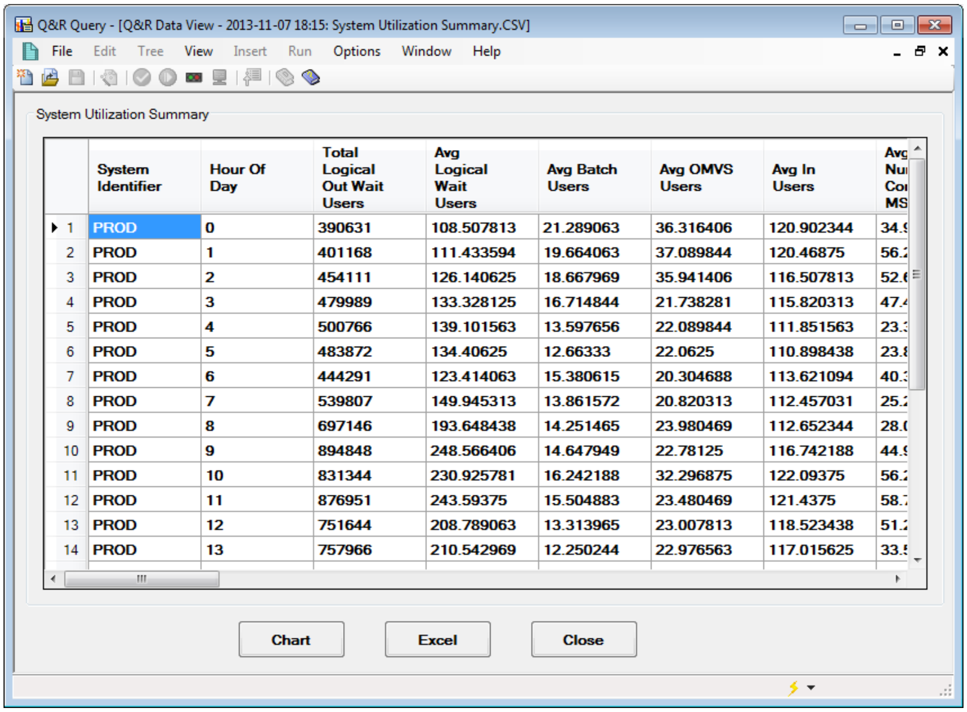
     Q&R Data View displays the query data output in a table. You can sort the data by clicking the column headers. This option is useful when you have query output that you do not need to chart.

   - The Excel button to open the Output in Excel.

   The data is retrieved and displayed based on the output option you selected.

Q&R Data View Panel

The Q&R Data View panel presents the query output in a table. This option is useful when you have Query output that you do not need to chart. You can sort the data by clicking the column headers.



	System Identifier	Hour Of Day	Total Logical Out Wait Users	Avg Logical Wait Users	Avg Batch Users	Avg OMVS Users	Avg In Users	Avg Nu Co MS
1	PROD	0	390631	108.507813	21.289063	36.316406	120.902344	34.
2	PROD	1	401168	111.433594	19.664063	37.089844	120.46875	56.
3	PROD	2	454111	126.140625	18.667969	35.941406	116.507813	52.
4	PROD	3	479989	133.328125	16.714844	21.738281	115.820313	47.
5	PROD	4	500766	139.101563	13.597656	22.089844	111.851563	23.
6	PROD	5	483872	134.40625	12.66333	22.0625	110.898438	23.
7	PROD	6	444291	123.414063	15.380615	20.304688	113.621094	40.
8	PROD	7	539807	149.945313	13.861572	20.820313	112.457031	25.
9	PROD	8	697146	193.648438	14.251465	23.980469	112.652344	28.
10	PROD	9	894848	248.566406	14.647949	22.78125	116.742188	44.
11	PROD	10	831344	230.925781	16.242188	32.296875	122.09375	56.
12	PROD	11	876951	243.59375	15.504883	23.480469	121.4375	58.
13	PROD	12	751644	208.789063	13.313965	23.007813	118.523438	51.
14	PROD	13	757966	210.542969	12.250244	22.976563	117.015625	33.

Q&R Charting

Q&R Charting is a flexible tool that is used to display the query output in several different styles:

- 2-Dimensional Charts—Line, Stacked Area, Bar, Stacked Bar, Bar Stacked by Key
- 3-Dimensional Charts—Area, Stacked Area, Bar, Stacked Bar, Pie.

The appearance of the chart is defined by views. You can customize the View definitions.

By default, Q&R Charting creates a 2D bar chart for your initial view of the output data. Edit the MQRQuery.ini and modify the “QR Charting DefaultChartType=” setting to change the view:

- Change the value after the “=” from “2-D Bar” to “2-D Line” to produce line charts.
- Change the value to “None” if you always want the initial display of the output to be a data view only.

Once Q&R Charting displays the data, you can add or modify views to create different presentations. To generate output for MICF CSV, enter K0 in the Output Control Cell to cause Q&R Charting to display data only.

Start Q&R Charting

The Q&R Charting panel lets you display query results and define display options. These option definitions are named views; they can be saved and applied to future query output. In Q&R Query, a view definition describes: the type of chart; what to display on the chart; properties such as the Chart title, Axes, and Legends. You can create several views for a single output.

Note: If a view is not already defined, Q&R Charting generates one by default.

After the view definition is saved in a query definition, it is automatically included in the query output for use in Q&R Charting.

Note: Finalize your query definition before customizing the views. Q&R Charting applies existing view definitions to new query output and continues to do so even if the query has changed. Q&R Charting attempts to reconcile minor changes, for example, adding or removing elements, and displays a warning message. When a warning message appears, review the view definition and make any necessary adjustments. More significant changes, for example, adding or removing keys, might invalidate your view definition.

To access Q&R Charting

1. Select Retrieve Output from the Welcome panel.

   The Output Retrieval panel appears.

2. Highlight the output file that to be charted and click the Chart button.

   The Q&R Charting window appears displaying the first chart. To modify the view, select the View tab, select the view and click Edit. To add a view, click Add.

3. To open another charting window, navigate back to the Output Retrieval Window, select the same output or a different output and click the Chart Button.

   Note: If the same output is opened multiple times the second – nth instance of the Q&R Charting window is read-only.

   The Read-Only windows are different in three ways.

   - The window icon is different.
   - The text "(read-only)" is appended to the window title.
   - All view update operations are disabled.

More information:

Change and Save Chart View Definitions (see page 43)

Q&R Charting Panel

The Q&R Charting panel presents the query output, provides the ability to navigate through the data and views, and lets you maintain your view definitions. The Q&R Charting panel exhibits data as defined by the existing view definitions. You can modify the views to adjust the display according to your needs.

This illustration shows the Q&R Charting panel which contains the Chart Display pane and the Chart Properties pane.

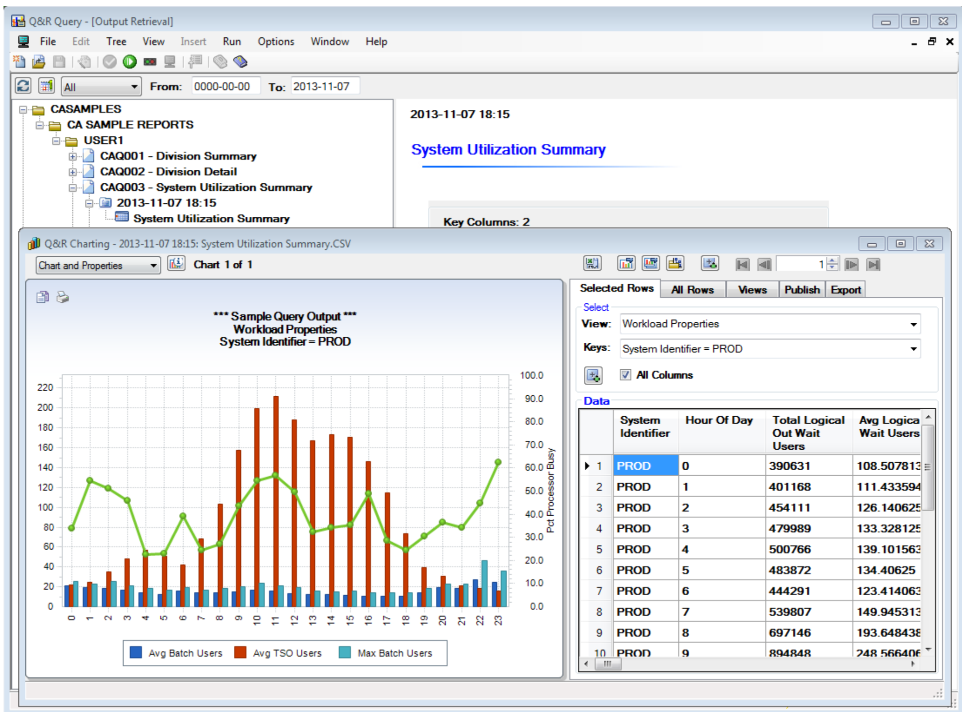


Chart Toolbar

Use the Chart toolbar to access these charting options:

- Select a display option:
  - Chart and Properties - Shows both the chart and the properties panes
  - Chart only - Hides the properties pane

  - Properties only - Hides the chart pane
- Info - Hover over this button to display the View and Key Value for the current chart.
- Chart # of n charts -- Display the chart number of the current chart and the total number of charts available for this output.
- Excel - Open the output in Excel
- Export One - Export the current image according to the parameters that were defined on the Export tab.
- Export All - Export all images in the current view according to the parameters defined on the Export tab.

  If the export is taking longer than expected, use the Esc key to cancel the export before it completes.
- Explore - Open Windows Explorer to the location defined for currently exported images.
- Key Selection Pop-up - Display the Key values for the current output/view.

  This window provides an expanded view of the items that appear in the Keys drop-down list. Use this button when the output contains key values that are longer than the available display space on the Q&R Charting window.
- You can navigate to a specific chart by using the number or the First, Next, Previous, and Last buttons.

Chart Display pane

Displays the chart that is associated with the current view. The data values associated with the chart are shown in the table on the Chart Properties pane.

Two icons are available at the top left corner of the chart:

Print

Prints the currently charted data to your default printer.

Copy to clipboard

Copies the currently displayed chart to the clipboard. You can paste it into other applications such as Power Point. You can copy the information in bitmap, metafile, or text format depending on the receiving application.

Note: We recommend using the export feature when you need to specify the size of images.

Chart Properties pane

Provides options to use to view the query output. These options let you select data, keys, and views.

Selected Rows tab

Displays the currently charted data and provides navigation through existing views and charts.

Select section - Provides navigation control using the following options:

- View - Select a view that was defined for this output.
- Keys - Display a chart that is associated with the selected key value.

Note: Click the  button to display the Q&R Charting Key Selection pop-up. This window provides an expanded view of the items that appear in the Keys drop-down list. Use this button when the output contains key values that are longer than the available display space on the Q&R Charting window.

- All Columns - Permits switching between showing all elements and charted elements in the data grid.
- On Stacked by Key charts, you can show the data as stacked or nonstacked. When you select Stacked, the data grid displays a row for each stacked value and a column for each item on the X axis. When you clear Stacked, the data grid displays one row for every CSV row that is used to build the chart. The nonstacked option displays the grid data the same way it does for all other chart types.

Data section - Displays the currently charted data.

- By right-clicking the Data Section, you can copy data from the grid to paste into another application.

All Rows tab

Displays all the rows in the CSV in a data grid. Clicking the column headers lets you sort the data by the selected column.

Views tab

Displays all the existing views as a list. Clicking a view name displays the first chart for the selected view in the Chart Display pane.

The following buttons let you maintain views:

- Up and Down Arrows - Move a view in the view list.

Note: the first view on the view list becomes the primary view in Q&R Web Reporting.

- Copy - Copies the currently selected view. A new view that contains the name of the copied view and " - copy" is added at the end of the view list.
- Add - Create a view. The View Definition panel is displayed.

- Edit - Modify an existing view. The current settings in the View Definition panel are displayed.

- Remove - Delete the View Definition.

Publish tab

Allows you to publish the current CSV to Q&R Web Reporting.

- Job Name - Specifies the SingleCSV Publish Output Q&R Web Reporting job that contains the parameters to use for publishing. Click the dropdown box to select a SingleCSV publishing job.

  Note: SingleCSV publishing jobs are defined in Q&R Distribution Server Administration, Publish Output to Q&R Web Reporting.

- Default Category - Specifies the pre-defined category that is associated with the SingleCSV Publish Job.
- Override Category (optional) - Specifies the category name under which to publish the output. If this field is blank, the output is published using the value displayed in the Default Category field.
- Publish - Invokes the publish process.

  For more information about creating job definitions that publish output to Q&R Web Reporting, see the *Q&R Administration Guide*.

Export tab

Allows you to export the current chart, or all charts in the selected view to an output directory. The exported images can then be used with other windows applications.

- Current Chart Size (Width and Height) - Specifies the size of the current chart image displayed in the left panel. These values are updated when you resize the chart area.
- Export Image Size (Width and Height) - Specifies the size of the exported image.
- Update Export - The values for Export Width and Height are updated with the Current Width and Height values. The image is exported as it appears in the left pane.
- Resize Chart - The values for Current Width and Height are updated with the Export Width and Height values. The chart image is resized to match the Export size.
- Root Directory - Specifies the top-level directory where images will be stored.
- Add Directory Level for Date Time - When selected, an additional directory level that contains the CSV Date and Time will be created when the images are exported.
- File Name Prefix/Suffix - Default, None. Allows you to specify whether to add the CSV Date and Time to the export file name as a prefix or a suffix
- Image Type- Default: .png. Select a type for the exported image. The type is used as the file extension of the exported file.

Note: Use .bmp files only when necessary, in general they are much larger than .png

Chart Views

A chart view defines the appearance of the chart. It lets the user specify properties like the type of chart, the elements to place on the X and Y axes, and the use of legends on the chart.

Working with various views lets you explore data that you have already downloaded. You can use views to discover and further investigate interesting patterns and relationships in your data.

Stacked Bar vs Stacked Bar by Key charts

The following examples describe the Stacked Bar chart and the Stacked Bar by Key chart types to help you understand the differences between them.

Stacked Bar chart

In this chart type, you select different elements to become layers of the stack. When you select this chart type, you may select more than one element for the Y-axis.

Example:

If you have Division as key, hour as X-axis, and batch cpu time and tso cpu time for Y-axis, the result would be a different chart for each division. The values for batch cpu time and tso cpu time would be stacked one on top of each other with hour as your X axis.

Stacked Bar by Key chart

When the grouping is done by key values, the bar is a single data element and the layers represent the key value’s contribution to the total. When you select this chart type only one element can be placed on the Y-axis.

Example:

If you have Division as your stack key and hour as your X axis and batch cpu time for your Y axis, the result would be one chart that would stack the batch cpu time values for all the divisions.

Change and Save Chart View Definitions

After you have created a query, saved it, run it and are satisfied with the output, you are ready to start working with views. When working with views it is important to select the most recent instance of the output available.

Note: If the query needs significant modifications, for example, changes to the keys used in the Data Extract, we recommend that you make adjustments before you edit the view definitions.

Q&R Charting attempts to reconcile minor changes in the output, for example, adding or removing elements; however, you might have to adjust the view definition after you make the changes. A significant change such as adding or removing keys, might invalidate your view definition.

To change the view definitions and save them with the query

1. Select a Report Output from the Output Retrieval and display it in Q&R Charting.

   If view definitions have not yet been defined, Q&R Charting generates a basic line chart view. If the query definition file (QRQ) associated with the CSV output resides on your computer, Q&R Query automatically opens it.

2. Click the View tab on the Chart Properties pane to select an existing view or click Add to create a view.

   The View Definition panel appears.

3. Change properties as appropriate on the View Definition panel and click OK.

   The Q&R Charting panel appears.

4. Click X to close the Q&R Charting panel.

   The view definition is saved in the current CSV output file. These changes are also saved to a default View Definition file (VDF).

5. Select the Query Definition panel; it becomes the active window.

   The Query Definition panel appears.

6. Select Save.

   The view changes are saved in the Q&R query definition file (QRQ).

   Note: You cannot save view changes without saving query changes.

Saving the view changes to the Query lets you move the changes with the query when it is renamed or copied to another location. After a query is updated with a view definition, it is included in the output file every time the query is run.

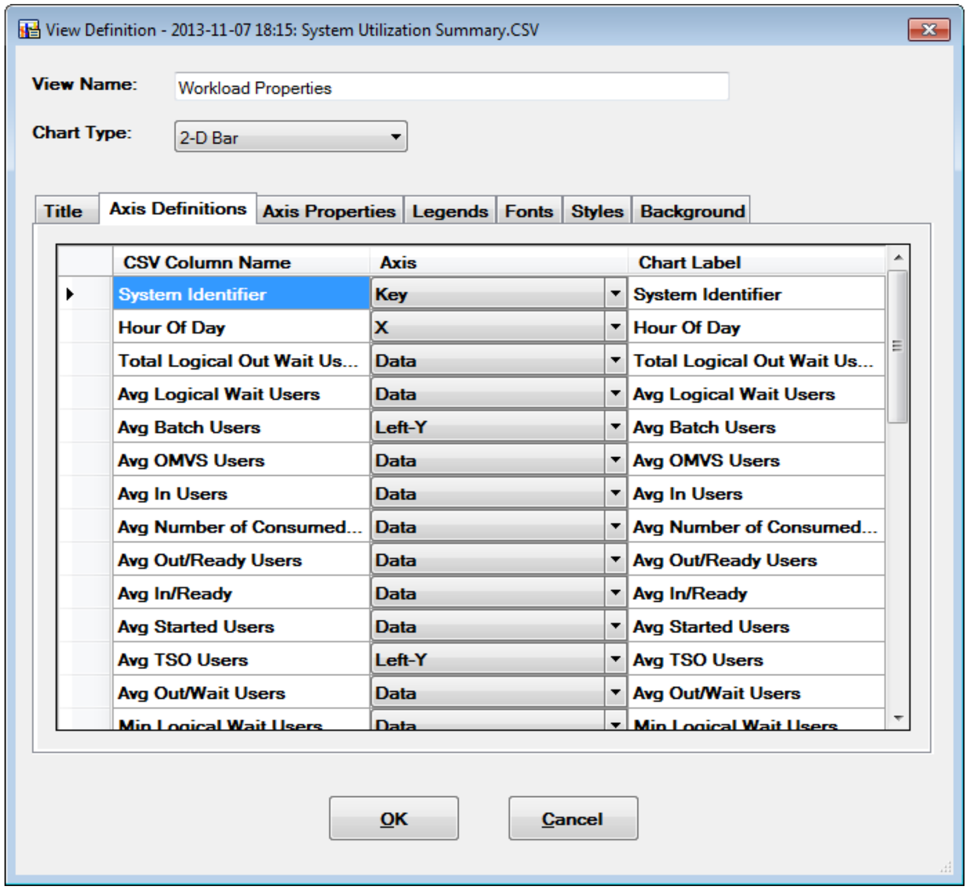
Note: For MICF CSV output that is downloaded through the Publish Output to Web Reporting, there is no QRQ to modify. In this case, the Default View Definition is applied to the next output. To change views for MICF CSV output, open the MICF output in Q&R Output Retrieval, edit the view, correct the property settings, and save the changes. In the future, downloaded CSV output will be published using the updated view definitions.

View Definition Panel

The View Definition panel in the following illustration lets you define how you want to see the data in your CSV Output. You can use the same CSV output to add views to create multiple visualizations (charts).

The default values for charting parameters are maintainable through the Q&R Options Editor. You can change the default values to reflect the preferences of your site and promote consistency across charts. For more information, see the Q&R Options Editor section.

Note: In this section the documented default value is the CA value that is provided at installation and the Q&R Options property name (where applicable).



View Name

Displays the name for this view.

Chart Type

Identifies the type of chart that is used for this view. The available chart types follow:

- 2D: Line, Stacked Area, Bar, Stacked Bar, Bar Stacked By Key

  Note: To stack the values from several different y-axis columns, use a 2-D Stacked Bar chart. When this chart type is selected, columns that are selected for the y-axis become layers of the stack. The resulting chart displays a bar that has a layer for each selected column. In contrast, on the 2-D Bar Stacked by Key chart, you select one of the last two key columns to become the stack column and one column for the y-axis. The resulting chart displays a bar showing layers that represent the different values of the stack column. The value of the y-axis column that is associated with the stack column determines the height of each layer.

- 3D: Area, Stacked Area, Bar, Stacked Bar, Pie
- None

  Note: This option is useful when your query produces a CSV that you do not want to visualize on a chart. A table view is produced in both Q&R Charting and Q&R Web Reporting.

  Default: 2D bar or Q&R Options setting: Default Chart Type

If the query definition (QRQ) is open when you close the Q&R Charting window, it is updated.

The following sections describe the tabs of the View Definition Panel.

More information:

Change and Save Chart View Definitions (see page 43)
Save a Query (see page 27)

Title tab

You can modify the name of the chart as it appears in the Chart Display pane using this tab. Following are the Chart Title components:

Custom Title

Defines the title of the chart. If entered, the customized title appears as the first portion of the Chart Title. A maximum of four lines can be entered and each will be centered.

Default: Blank

Include View Name

Displays the view name on the chart following the Custom Title.

Default: Clear or Q&R Options setting: Title - Include View Name

Include Generated Title

Displays a system-generated title including the names of the charted fields. This title follows any other selected title information.

Default: Selected or Q&R Options setting: Title - Include Generated Key

Include Key Values

Displays key values on the chart. The key values follow any other selected title information.

Default: Selected or Q&R Options setting: Title - Include Key Value

Show Invalid Chart Message

Displays a message in the chart title when the chart contains values that cannot be displayed because they are not within the axis limits of the chart.

By default, the message displayed is "Some values are not shown on this chart."

This message is not customizable in the view, but it can be changed for the site by updating the Q&R Options setting: Invalid Chart Message - Text

Default: Selected or Q&R Options setting: Invalid Chart Message - Display

Axis Definitions tab

You can define which CSV columns to present and also customize the labels.

CSV Column Name

Displays the column name as it appears in the Q&R output.

Note: The CSV Column Name cannot be modified; however, you can change the Chart Label to change how the label is displayed on the chart.

Axis

Defines the location of the column on the chart. Axis options are dependent on the Keys defined in the Q&R Query and the selected chart type. Only valid options appear in the drop-down list associated with a given column.

The values in the axis column and their descriptions follow:

Key

Appears in the Title area of the chart. Only elements defined as keys in the query Data Extract step can be selected as keys in the view. Q&R Charting groups the rows of the CSV to display on a given chart by selecting CSV data with like data values in all “key” fields.

X

The data column to plot along the X axis.

Note: On a pie chart, the X Axis column defines a slice of the pie.

Stack

The data column to stack.

Left-Y

The data column to plot along the Left-Y axis.

Right-Y

The data column to plot along the Right-Y axis.

Notes:

Depending on the chart type, you may select more than one column to plot against either the Left-Y or Right-Y axis. Selecting two items for the same axis is a good way to visualize data that is on the same scale. For example, you can plot Percent CPU Utilization of Division A with CPU Utilization of Division B on a 2-D Line chart and view.

When creating MICF CSV output for use in Q&R Query or Q&R Web Reporting, enter K and a number (for example, K3) in the Output Control Cell to denote the number of columns to use as keys. If you do not want to use the output to create charts, entering K0 in the Output Control Cell directs Q&R Query and Q&R Web Reporting to display a table view of the data. If you do not enter a value in the Output Control Cell, Q&R Query prompts you for a value and the Publish Output to Q&R Web Reporting utility generates a table view only unless customized views associated with the output have been created in Q&R Charting.

Data

The data column is not charted; however, it is displayed in the Data Table on the Data tab of the Chart Properties panel.

Chart Label

Displays the labels that appear on the chart. The Chart Label defaults to the CSV Column Name.

Axis Properties tab

Use this tab to set the axis properties for a view. You can set these properties for the Right-Y and Left-Y axes separately.

Automatic

Assigns axes ranges dynamically by default.

Equal to Right Y or Left Y

Matches the scale of one axis to the other. Both axes are on the same scale.

Fixed

Defines the axis limits. When selected, input boxes for the lower and upper limits display. This option must be set by the user. Fixing the axis limits makes it easier to compare two different charts. An example of a possible use of this option is to set the axis used for Percent CPU Busy from 0 to 100.

Default:

Left Y Axis: Automatic or MQR Options setting: Left Y Axis Type

Right Y Axis: Automatic or MQR Options setting: Right Y Axis Type

Custom Label

Overrides the generated axis label with your own label.

Gridlines

Controls the display of gridlines on the chart. By default, the only gridlines that are displayed are for the left-Y axis.

Default:

Left Y Axis: Selected or Q&R Options setting: Left Y Axis Grid Lines

Right Y Axis: Clear or Q&R Options setting: Left Y Axis Grid Lines

Show Axis Label

Displays the axis label.

Default:

Left Y Axis: Not Selected or Q&R Options setting: Left Y Axis Show Label

Right Y Axis: Not Selected or Q&R Options setting: Right Y Axis Show Label

X Axis: Not Selected or Q&R Options setting: X Axis Show Label

Consistent Axis Limit

Defines the consistent axis limit. When the axis is not stacked and the Automatic option is selected, the consistent axis limit check box is enabled. When selected, the Axis is the same for each chart created for an output. This option lets you compare the charts associated with the current output. If you want the axis to be consistent for all outputs, use the Fixed option.

Default:

Left Y Axis: Not Selected or Q&R Options setting: Left Y Axis Consistent Upper Limit

Right Y Axis: Not Selected or Q&R Options setting: Right Y Axis Consistent Upper Limit

Reference Line

Defines a reference line or reference area on the Y Axis. This option must be set by the user. Setting a reference line can be used to identify data limits and ranges. Setting the lower limit = to the upper limit will cause a line to be displayed. Setting the upper limit greater than the lower limit will highlight a section of the chart. If a Label is entered, it will display in the chart legend.

Rotate X Axis Label 90 Degrees

Displays the X axis labels vertically. This option is beneficial when the X axis label is long or when there are large numbers of items on the X axis.

Default: Selected or Q&R Options setting: X Axis Rotate Label

Legends tab

You can control the appearance of the chart legends using this tab. Each Y axis has its own legend. You can change the default values using this tab.

Show Legend

Specifies whether the legend appears on the chart.

Default:

Show Left Y Axis Items: Clear or Q&R Options setting: Left Y Axis Show Legend

Show Right Y Axis Items: Clear or Q&R Options setting: Right Y Axis Show Legend

Position

Selects where the legend is displayed. The choices are: Upper Right, Lower Right, Upper Left, Lower Left, and Bottom.

Default: Bottom or MQR Options setting: Legend Position

On 2-D Bar Stacked by Key charts, the following additional options display:

Consistent colors

Uses unique colors for each item in the stack. These colors will be used across all charts in the selected CSV Output.

Default: Selected or Q&R Options setting: Legend - Consistent Colors

Consistent legend entries

Places all possible legend items on every chart when selected. In other words each chart rendered for the selected CSV Output will have the same items in the legend regardless of whether or not the value is included in the data used for a given chart. When cleared, each chart’s legend contains only those stack items that have CSVs rows that contain the current chart’s key value.

Default: Clear or MQR Options setting: Legend - Consistent Entries

Fonts tab

You can use this tab to control the fonts that are used in different areas of the chart. The chart text areas that can be controlled are the Title, Chart, Axis Labels, and Legend. To select a new font, click the Change button next to the font you want to change, then select the new font using the dialog.

Name

Specifies the font name.

Size

Specifies the font size.

Style

Specifies the font style. Note: only Bold and Italic font styles are supported. In the Q&R Options Editor the next to the last part of the font value is True when the font is to be displayed in bold. When the font is to be displayed in italic, the last value is True.

Default:

Title: Microsoft Sans Serif,9.5,True,False or Q&R Options setting: Title - Font

Chart: Arial,8.25,False,False or Q&R Options setting: Chart – Font

Axis Label: Arial,8.25,False,False or Q&R Options setting: Axis Label – Font

Legend: Arial,8.25,False,False or Q&R Options setting: Legend - Font

Styles tab

You can control the look of lines and bars using this tab.

Lines

Style: Specifies the look of the line. You can choose from Line, Curve, Scatter or Step.

Note: When Scatter is selected, no line is displayed, but the markers will be visible.

Default: Line or Q&R Options setting: Line Style

Width: Specifies the line width. Values 0 -12.

Default: 3 or Q&R Options setting: Line Width

Marker Shape: Specifies the shape of the marker, You can choose from circle, cross, diamond, horizontal line, inverted triangle, many, marble or none. Tip: When showing multiple lines on a chart, the many setting will display a different marker type for each line on the chart.

Default: Marble or Q&R Options setting: Marker Shape

Size: Specifies the size of the marker values 0 to 6 .

Note: When set to 0, no marker is displayed.

Default: 3 or Q&R Options setting: Marker Size

Bars

Style: Specifies the direction of the bars. You can choose from vertical or horizontal. When you choose horizontal, the chart is rotated so that the Y Axis items appear at the bottom of the chart and the X axis items appear on the right side of the chart.

Default: Vertical or Q&R Options setting: Bar Style

Shape: Specifies the shape of the bars. You can choose from rectangle, cylinder, cone or pyramid.

Default: Rectangle or Q&R Options setting: Bar Shape

Background tab

You can control the look of the chart background using this tab. The appearance of the background depends on the chart type. On 2D charts, the chart background is transparent and the entire background displays. On 3D Charts, the chart background "box" displays. In this case, you see only the parts of the image that are not covered by the chart.

Type

Specifies the background type. You can select from the following:

- Default: A gradient blue background.
- Solid: a solid background with color set to Q&R Option setting Chart - Background Solid Color.
- Image: an image background where the background image will be set to the value of the Image File name field.

Default: Default or Q&R Options setting: Chart - Background Type

Image File Name

Specifies the name of Image file used when background type is set to Image. This file can be of type .bmp, .jpg, .jpeg, or .png.

Default: None or Q&R Options setting: Chart - Background Image Name

Note: The image file must be available (accessible) for Q&R Charting or Publish to Web Reporting to use when the chart is being rendered.

When you are using a background image on a chart that will be published to Q&R Web Reporting, the image must be sized. Use the same dimensions as the Image Size that is defined on the image properties tab of the Publish to Q&R Web Reporting Job. This job will be used when you publish the output.

Time Values in Q&R Charting

Time values in HH:MM:SS.ss or MM:SS.ss format can be charted. Q&R Charting determines the display units base on the values in your data. The conversion unit used (hour, minute or second) is then appended to the Y-axis label. The data section of the Data tab displays the time value in HH:MM:SS.ss format.

Note: Time values cannot be plotted on the same Y-axis as other numeric values.

Numeric Values in Q&R Charting

When creating a query, the following rules apply to formatting numeric values.

- When selecting the Output File Separator in the Q&R Query Data Extract step, use the following punctuation marks:
  - A comma if your numeric values are displayed in U.S. format (the decimal symbol is a period).
  - A semicolon if your numeric values are displayed in European format (the decimal symbol is a comma).
- For numbers to chart properly, do not apply a format in the Element Selection task of the Data Extract step that changes the digit grouping or decimal symbols.
- Q&R Charting displays numbers based on the decimal symbol and digit grouping symbol defined in the Regional Options of the Windows Control panel.
- Q&R Web Reporting charts display numbers based on the decimal symbol and digit grouping symbol defined in the Regional Options of the Windows Control panel of the Q&R Distributed Server that generated the web content.

Default Chart Display in Q&R Charting

By default, Q&R charting will create a 2D Bar chart for your initial view of the output data. You may change this by editing MQRQuery.ini and changing the “QR Charting DefaultChartType=” setting. Change the value after the “=” from “2-D Bar” to “2-D Line” to produce line charts. Change the value to “None” if you always want the initial display of the output to be a data view only. Once Q&R Charting displays the data, you can add or modify views to create additional presentations. In addition, for MICF CSV output, entering K0 in the Output Control Cell will cause Q&R Charting to display data only.

How Views Are Saved and Applied

When you run a new Query or are examining an output produced by Production Reporting for the first time, Q&R Charting generates a basic chart view and displays the data. You may want to customize the visualization and add additional views. When views are added or changed, Q&R Charting updates the display so you can see the results and make additional changes where necessary. When you close the Q&R Charting window, the view changes are:

- Automatically saved in the output you have viewed.

  Updated in the associated Q&R Query file (.QRQ) by replacing the Chart Step information in the Data Extract step that defines the CSV output. From the Query Definition window you have the option of saving the changes. After you have saved the changes, subsequent ad hoc runs of the query produce output with the updated views.

  Note: This is only applicable if the Query (.QRQ) associated with the output is open. If the .QRQ is not open, the view changes will only be applied to the output. Saving the view definition in the QRQ file ensures that the view definition is available if the query is moved or copied to a new location.

- Saved in the Q&R Output Retrieval at the Query Level in a file called the external View Definition File (.VDF). The .VDF is only applied when the Q&R Distributed Server receives CSV output from the Q&R Mainframe Server and determines that it does not contain a view definition. If a .VDF file is available, the contents are included in the CSV as part of the save process.

  Note: The .VDF file stores view definitions so they can be applied to CSV output generated by Production Reporting and downloaded using the Publish Output to Q&R Web Reporting feature of Q&R Distributed Server Administration.

The process of applying views is completed *before* the output is made available in Output Retrieval. After output is available through Output Retrieval, Q&R Charting reads the view definition from the output and uses it to create graphs. The only way to change the view properties of currently displayed output is by editing the views using Q&R Charting.

Export Query to Run in Production

After you create a Q&R Query, you may find that you want to run regularly. You can save directly to the mainframe using Move Query to Production. Optionally you can save the exported query on the client workstation and can move it to the mainframe later by using Save Macros.

Move Query To Production

To move a query from the Q&R environment to the MICS reporting environment:

Follow these steps:

1. Select the Move Query to Production option.
2. To create the data set and member name where the query is stored, select from the MICS Complexes and optional suffix.
3. The constructed name appears in the Mainframe Data Set Name (member box).
4. Check the Replace member checkbox if it is ok to replace the member if it already exists.
5. Click ok.
6. Verify completion by viewing the associated MICSLog from the Query Status window.
7. Complete the process of putting the query into production using CA MICS MICF on the mainframe.

   Note: For more information, see the Set Up MICF Production Queries section in the *Q&R Administration Guide*.

   The view definition is automatically paired with production output if the Move Query To Production process is done using the same Q&R Distributed Server that is used for Publishing to Q&R Web Reporting (RMWSLoad). Otherwise, if you want it to be associated with the production run, copy the .VDF file to the directory you are downloading your production run to. This data is stored in the Q&R Distributed Server environment, under the Server Data Path\ Mainframe Server Name\Category\Report. If you do not have access to the Q&R Distributed Server, ask your Q&R Administrator to help you complete this operation.

Save Macros

The Save macros option (available from the file menu in Q&R Query) extracts the SAS generated from your query so it can be set up as a MICF production query that is run on a regular basis. If you select this option, you must use an external tool to move the file to the mainframe. We recommend using this option only if you are unable to use the Move Query to Production feature.

Note: For more information, see the Set Up MICF Production Queries section in the *Q&R Administration Guide*.

When using the Save Macros option, the view definition is not exported. If you want it to be associated with the production run, copy the .VDF file to the directory you are downloading your production run to. This data is stored in the Q&R Distributed Server environment, under the Server Data Path\ Mainframe Server Name\Category\Report. If you do not have access to the Q&R Distributed Server, ask your Q&R Administrator to help you complete this operation.

Chapter 3: Q&R Web Reporting

Q&R Web Reporting provides easy access your web-published Q&R query results for your internal customers and information consumers.

To view the query output on the intranet, you need a web browser that has access to the location where the query content is published. You are not required to have any Q&R Workstation software to view web-published Q&R Query output. Reports are displayed in graphical or tabular form according to the settings defined by the query authors.

This section contains the following topics:

Before You Begin

Obtain the Q&R Web Reporting web address from your Q&R Administrator.

Access Q&R Web Reporting

To access Q&R Web Reporting using your browser, enter the web address that your Q&R Administrator provided.

View a Report

When the Contents pane is visible in your browser, you can view any of the available reports.

To view a report

1. In the Contents pane on the left, select a category. The category expands to display a list of reports that are associated with that category.

   Notice that the Detail tab is selected, and serves as the default viewing method used to examine published reports.

2. Click a report.

   A new pane opens on the right, displaying the most recently generated instance of the report. Several navigation controls above the report let you view the charts and tables of the report.

   Below the report are three tabs: Key, View, and Run Date. These tabs control the thumbnails--the chart images that are displayed below the tabs.

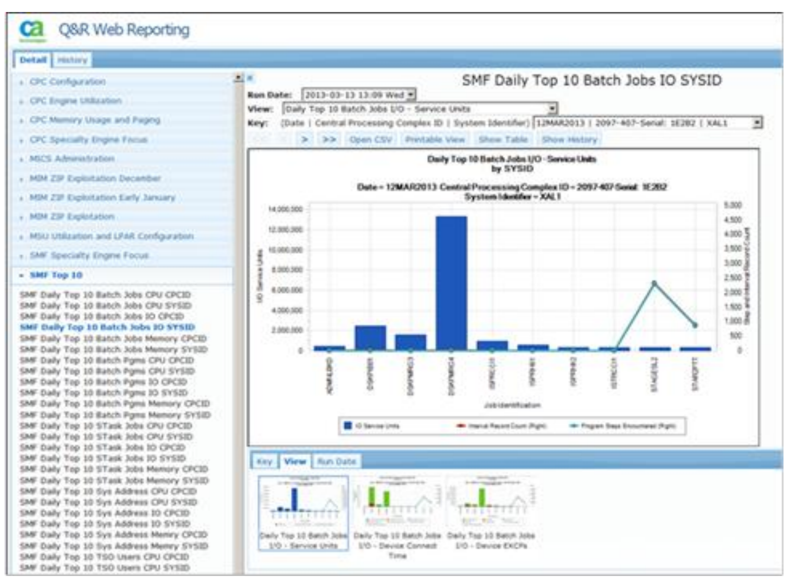
   The Key tab is selected automatically as the default thumbnail display. The Key tab shows thumbnails for any additional charts that are rendered using different key value combinations for the report instance currently being viewed. The thumbnail chart images allow you to identify and select a specific report rather than navigating to a specific key value using the buttons or the dropdown list.

Q&R Web Reporting Panel

Q&R Web Reporting provides several functions that let you navigate through the available report files. You can also navigate using the thumbnail tabs at the bottom of the window.

The following image is a sample of a Q&R Web Reporting web page. The category SMF Top 10 is selected along with the view tab under the main chart image.

Note: The actual reports and content available on your web site are determined by the CA MICS output that is published to your Q&R Web Reporting web site. For more information, see the *Q&R Administration Guide*.



Detail Tab

The Detail tab is the primary method to use to navigate through the Q&R Web Reporting reports. When the Detail tab is selected, the following navigation options are available directly above the displayed report:

Note: For the reports generated from CSV output, the View and Key dropdowns are available.

Run Date

Displays a list of all date and time instances for the selected report. The most recent instance of the report is shown by default.

View

Displays a list of all available views that are generated for the currently selected report instance.

- All reports have at least one view, considered the primary view. Not all reports have multiple views.
- The analyst establishes the report views during the Q&R Charting visualization process.

Key

Provides a list of the key value combinations that are associated with each report image of the currently viewed report output. Use this dropdown list to look for and select a specific key combination for display.

- The number of unique key combinations in the data determines the number of different selections in the Key dropdown.
- The analyst establishes the report keys in the Q&R Query composition by selecting keys on the data extract step.

  Within a selected view, you can use the navigation keys on the toolbar to move through the list.

The following option buttons are available under the Key dropdown:

Open CSV

Opens a new window and loads the entire CSV contents into Microsoft Excel.

Printable View

Opens a new browser window containing the chart image. Print the chart using the print capabilities of your browser.

Show Table

Displays a table version of the data that is associated with the chart being displayed.

This table can include additional metrics that are provided with the report, but are not displayed on the chart.

Note: You can highlight the table and copy and paste it to another program, for example, Microsoft Excel, for further independent analysis.

Show History

Displays the History Tab for the chart being displayed. The default is to display all available charts up to 30 days. This display can be modified to include any time period of available data that is filtered by key values.

Additional navigation tabs are available directly below the currently displayed report:

Key

Displays a thumbnail for each key combination available for the selected report.

Clicking a thumbnail displays the chart in the main report viewing area.

Hovering the mouse over a thumbnail displays a larger image and provides more information about the chart.

View

Displays a thumbnail for each View available for the selected report.

Clicking a thumbnail displays that chart in the main report viewing area.

Hovering the mouse over a thumbnail displays a larger image and provides more information about the chart.

Run Date

Displays a thumbnail for each historic instance of the currently selected chart.

Note: The thumbnail charts have the same key combination values.

Clicking a thumbnail displays that chart in the main report viewing area.

Hovering the mouse over a thumbnail displays a larger image and provides more information about the chart.

Note: By default 14 charts, 7 per row are displayed. To modify the default, use the Advanced Settings at the bottom of the page. If a chart is created daily, each row represents a week of data.

Advanced settings:

Allows you to modify the number of charts on each row on the Run Date tab.

In certain circumstances, you might want to mask certain key values from the display. For example, if a date is included as part of the key, you can exclude this value from key processing. Q&R Web Reporting automatically makes intelligent decisions about the values to exclude, but you can manually override these selections as needed.

We strongly recommend that you do not change these values unless you are familiar with the data and key values.

History Tab

The History tab lets you view all chart instances of a report for a specified time period. By default a 30-day period is displayed, but you can use the date selection dialogs to select any available time period.

You can access the History tab:

- Directly, by selecting a report from the Contents pane of the Q&R Web Reporting page and clicking the History tab
- From the Detail tab, Show History tab of a selected report.

The history for the report is displayed.

Run Date From

Provides a calendar control; select the start date for the report display.

To

Provides a calendar control; select the end date for the report display.

View

Lists the names of the views that are available for this report instance. To display all the views for a report, select *** ALL ***.

- Every report has at least one view--the primary view. Not all reports have multiple views.
- The analyst sets the number of views during the Q&R Query composition process and the Q&R Charting visualization process.

Key Area

Each key value is displayed in a dropdown list. To filter the displayed thumbnails, select a key value.

Newest First

When this box is checked, the thumbnail images are sorted to display the newest run date first.

Page Scrolling

Shows the number of charts currently displayed. If more than 105 charts are available for display, you can use the navigation buttons to locate a chart.

Appendix A: Q&R Query Tasks

Each query step contains one or more query tasks. Each task supplies parameters or modifiers to the functions performed by the step.

Q&R Query has seven query tasks that can be used when composing a query.

This section contains the following topics:

Data Filters Task

The Data Filters task is used to specify certain conditions that the data must meet before it is included in the query. For example, you can include data from specific SYSIDs or for CPU time greater than one second.

The columns in the Data Filters task panel include the following:

Element

Specifies an element from the data that is to be compared.

Operator

Specifies if the elements in the Element column and element values in the Value/Element column must be:

Operator	Description
EQ	equal to
LT	less than
LE	less than or equal to
GT	greater than
GE	greater than or equal to
NE	not equal

Note: When making character comparisons, you can use a colon (:) after any of the comparison operators to compare only the first character or characters of the value or element. Q&R Workstation truncates the longer value to the length of the shorter value during the operator phase.

Value/Element

Specifies the value or another element from the data, to compare against the element.

Connector

Specifies the relationship of the element conditions. The relationship can be one of the following:

Connector	Description
AND	both are true
OR	either one is true
;	independent of each other

Find Element

Specifies the element information from a list of available elements.

Remove Row

Deletes the highlighted conditions.

Previous Date Period:

Use the dropdown to select from the following:

None: No date selection

Day: Select the previous day’s data

N Days: Selects the previous N day’s data where N = 0 to 2000

Note: Data returned will be N days data or the number of days data stored in the MICS data base (usually 99), whichever is smaller.

Week: Selects the previous week’s data. Week start date is defined by the Complex’s MICS calendar

Month: Selects the previous month’s data

Default: None

Data Derivation Task

The Data Derivation task is used to create elements that are not typically a part of the data. For example, if your data includes the maximum CPU time and minimum CPU time, but does not show the differences between those values, you can create an element to represent this comparison.

Note: The Name Field has a maximum length of eight characters.

The Data Derivation task panel has the following fields:

Name

Specifies the name of the desired element.

Label

Specifies a brief description of the desired element.

Type

Specifies the data type of the derived element. The options are Alphabetic, Date, Date Time, Hex, Numeric, Time, Time of Day, and Money.

Length

Specifies the precision of a numerically derived element or the length of an alphabetically derived element.

Output Format

Specifies the style in which the element appears in the final output, using standard SAS formatting conventions.

Note: When an output format is specified, the extracted column becomes a text field in the output CSV. This means that the column cannot be selected for placement on the Right-Y or Left-Y axis of a Q&R chart.

Derivation

Displays the formula used to create the value of the element. For example, DIFCPU=MAXCPU-MINCPU;

Finder

Loads a derivation formula that was previously saved.

Save

Stores the current derivation formula in a .QRD file. Once the Data Derivation code is saved, it can be imported into another query using the Finder button.

User Code Task

The User Code task is used to include your SAS code into the query. This is a useful way to add customized processing or selection criteria as needed.

The User Code task panel has the following fields:

User Code: A free form text box where you can add the SAS code you want to execute.

Finder

Loads the SAS code that was previously saved to a .QRU file.

Save

Stores the current SAS code in a .QRU file. Once the SAS code is saved, you can use the Finder button to import it into another query.

Files Task

The Files task specifies the file information to be used in a query step. The input files can be derived from the CA MICS Database, an external SAS File, or a prior query step.

The Files task panel has the following fields:

Finder

Locates the file information from a list of available files, which will be used in the Filename box.

Filename

Displays the name of the file that contains the data that will be used in the query.

File Info

Displays the directory path of incoming complex files, including the complex, unit, and Q&R Mainframe Server.

Timespan

Specifies the level the complex file data is to be retrieved in. The possible levels are: Detail, Days, Weeks, Months, or Years, but the dropdown list includes only the active timespan levels for the selected file.

Sum

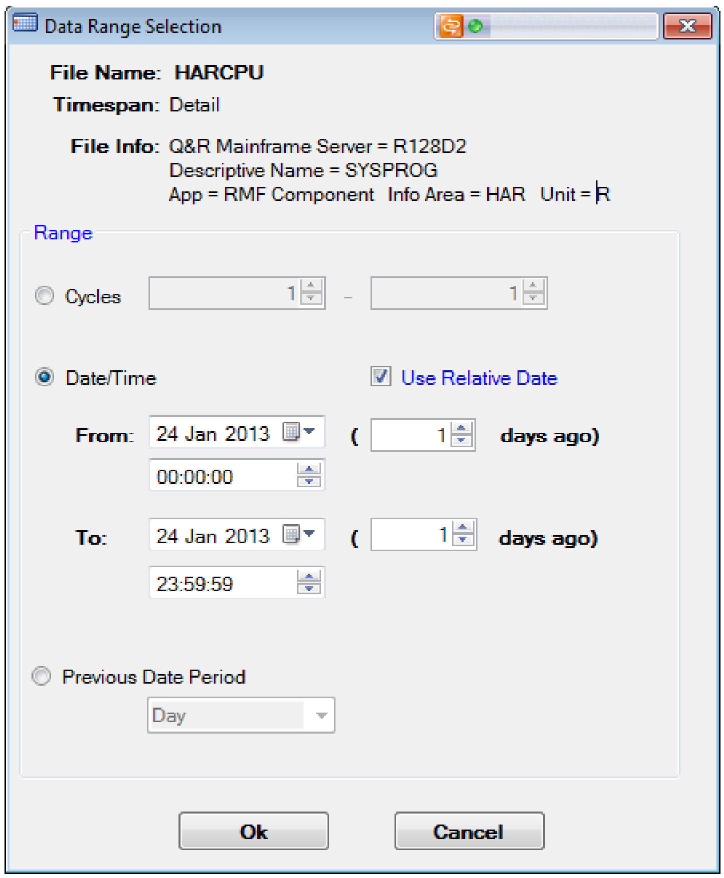
Includes a summarization on selection. This option is available only when this task is used in the Summarization step.

Data Range

Do one of the following to select the data to use as input for the query on the Data Range Selection panel.

- If the data range displays on the panel, click the calendar icon.
- If the data range displays on a grid, click the data range cell.

  On the Data Range Selection Panel, you can select by cycles, date range, or previous period. Click the appropriate button and enter the values.



Cycles

Specifies the number of cycles of the timespan to include from a complex.

Default: 1:1

Date Range

Specifies the date and time range of the timespan to include from a complex.

The date is automatically converted to a relative number of days that is displayed to the right of the date and time.

Default: Yesterday 00:00:00 - Yesterday 23:59:59

To change quickly to the default time values, right click the time field and click Set To 00:00:00 or Set To 23:35:59, as appropriate.

Use Relative Date

When this option is checked, the data range will be saved in the .QRQ or Exported Query in relative format.

The date is automatically converted to a relative number of days that is displayed to the right of the date and time. Dates are saved to the .QRQ in relative days. When you reopen a query, the date that corresponds to the relative number of days is automatically selected.

For example, if the date range is defined as the last three days, it will reset to the last three days when you open it later.

Note: The values in From Time and To Time will remain set to whatever was selected.

Previous Date Period

Specifies a date period for data selection. The user can select from the following options:

- Day: Select the previous day’s data
- N Days: Selects the previous N day’s data where N = 0 to 2000

  Note: The Data returned will be N days data or the number of days the data was stored in the MICS data base (usually 99), whichever is smaller.
- Week: Selects the previous week’s data; week start date is defined by the Complex’s MICS calendar.
- Month: Selects the previous month’s data

Default: Day

When you click OK, your selection is saved and is displayed in the Data Range textbox or in the column on the associated step.

Output File Name

Specifies a name for the output file that is created.

Key Selection Task

Keys are a collection of one or more elements used to identify each record in the data. Q&R Query initially fills in this information based on the current key structure of the file. Key Selection defines the elements to be used as keys and the order in which they appear in the output. The order of the keys impacts the Q&R Charting presentation. On 2D charts, Q&R Charting allows the last two keys to be selected for either the X-axis or as the stack variable in 2D Stacked by Key charts.

The Key Selection task panel has the following fields:

Element

Specifies the elements to use as a part of the key. The resulting data is sorted by default, based on the order that the elements are listed here.

Description

Displays the element label.

(Optional) Format

Specifies how the element displays in the output.

Order

Specifies whether the associated element is sorted in ascending or descending order. This selection reflects in the CSV output; however, Q&R Charting always orders the chart keys in ascending order.

Add

Adds an element from a list of available elements.

Remove

Deletes the selected element from the key.

Element Selection Task

The Element Selection task is used to specify which elements to include in the output of a Data Extract step.

Note: The element selections include the elements specified in the Key Selection task in the final CSV formatted file. Key elements are always included in the CSV file and need not be selected.

The Element Selection task panel has the following fields:

Element

Specifies the elements to include in the output.

Description

Displays the element label.

(Optional) Format

Specifies how the element appears in the output.

Note: When an output format is specified, the extracted column becomes a text field in the output CSV. This means that the column cannot be selected for placement on the Right-Y or Left-Y axis of a Q&R chart.

Elements and groups of elements

Lets you select or drag and drop to change the order of the elements included in the output. Click an element to select it. Use Shift + click to select groups of items. Use Ctrl + click to select multiple items that are not appearing together on the list. The Add button is used to add an element from a list of available elements. In addition, you can sort the elements by clicking the column heading. When saved, the order of this list determines the order in which the elements appear in the output.

Remove

Deletes the selected element.

Statistical Selection Task

The Statistical Selection task is used to perform statistical calculations on the data. You can run several types of statistical calculations on the same Statistical Selection task panel.

The Statistical Selection task panel has the following fields:

Available Elements

Displays the list of available elements to perform calculations. You can click the desired element to add your choice to the New Elements list.

New Element

Specifies the element name to store the resulting value.

Note: The default is the element used in the calculation and must be changed to a unique name.

Expression

Displays the element and the statistical calculations. The value of the new element is derived from the statistical calculations.

Remove

Deletes the highlighted calculation from the list.

The four drop-down boxes below the Available Elements box display the currently selected statistical functions that can be applied to a selected element. Use the drop-down list to change the selected function. To fill in the expression column, click Apply next to the statistical function you want to use.

The dropdown list includes the following items:

N

Number of Nonmissing Values

NMISS

Number of Missing Values

MIN

Minimum of Nonmissing Values

MAX

Maximum of Nonmissing Values

RANGE

RANGE of Nonmissing Values

SUM

SUM of Nonmissing Values

SUMWGT

Weighted Sum of Nonmissing Values

MEAN

MEAN of Nonmissing Values

CSS

Corrected Sum of Squares

USS

Uncorrected Sum of Squares

VAR

Variance of NonMissing

STD

Standard Deviation of Nonmissing

STDERR

Standard Error of the Mean

CV

Coefficient of Variation

SKEWNESS

Skewness

KURTOSIS

Kurtosis

T

Student's Test

PRT

Probability of Greater Absolute Value

Note: For more information about statistical calculations, see the *SAS Procedures Guide.*

Appendix B: Q&R Query Templates

When you compose a new query, you can, optionally, use a query template to help you get started quickly. The templates can help you learn how to use combinations of steps and tasks to produce a desired result. A query template is a predefined empty query shell that defines the structure of a particular query, that is, its steps and associated tasks. Using a template, you fill in the required information and run the query.

- You can modify, save, or create a template from any query.
- You can use a template as a starting point to compose a query. You can start with either a simple or a complex template and customize the template for your query by adding or deleting steps or tasks.
- If you modify a query template, we recommended that you save the template with a new name. This ensures that your modified template is not overwritten in the event that you install product updates or uninstall Q&R Workstation.

This section contains the following topics:

Create a Template

From any Open Query, you have the option of saving the query as a template so you can create a new query with the same structure (steps and tasks) later.

To Create a New Template

1. Open or Compose a new query.

   The Query Definition panel appears.

2. Update the query as required.

   Steps and tasks are added.

3. Click File, Save As Template.

   The Save Template As panel appears.

4. Enter the file name that you want to use for the template and click OK.

   The template is saved.

Query Templates Description

Q&R Workstation provides a selection of templates. The templates are categorized as simple or complex.

Following are the template choices in the pull-down menu:

Complex Data Extract

Builds a typical complex query using the following step options:

- File Selection
- Merge
- Concatenation
- Summarization
- Sort
- Data Extract

Each step contains required and optional tasks, such as data filters, data derivation, and user code that allow further data manipulation within each step. This template does not provide SAS Code steps for your own independent SAS Data steps.

Complex Data Manipulation

Builds a complex query using multiple input files that are merged, summarized, and sorted prior to building a Data Extract file. You may add your own SAS code in between steps to further manipulate the data. The template consists of the following step selections:

- Two File Selections
- Merge
- SAS Code
- Summarization
- Sort
- Data Extract

Each step also contains required and optional tasks, such as data filters, data derivation, and user code, allowing further data manipulation.

Complex Data Merge

Builds a complex query that merges files directly from CA MICS or SAS databases without using File Selection. The merged file is sorted, further manipulated using your own SAS code, and summarized prior to building a Data Extract file. The template consists of the following step selections:

- Merge

- Sort
- SAS Code
- Summarization
- Data Extract

Each step also contains required and optional tasks, such as data filters, data derivation, and user code, allowing further data manipulation within each step.

Complex Query

Builds a complex query using every available query step and task supported by this product, including the following:

- File Selection
- Merge
- Concatenation
- Summarization
- Statistics
- Sort
- SAS Code
- Data Extract

Use this template as a model for customizing or creating your own templates, or when you need to build a very complex query but are unsure of the steps and tasks available.

Complex Statistics

Builds a complex query that involves statistical calculations, such as sum, mean, variance, and standard deviation. The template consists of the following:

- File Selection
- Sort
- SAS Code
- Summarization
- Statistics
- Data Extract

Each step contains required and optional tasks. The statistics calculations are computed by PROC MEANS.

Simple Concatenation

Builds a simple query using two or more input files directly from CA MICS or SAS database(s). The template consists of the following step selections:

- Concatenation
- Data Extract

The concatenation step joins two or more files from the databases. The Data Extract step converts the data for use on the workstation. You have the option during concatenation to select the file join method, which either appends the file one after another, or interleaves the files using keys.

Simple Data Extract

Builds a simple query using one database file and converts it for use on the workstation. The template consists of the Data Extract step and its required tasks. Simply specify the input file from either CA MICS or SAS database, and the Data Extract step converts the data for use on the workstation.

Simple File Selection

Builds a simple query using files from CA MICS or SAS database(s) while providing limited data manipulation capabilities. The template consists of the following step selections:

- File Selection
- Data Extract

The File Selection step creates a work file from a CA MICS file (1-99 cycles) or a single SAS file, and the Data Extract step converts the data for use on the workstation. You can manipulate the data during the File Selection step by defining data filters and deriving additional data elements.

Simple Merge

Builds a simple query using two or more input files directly from CA MICS or SAS databases. The template consists of two step selections:

- Merge
- Data Extract

The Merge step creates a work file by merging two or more files from the databases, and the Data Extract step converts the data for use on the workstation. You can merge CA MICS files with SAS files during the Merge step. You can specify the files be sorted and summarized before the merge.

Simple Sort

Builds a simple query using one database file. The template consists of two step selections:

- Sort
- Data Extract

The Sort step sorts an input file from either CA MICS or a SAS database, and the Data Extract step converts the data for use on the workstation. You can use any data elements in the input file as the sort keys, and each key may be sorted in either descending or ascending order.

Simple Summarization

Summarizes and builds a CSV file. The template consists of two step selections:

- Summarization
- Data Extract

The Summarization step summarizes either a CA MICS file using the CA MICS summarization macros, or a SAS file using PROC MEANS or PROC SUMMARY. You can specify in the summarization step whether or not the file must be sorted prior to summarization. The Data Extract step converts the data for use on the workstation from the work file created by the Summarization step.

Select a Template

Templates are predefined query shells provided as a starting point to create queries. You do not need to use a template to create your query.

To select a template

1. After entering a query name, title and description on the New Query information panel, click the Finder button to select a template and click Open.

   The name of the template you selected appears on the New Query information panel.

2. Click OK.

   The Q&R Query panel opens, presenting the template steps as a query tree in the left pane and the associated query properties in the right pane.

Appendix C: CSV Directory and CSV Data Extract Structure

This section contains the following topics:

CSV Directory

The CSV directory, shared prefix.MICS.DTF.INDEX, is a sequential file with a variable length 255-character record. The CSV directory data sets created by the individual CSV and MICF production job stream have the same format as the common CSV directory.

The following table lists the record types that can appear in the CSV directory. The one-byte record type is in the first position of the record.

Row ID	Description	Example
V	Version	MQR7160 BAS7405
J	Production Reporting Job Stream Name	MQRPRJOB MQR Production Reporting Job Stream
G	Long Group Name	PRODRPT Production Reporting
U	User ID	BELDA01
D	CSV Data Set Name	MDI.PRODRPT.MWFDTFn.DATA
O	Output Data Set Name	MDI.PRODRPT.MWFPDSnn.DATA
S	Short Group Name	PRODRPT
I	Query Name	PRTCPU 11/03/24 11:42 PRINTED RPT CPUBSY
L	SASLOG Member Name	ML1
R	Report (SASLIST) Member Name	MR1
X	MICSLOG Member Name	MM1
M	CSV Member Name(s)	CSV10009 18970 RMF CPU Busy1
P	Profile Member	PRF10009 CSV10009 RMF CPU Busy1

The records are sequentially dependent and represent a hierarchy of information.

CSV Directory Record Fields

Each record in the CSV directory has one or more fields in addition to the record type field described in the Control File Record Types section. These fields have a fixed format and length. The following table shows each of the field names, lengths, locations, and layout characters used to represent their length and location in the CSV directory record layouts that follow.

Field Name	Length	Location	Field Layout*
Job Name	8	3	jjjjjjjj
Group Name	8	3	gggggg
Short Group Name	8	3	hhhhhhhh
User ID	8	3	uuuuuuuu
Query Name	6	3	iiiiii
Member Designation	1	3	M (constant)
Member Name	8	3	mmmmmmmm
CSV formatted (file size)	8	12	ssssssss
Title (Job)	40	12	tttttttttttttttttttttttttttttttttttttttt
Title (Group)	40	12	tttttttttttttttttttttttttttttttttttttttt
Title (Inquiry)	40	25	tttttttttttttttttttttttttttttttttttttttt
Title (Member)	40	21	tttttttttttttttttttttttttttttttttttttttt
Data Set Name	44	3	dddddddddddddddddddddddddddddddddddddddd dddd
Profile Name	8	3	pppppppp
Date	8	10	yy/mm/dd
Time	5	19	hh:mm
Catalog Version	7	3	ccccccc
Software Version	7	11	vvvvvvv

Field Name	Length	Location	Field Layout*
Type	1	1	x (where x is one of the following: V, J, G, U, D, O, S, I, L, R, X, M, P)

*All layouts start in position 1.

CSV Directory Record Layouts

The following example shows the format of each CSV directory record. This view simply shows the location and length for the fields in each CSV directory record type. This view does NOT show the hierarchical relationship between records.

Note: Due to margin limitations, the indented line in the following example actually contains the trailing characters from the preceding line. Continuation lines are NOT permitted.

```
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----

V cccccccc vvvvvvv
J jjjjjjjj
G gggggggg
U uuuuuuuu
D dddddddddddddddddddddddddddddddddddddddddddd
O dddddddddddddddddddddddddddddddddddddddddddd
S hhhhhhhh
I iiiiiiii yy/mm/dd hh:mm
L M mmmmmmmm
R M mmmmmmmm
X M mmmmmmmm
M mmmmmmmm ssssssss
P pppppppp mmmmmmmm
```

CSV Directory Example

The following example shows the records as they might appear in an actual Q&R Workstation CSV directory. This example shows the sequentially dependent relationship between records. The location of each record in the file defines its relationship to the other records in the file. For example a J row can be followed by G, D, O, or S rows to designate the Group, Output Data Set Name and Short Group Name for the Production Reporting Job Stream. These rows can be followed by a Query (I) row. Following the I row, there may be a L, X or R record followed by one or more M rows to specify the member names of the SASLOG, SASLIST, MICSLOG, and CSV members created as a result of running the query. An M row may be followed by a P row if a profile member was generated.

All control records start in position 1.

```
V MQR7160 BAS7405
J PRODSP4 Production Reporting on SP4 complex
G PERFORM Performance and Resource Consumption
O MICSAPP.SP4.PRODRPT.MWFPDS3.DATA
S PERFORM
I RMFLPA 11/08/15 09:56 Post Processor CPU Activity Report
L M L1
R M R1
X M M1
S PERFORM
I RMFED1 11/08/15 10:47 MVS CPU and ASID Activity (.CSV)
L M L2
R M R2
X M M2
M CSV10110     1762 Daily - Pct MVS CPU Busy by System   K3D1
M CSV10111     3390 Daily - MVS ASID Act by System       K3D9
U BELDA01
D BELDA01.MICS6.USER.DTFOUT
O BELDA01.MICS6.USER.OUTPUT
G BATCH    MICF Batch Test
S BATCH
I PRTCPU 11/10/03 14:38 PRINTED RPT - CPUBSY
L M L256
R M R256
X M M256
S FOREGRND
I FCPU   11/06/27 15:56 Test Foreground Execution
L M L202
R M R202
X M M202
M CSV21001    19037 RMF CPU Busy1                        K5D1M1
P PRF21001 CSV21001 RMF CPU Busy1
S FOREGRND
I FGCPU  11/08/09 09:40 Foreground CPU CSV Test
L D BELDA01.MICS6.USER.BATCH78.LOG
X D BELDA01.MICS6.USER.BATCH78.MICSLOG
```

Extract Data Structure

The information extracted from the CA MICS database is stored as members in the CSV output data sets. The content of these members is stored in Comma Separated Value (CSV) format. The first three characters of the member name are CSV.

Comma-Separated Value (CSV) Format

The comma separated value format is implemented using the following rules.

- Each record in the CSV formatted file is made up of fields separated by commas (,) or another character that is determined by your locale.
- Character fields are quoted using the double quote character (").
- Numeric fields are not quoted and may either be a simple integer, or they may contain a decimal point, depending upon the numeric value of the field.
- Three record types are found in a CSV formatted file—identification, dictionary, and data. The first two record types contain descriptive information, appear only once, and are found at the beginning of the file. The third record type, the data record, starts with record three and continues to the end of the file. The number of data records in the file is equal to the number of CA MICS data records being extracted in the CSV format.

Identification Record

The first record of a CSV formatted file contains 17 data elements, all stored as comma separated values, as shown in the following table.

Field Number	Description
1	CSV header that contains the fixed value HCSV.
2	CSV version.
3	Originating product.
4	Originating product version.
5	Date the CSV data was created, with the format yyyymmdd.
6	Time the CSV data was created, with the format hhmmss.
7	Name of the CSV data file and may have a maximum length of eight characters.
8	Data name qualifier.
9	Data source.
10	Number of CSV data fields that appear in the dictionary record and the data records that follow.
11	Number of data records in the CSV formatted file.
12	Output Control value used by the Q&R Reporting for Excel macro.
13	Time-series chart descriptive text.
14	Title of the query.

Field Number	Description
15	Location of the original query located on the Q&R Client.
16	Identification of the Chart task in the query, which produced this data.
17	Chart-formatting information used by Q&R Charting.

Dictionary Record

The second record of a CSV formatted file is the dictionary record, which names all the data elements found in the subsequent data records. This record contains the data element names as a series of quoted and comma-separated character values. The order of the data element names in this record defines the order of the data element values found in the subsequent data records. In other words, there is one data element value in each data record for each data element name found in this record.

Data Record

The third record of a CSV formatted file is the data record. Data records begin with the third record of the file and continue to the end of the file. The data records contain data values, quoted or not quoted depending upon the data value type, and are separated by commas or another character determined by your locale. Each data record contains as many data values as there were data elements named with the dictionary record.

Note: Some data values can be missing, depending on the content of the CA MICS database file from which the extract is made. When this occurs, two commas (,,) represent the missing data value. If the missing data value was character type data, two double quote characters appear between the commas (,"",).

Glossary

This glossary is designed to help the user with words and phrases that may occur in this documentation set; therefore, it contains terms that may not be specifically relevant to Q&R Workstation.

Application Program Interface (API)

A set of routines, rules, or conventions used to request services from another program.

batch file

An ASCII (unformatted text) file containing one or more commands. A batch file has a .BAT extension.

CA MICS Information Center Facility (MICF)

An ISPF-based online reporting facility that provides a convenient way to access, manipulate and report on the data in the CA MICS database.

client

A program requesting services from a server. Q&R Query is an example of a client.

comma separated value (CSV) format

A convention for organizing data using a comma as the delimiter between fields. Countries other than the United States may use a different delimiter.

common communications interface (CAICCI/CAICCI-PC)

A component delivered with CA Common Services. Used to communicate between application components.

complex

An occurrence of a CA MICS system.

concatenate

A process that combines two or more files by appending one to the other to create a single file.

cycles

A two-digit number ranging from 0-99 that identifies a specific instance of a CA MICS file.

data dictionary

Contains definitions of elements in a complex.

elements

Fields of information stored in a CA MICS or SAS database table. Examples include Hour, System Id, and Percentage of Use.

ERRNO

Special error return code generated by C language programs and included on error messages created by the Q&R Mainframe Server and the Q&R Distributed Server.

job

Unit of work run on the mainframe.

merge

The process of combining two or more files into a single file by sorting them together.

Meta Database

Contains the structural definitions for CA MICS complexes and SAS databases. Information in the Meta Database is used by Q&R Query to build and validate a query.

MICF Production Reporting

The standard production reporting process on the mainframe for the CA MICS complex.

prefix

CA MICS Unit Database level high-level qualifier.

Q&R Distributed Server

The underlying services that support the query, reporting, and web publishing functions of Q&R Workstation.

Q&R Mainframe Server

Mainframe component that provides access to resources on the mainframe for the Q&R Workstation.

Q&R Mainframe Server name

CAICCI network name assigned to the Q&R Mainframe Server using the MQRMSN parameter.

Q&R Query

Client application that lets you perform all of the functions related to composing and running queries, as well as retrieving and viewing query output.

Q&R Web Reporting

Feature that lets you view published Q&R Query results through your web browser.

QRQ

A file with a .QRQ extension that contains a query created in Q&R Query.

Query

A series of steps and their associated tasks used to retrieve specific data from the mainframe for analysis.

query status icon

Contains four indicators that display the status of a query.

query step

The high-level unit of query organization. A query contains one or more query steps.

query task

The low-level unit of query organization. Each query step contains one or more query tasks.

query tree

The display of a query in Q&R Query that shows all of the steps and tasks in a collapsible list structure.

sharedprefix

CA MICS complex high-level qualifier.

Statistical Analysis System (SAS)

A comprehensive line of products that together capture, store, analyze and present data.

template

A predefined query structure that lets you quickly build a query. The template consists of query steps and associated tasks.

timespan

A period of time of summarization including detail, days, weeks, months, years, and tables; applicable only when the input is a CA MICS file.

unit

CA MICS databases used to store information that can be referenced by Q&R Query.

View

The appearance of a Q&R Chart including which elements to present, the style of chart, the titles, legends, and keys.

View definition

The attributes that define the appearance of a Q&R Chart.

view definition file (VDF)

The .VDF file stores view definitions so that they can be applied to output generated by Production Reporting.

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