Caché SQL — Version F.12
Release Information

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For support questions about any InterSystems products, contact the InterSystems Worldwide Response Center:

Phone:	US: +1 617 621-0700	Europe: +44 (0) 1753 830-077
Fax:	US: +1 617 374-9391	Europe: +44 (0) 1753 861-311
Internet — support@intersys.com		**FTP Site** -— ftp.intersys.com
World Wide Web — www.intersys.com		
BBS:	General Use: +1 (617) 225-0475	Europe: +44 (0) 1753-853-534

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Introducing Caché SQL

Caché SQL is the new name of Open M with SQL. This name reflects its release with Caché 2.1, InterSystems' *post-relational* database.

See the *Caché 2.1 Release Information* for more information on Caché.

File and Utility Names

If you are familiar with previous InterSystems database products, the most obvious new feature of this release of Caché is its name. Many files and utility names have been changed to maintain consistency throughout the product. Most of these changes are performed for you by the conversion process.

The name of our procedural language has also been changed to Caché ObjectScript. Caché ObjectScript is fully upward compatible with InterSystems' Open M language, but contains many additional features, including new syntax for use with Caché object technology.

Open M Relational Server is now called Caché SQL Server. These name changes are reflected in all menu titles, menu options, and menu help.

See the *Addendum B* of the *Caché 2.1 Release Information, Name Changes*, for a complete list of changes.

Converting Your Caché SQL Applications to Version F.12

When you upgrade to Caché SQL Version F.12, you need to perform the following steps to convert your existing Open M with SQL applications:

1. Back up your system. Once you have converted to the new routine storage global structure, you cannot downgrade to earlier versions of Open M with SQL.

2. Run the Caché SQL conversion program in each directory/UCI (except the manager's directory and the Caché SQL common directory). The conversion program consists of a series of routines that update certain Caché SQL internal structures to make them compatible with the new version.

    Caché SQL provides the Conversion Manager utility to assist you in running the appropriate conversion program(s).

3. After running the conversion program, you should recompile all Caché SQL objects in each directory/UCI (except the manager's directory and the Caché SQL common directory).

    Caché SQL provides the %mcompil utility to assist you in recompiling Caché SQL objects.

Conversion Manager Utility

The Conversion Manager utility runs conversion routines beneath a window-based interface. It automates the task of converting to a new Caché SQL version on a per directory basis and allows you to selectively exclude undesired features of the target version. The Conversion Manager also allows you to run conversion routines multiple times and print reports associated with a particular conversion task.

You should normally run the Conversion Manager in each directory/UCI that you are upgrading.

For complete information on how to convert Caché SQL applications using the Conversion Manager utility and recompile Caché SQL objects using the %mcompil utility, see the *Open M with SQL Database Administrator's Guide*.

Note: All Stored Procedures must be deleted from the Caché SQL Server prior to connecting from the Caché SQL Driver.

New Features and Enhancements

Macro Compiler

n   There is a new entry point, nall (Namespace ALL), in the %urcomp utility. This entry point compiles all .MAC and .INT routines in all namespaces.

Example   `>d nall^%urcomp`

The utility prompts you for syntax checking of the routines during compilation. It also prompts for an output device. If you choose an output device other than the principle device, the utility prints a small amount of information on the principle device to keep you up to date on the progress of the compilations.

Note: Routines in the %SYS namespace and % routines mapped out of the %SYS namespace are not compiled.

n   The timestamp placed on the first line of the .INT code versions of routines by the macro preprocessor now includes a 4 digit value for the year.

Old timestamp: Compiled 07/15/97 12:00PM for M/UX

New timestamp: Compiled 15 Jul 1997 12:00PM for M/UX

n   Caché SQL provides the ability to define empty macros and have them expanded by the macro preprocessor.

Example:
```
#DEFINE abc _" test"
#DEFINE def
w !,"This is a "$$$abc  w !,"This is a "$$$def
```
expands to:
```
w !,"This is a "_"test"  w !,"This is a "
```

Implementation of SQL

n   InterSystems has implemented additional optimization for SQL queries that use multiple ORs or the IN predicate as part of the WHERE condition. This is a considerable performance enhancement.

- InterSystems now supports expressions in the INSERT VALUE-List. The following query syntax is recognized by embedded SQL and any Client/Server applications that support ODBC:

```
INSERT INTO MRP670 (MRP670, SQL_DATE, SQL_TIME, SQL_TIMESTAMP)
        VALUES( 6969,
    {d '1997-10-18'},
    {t '14:30:30'},
    {ts '1997-10-18 14:30:30'})
```

  or

```
INSERT INTO MRP670 (MRP670, SQL_DATE, SQL_TIME, SQL_TIMESTAMP)
     VALUES( 6969,
       --(*vendor(Microsoft),product(ODBC) d '1997-10-18'*)--,
       --(*vendor(Microsoft),product(ODBC) t '14:30:30'*)--,
       --(*vendor(Microsoft),product(ODBC) ts '1997-10-18 14:30:30'*)--)
```

SQL Server

- Open M Relational Server is now called Caché SQL Server. This name change is reflected in all menu titles, menu options, and menu help.
- Open M Relational Client is now called Caché SQL Driver.

Corrections

Data Dictionary

- InterSystems has corrected an <UNDEFINED> error compiling tables containing index maps without filing code.

Queries

- InterSystems has corrected a problem with queries that build temporary globals. If you had DISTINCT(field) or function(field) for each sort_field in the select statement, and you sorted by a NULL field for one or more of the rows, the query only returned one row of data.
- InterSystems has corrected a <MAXSTRING> error when compiling a query with an order by clause containing more than 10 fields.
- InterSystems has corrected an <UNDEFINED> error when compiling a query that uses a Conditional Map.
- InterSystems has corrected a problem with generated code for multiple choice multi-line fields using the %EXTERNAL operator.

Import/Export

- InterSystems has corrected a problem where general import was not properly importing override invalid conditions for map access path specifications if the override condition ended with "}".
- InterSystems has corrected a problem where general export/import did not properly export an M/PACT report's data selection if it was against a multiple choice field with external and internal values.

SQL Client/Server

- InterSystems has added functionality to the Caché SQL Server for compatibility with the Caché SQL Driver.

  Note: All stored procedures must be deleted from the Caché SQL Server prior to connecting from the Caché SQL Driver.

- InterSystems has corrected a <MAXSTRING> error compiling a Stored Procedure with more than 80 SELECT-List items.

Forms

n InterSystems has corrected an <UNDEFINED> error compiling multi-row forms containing branching fields with translations and pre-field triggers with references to other fields.

Limitations

Caché SQL (General)

- Caché SQL Developer objects (with the exception of forms) can not have foreign characters in their identifier names. Form names, however, can include both foreign characters and punctuation marks in their identifier names.   [M/SQL C.91-01]

Data Dictionary

- When running Caché SQL, a Base Table can contain a maximum of approximately 150 fields.
- The calculation for a computed field can reference a maximum of approximately 35 other fields.   [M/SQL 89-12]
- A single lookup query defined in the Data Dictionary lookup specifications should contain no more than 7 lookup fields and 7 lookup display fields. From this, you should subtract one field for each level of dependency of the table, i.e. 6 fields for a child table, 5 for a grandchild table, etc.   [M/SQL 89-12]
- InterSystems discourages use of the %data and %edit arrays in SQL triggers due to the possibility of their being NEWed within the SQL trigger. If necessary, use a previous trigger item to copy the values from %data and %edit into local variables.   [M/SQL 89-12]
- If you change a RowID definition, Caché SQL does not automatically update the Row ID calculation in the Data Dictionary maps. In order to force the recalculation of the RowID, you must delete the existing RowID calculation from every map definition in the table. To do this, enter each map definition, select RowID Calculation, and delete the existing Row ID calculation by pressing the <REMOVE> key or by selecting the Delete an Entire Row option from the horizontal menu. Once you have deleted the existing calculation, Caché SQL automatically generates the new calculation.   [M/SQL 89-12]

Form Generator

- Multi-row forms cannot be window-ordered. If you attempt to create a multi-row window-ordered form, the Form Compiler issues a warning message during compilation, and the form ignores the window-order list at run time.   [Open M/SQL Version F.6]
- Database fields with the data types Designative Reference and Multiple Choice do not display horizontal menu options. [Open M/SQL Version F.6]

n   If you have a RowID that is based on other fields and those based-on fields appear on a form, you must make sure that users do not modify their values after filing an initial value. Modifying the values of based-on fields may cause the form to behave erratically.   [Open M/SQL Version F.6]

n   Field validation code does not act on default values for form-only fields or on default values passed in via a default array (the 8th parameter of the M form call syntax). You are responsible for your own validation checking on these default values.   [Open M/SQL Version E.3]

Branching Fields

n   You cannot specify Conversion/Validation code for fields of data type Branching. The Conversion/Validation Code option does not appear on the horizontal options menu of the field definition.   [Open M/SQL Version F.6]

Triggers

n   Caché SQL enforces the following limitations for Post-Window triggers associated with the master window of a multi-row form:

- The action type Set Field is not available
- You cannot reference fields using curly brace syntax {fieldname} in triggers of action type M Code   [Open M/SQL Version F.7]

n   The Delete Row action type is not supported at the following trigger locations for multi-row forms:

- Pre-Window triggers
- Post-Window triggers
- Post-Retrieval triggers   [Open M/SQL Version F.7]

n   When using Set Field triggers to target Designative Display fields, you cannot set the field directly. On the Set Field popup window, you must accept the *No* response to the "Set the Field Directly?" prompt. Attempting to set the field directly causes the Form Compiler to generate a warning message during form compilation stating that the trigger is ignored. [Open M/SQL Version F.6]

Programmed Lookups

n   It is not possible to define programmed lookups for fields with data types Branching, Designative Display, Designative Reference, or Multiple Choice. Selecting the Programmed Lookups option on the horizontal options menu of the field definition returns you to the main field definition window.   [Open M/SQL Version F.6]

n   You cannot reference the variables *x*, *y* or **tmp** in programmed lookup code. If you reference any of these variables, your programmed lookup does not work properly.   [Open M/SQL Version F.6]

Roll and Scroll Mode

n   You cannot access the M/SQL System Help Menu when running forms in Roll-and-Scroll mode. Pressing the <HELP> key while in Roll-and-Scroll mode causes the terminal to beep.   [Open M/SQL Version F.6]

n   You cannot see or access any menu objects when running forms in Roll-and-Scroll mode. This includes form menu bars and window menu bars as well as menu bars and pop-up menus called by form triggers.   [Open M/SQL Version F.6]

Lookup Specifications

n   In the Lookup Specification window (both in the Data Dictionary and in the Form Generator), you must not specify multi-line fields as a lookup fields (Fields To Lookup On) or lookup display fields (Fields To Display).   [Open M/SQL Version F.6]

n   Lookup boxes can accommodate a maximum of 7 lookup display fields. If you define more than 7 lookup display fields in a lookup query, Caché SQL displays only the first 7. You receive a warning message to this effect at compile time.   [Open M/SQL Version E.5]

Menu Generator

n   The Menu Generator limits Menu Item names for old-style vertical and horizontal menus to 42 characters.   [M/SQL B 90-09]

M/PACT

n   M/PACT reports cannot use {fieldname} reference in pre- and post-report triggers with action type of M Code.   [Open M with SQL Version F.11]

n   When an M/PACT report is based on either of the following:

   • Query

   • View that is itself based on a query

   it cannot use the "Eliminate Cartesian Product?" option.

   In this case, the "Eliminate Cartesian Product?" field on the Report Definition Advanced Options window is set to *No*, and you cannot access it. [Open M/SQL Version F.6]

- In a report based on a query data source, once the query is imported into the report definition, it is not possible to modify the text of the original query and reimport it or otherwise update the query within the report.   [Open M/SQL Version E.5]

- M/PACT places a limitation on the number of data columns that you can include in a report definition. If you exceed this limitation, compilation of the report definition fails due to a <MAXSTRING> error. The number of data columns to which you are limited varies, depending on the complexity of the formatting attributes associated with your data columns. Formatting attributes include Width, Alignment, Value Formatting, and even attributes associated with the field definition, such as Internal-to-External Conversion code. If you do not associate any formatting attributes with the data columns, M/PACT allows a maximum of approximately 16 data columns in a report definition. To the extent that you do define formatting attributes, that number decreases.   [Open M/SQL Version D.1992-03]

Implementation of SQL

- The LIKE predicate yields unpredictable results when it is used in an expression that references a field as the <*match value*> operator (value on the left side of the LIKE predicate), and the field uses the ALPHAUP collation function.   [Open M/SQL Version F.7]

- The INTO clause cannot recover fields from a view into a local array. [Open M/SQL Version D.1992-03]

- The Interactive Query facility does not support the use of the INTO clause. [Open M/SQL Version D.1992-03]

Documentation Notes

Set Field Triggers That Target Multi-Line Fields

When defining a Set Field trigger that targets a multi-line field, you can set the trigger to remove all instances of the multi-line field, as follows: [Open M/SQL Version F.6]

- When you specify the field name in the Trigger Definition window, specify just the field name, and do not specify a line number in parentheses.
- In the Set Field popup window, leave everything blank.

n You cannot use the Set Field trigger action to set the line counter of a multi-line field. Do not attempt to set the line counter by specifying FieldName(0) in the Trigger Definition window. [Open M/SQL Version F.6]

Using Percent Variables in Form Triggers for Multi-Row Forms

n In multi-row forms, you can only reference row-specific percent variables in Post-Field triggers. The row-specific percent variables are:

- {%filetype}
- {%presave}
- {%savedata}
- {%return_filetype}
- {%return_presave}
- {%return_savedata}

These percent variables hold information that is specific to one data row, and therefore, must be used in reference to a specific row.

In single-row forms (where there is only one row), you can also reference these percent variables in Post-Window and Post-Form triggers.

Field Skipping Rows in Multi-Row Forms

n If a user exits a row in a multi-row form using either the <DOWN ARROW> or <NEXT SCREEN> keystroke and the field to be landed on is defined to be skipped, the field is skipped as if the user had pressed <RETURN> while in it. [Open M/SQL Version E.4]

n If a row is exited with an UP keystroke (e.g., <UP ARROW> or <PREVIOUS SCREEN>) and the field to be landed on is to be skipped, the field is skipped as if the user had pressed the <LEFT ARROW> key while in it. [Open M/SQL Version E.4]

Available Documentation

Caché SQL

The documentation set for InterSystems Caché SQL relational database product includes the following manuals:

- This *Caché SQL — Version F.12 Release Information*; Revision Date: August, 1997.

- *Open M with SQL — Version F.11 Release Information*; Revision Date: July, 1997.

- *Open M/SQL Developer Guide* — Version F.6 & F.7; Revision Date: September 11, 1995.

- *Open M with SQL Database Administrator's Guide — Version F.9, F.10;* Revision Date: December 9, 1996.

- *User Interface Programming Guide — Version F.4;* Revision Date: October 6, 1994.

- *Open M with SQL Data Dictionary Guide* — Version F.10; Revision Date: April 2, 1997.

- *Open M/SQL M/PACT (*includes *M/PACT Addendum)* — Version B; Revision Date: July 2, 1990.

Caché SQL Server

If you plan to use Caché SQL Server, you also need the following documentation:

- *Caché SQL Driver User's Guide* —Version 2.2; Revision Date: September, 1997.

- *Open M/SQL Server Programming Guid*e — Version E.3; Revision Date: May 5, 1993. *Available on request.*

- *Open M Relational Server Manager's Guide* — Version F.10; Revision Date: December 9, 1996.