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Fujitsu Technology Solutions

ESQL-COBOL (BS2000/OSD)
Version 3.0
*3   December 2013

Release Notice

1   General

*3   This Release Notice is a summary of the major extensions, requirements
        and operating information for ESQL-COBOL V3.0D under the BS2000/OSD oper-
        ating system *).

*3   The release level is that of December 2013.

*2   Changes to ESQL-COBOL V3.0A release level May 2007 are marked with "*1".

*2   Changes to ESQL-COBOL V3.0B release level April 2009 are marked with "*2".

*3   Changes to ESQL-COBOL V3.0C release level June 2012 are marked with "*3".

*2   This and other current Release Notices are shipped on the SoftBooks DVD and are
*2   available online at http://manuals.ts.fujitsu.com/.

        If one or more previous versions are skipped when this version is used, the infor-
        mation from the Release Notices (and README files) of the previous versions
        must be noted.

1.1   Ordering

ESQL-COBOL V3.0 can be ordered from your local distributors.

ESQL-COBOL V3.0 is subject to the general terms and conditions of the software
product use and service agreement

1.2   Delivery

The ESQL-COBOL V3.0 files are supplied via SOLIS.

The following delivery components are required regardless of the HSI:

SYSSPR.ESQL-COBOL.030   SDF procedure for START-ESQLCOB
SYSLNK.ESQL-COBOL.030   Library with the ESQLCOB LLM
SYSSDF.ESQL-COBOL.030   Software unit syntax file
SYSSDF.ESQL-COBOL.030.USER   User syntax file for ESQL-COBOL
SYSMES.ESQL-COBOL.030   Primary message file for ESQL-COBOL

Subsystem declarations for DSSM:
SYSSSC.ESQL-COBOL.030.CL34   Memory class 3/4 installation
SYSSSC.ESQL-COBOL.030.CL5   Memory class 5 installation

Libraries with SQLCA include:
SYSLIB.ESQL-COBOL.030.INCL-V1   Compatible to ESQL-COBOL V1.x
SYSLIB.ESQL-COBOL.030.INCL-V2   For SESAM/SQL Server V2.0

*3   SYSSII. ESQL-COBOL.030   IMON-Description of product

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*) BS2000/OSD (R) is a registered trademark of Fujitsu Technology Solutions.

*3	SYSRME.ESQL-COBOL.030.D	Readme file (German)
*3	SYSRME.ESQL-COBOL.030.E	Readme file (Englisch)
	SYSFGM.ESQL-COBOL.030.D	This Release Notice (German)
	SYSFGM.ESQL-COBOL.030.E	This Release Notice (English)

The current file and volume characteristics and specifications are listed in the SOLIS2 delivery cover letter.

1.3   Documentation

*2   The following documentation is available for ESQL-COBOL V3.0:

ESQL-COBOL für SESAM/SQL-Server Benutzerhandbuch V3.0A

ESQL-COBOL for SESAM/SQL-Server User Guide V3.0A

The documentation is available as an online manual under http://manuals.ts.fujitsu.com or can be ordered at extra cost under http://manualshop.ts.fujitsu.com.

In addition, the documentation of the BS2000/OSD standard configuration can be required for operating ESQL-COBOL.

The documentation for BS2000/OSD is also available in German and
*2   English on DVD under the title BS2000/OSD SoftBooks.

The following documentation is also recommended:
*3   this Release Notice for ESQL-COBOL V3.0D.

This Release Notice is also available online under
*1   http://manuals.ts.fujitsu.com.

There may be supplementary README files to the manuals. They contain changes and extensions to the manual of the respective product. The file names have the following structure:

SYSRME. <product>.<version>.D   (file with German text)
SYSRME. <product>.<version>.E   (file with English text)

*3   The README files are available on the SoftBooks-DVD or online under
*3   http://manuals.ts.fujitsu.com.

2 Software Extensions

Only the extensions and enhancements over the previous version ESQL-COBOL V2.0 are described in the following sections.

2.1 National data

The new data type National in COBOL2000, defined by PICTURE N (or USAGE NATIONAL), is supported as a host variable and mapped to the SQL TYP NCHAR or NVARCHAR. This allows ESQL-COBOL programs to support Unicode compatibly both in the database and in the COBOL processing logic.

2.2 Numeric data

Up to 31 digits of numeric data is supported in the picture mask.

2.3 Data type COMPUTATIONAL-5

COMPUTATIONAL-5 is now supported as an alternative to USAGE BINARY or COMPUTATIONAL in all host variable definitions.

2.4 COBOL language resources from COBOL standard 2002

Various new COBOL language resources from the COBOL standard ISO1989/2002 are permitted in ESQL programs.
- BASED clause
- Comments at the end of lines, prefixed with *>
- COBOL directives prefixed with >>
- PICTURE masks up to 50 characters

2.5 Non-evaluated COBOL language resources

Various COBOL language resources that are of no consequence to ESQL are now permitted syntactically and ignored. The check for correctness is only made by the COBOL compiler.
- VALUE clause for tables
- REDEFINES clause
- KEY clauses and DEPENDING clauses in table definitions
- COBOL condition names (level 88 definitions)
- The uniqueness of data names is only checked when they are put to use.

2.6 Support of COBOL Reference Format Free

*1 Like the Product COBOL2000, ESQL-COBOL as of V3.0B allows source pro-
*1 grams in COBOL Reference Format Free. For this the COBOL directive
*1 >>SOURCE FORMAT = FREE is evaluated. Where this directive is in effect,
*1 source lines up to 248 characters are permitted. The restrictions mentioned in
*1 chapter 2.5 and 2.6 of the manual, describing column 8-72 as valid for semantic
*1 relevant program text and usage of the indication area in column 7 for indication of
*1 comments are not applicable in this case. The COBOL Free Reference Format, its
*1 limitations and rules in respect to comments, continuation of literals and the meth-
*1 od to change between Fixed and Free Format is described in the COBOL200O
*1 language manual.

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2.7 Product-internal adaptation

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To improve the maintainability of ESQL-COBOL a product-internal adaptation has been implemented in Version 3.0C.

2.8 C-style Comments, 64-bit time functions

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In ESQL-COBOL V3.0D the following Extensions were made:

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- support of C-style comments /* */
- use 64-bit time functions

For more information see README-File.

3 Technical Information

3.1 Resource requirements

At runtime, the following memory is required in the system and user address space:

Basic requirement: approximately 5 MB
+ dynamically requested memory, depending on the ESQL program
+ requirement of SESAM for linked-in mode with database contact.

The amount of main memory required for compilations with database contact in linked-in mode depends mainly on the database system.

3.2 Software configuration

*3   ESQL-COBOL V3.0D is released for BS2000/OSD-BC as of V6.0B and OSD/XC as of V2.0.

You require the following delivery components for the /390 system architecture:
- BS2GA.LLMAM   as of V6.0
- BS2GA.SDF   as of V6.0
- BS2GA.CRTE-BAS   as of V6.0

*3   ESQL-COBOL V3.0D also works in conjunction with

- COBOL2000   as of V1.4
- CRTE   as of V2.6F
- database system SESAM/SQL Server   as of V5.0A
- optionally   SESAM/SQL LINK   as of V5.0A

3.3 Product installation

Installation of the product ESQL-COBOL with the installation monitor IMON is mandatory. The information concerning installation in the delivery cover letter and in the product documentation must be followed as well as the information given below.

ESQL-COBOL (BS2000/OSD) V3.0 must be completely reinstalled.

The standard installation procedure is SOLIS. The installation steps for the product are as follows:

1. The SYSLNK.ESQL-COBOL.030 library is copied to the $TSOS ID by default. The only element this library contains is the executable ESQLCOB LLM of the precompiler. The storage ID is specified in the SDF procedure for START-ESQLCOB and can be modified there (SYSSPR.ESQL-COBOL.030; the "UID" parameter can be initialized with "$<esql-id>.") so that the file may also be stored under another ID.

2. The SYSSPR.ESQL-COBOL.030 file is installed under the $TSOS ID by default. When the START-ESQLCOB command is processed, SDF starts up this procedure to activate the precompiler. The storage ID and the name of this file are specified in the SYSSDF.ESQL-COBOL.030 software unit syntax file (SESD) or in the user syntax file SYSSDF.ESQL-COBOL.030.USER.

The storage ID (and name) may be modified there via SDF-A as of V3.0 (*not included in the BS2000/OSD basic configuration):

```
        …
//EDIT OBJECT=*COMMAND(NAME=START-ESQLCOB)
//MOD-CMD IMPLEMENTOR=*PROCEDURE(NAME='$<newid>.<newname>')
        …
```

(see the SDF-A User Guide). This allows the file to also be stored under any desired ID.

3. ESQL-COBOL V3.0 requires an SDF syntax file that contains all precompiler-specific SDF definitions.
The software unit syntax file (SESD) is called:

```
        SYSSDF.ESQL-COBOL.030
```

*3   When installing with IMON the message file SYSMES.SESAM-SQL.070 and the
*3   SDF syntax file SYSSDF.SESAM-SQL.070 are activated as standard.
*3

If the SESD is not installed in the SDF system file, you can also use the supplied user syntax file

```
        SYSSDF.ESQL-COBOL.030.USER
```

which must be activated for each specific task before the precompiler is called up.

4. If ESQL-COBOL is to be loaded as shared, it must be reloaded. The following object module files are supplied for generating the shared code parts of ESQL-COBOL as a DSSM:

```
        SYSSSC.ESQL-COBOL.030.CL34 and
        SYSSSC.ESQL-COBOL.030.CL5
```

The files represent object module files (SSD object) and can be transferred to an opened subsystem catalog with the following SSCM statement:

```
        //ADD-CATALOG-ENTRY FROM-FILE=<object-module-file> -
        //       INSTALLATION-USERID=<esql-id>
```

The files have been set up for class 3/4 or class 5, as required.

5. The libraries

```
        SYSLIB.ESQL-COBOL.030.INCL-V1 or
*1        SYSLIB.ESQL-COBOL.030.INCL-V2
```

can exist under any ID but are installed under the $TSOS ID by default.

The SQLCA element in the "...INCL-V1" library contains a definition of both
*1   the SQLca and SQLda structure. The "…INCL-V2" library also has an SQLCA element with a definition of both the SQLca and SQLda structure. The two SQLda structures are identical. The SQLca structures differ by the fact that the "...INCL-V1" structure still contains the SQLCODE field. However, SQLCODE is obsolete.
*1   One of the two definitions, preferably the "...INCL-V2" structure, must be included in each ESQL-COBOL program.

3.4 Product use

This section tells you how to start up a precompilation task.

Before calling up the precompiler, you must make the following preparations:

1. If the SESD has not been entered in the SDF system file, you must assign the user syntax file as such in the task with the following command, before calling up the precompiler:

```
/MODIFY-SDF-OPTIONS SYNTAX-FILE=USER -
/           (NAME=$<esql-id>.SYSSDF.ESQL-COBOL.030.USER)
```

If you want to use the linked-in database handler (DBH), the SDF declarations of SESAM/SQL Server must also be available.

2. Both the ESQL-COBOL V3.0 message files and the SESAM/SQL-Server message files must be available in the precompiler task. If the files have not been entered in the system message files, you must enter them specifically for each task with the following BS2000 command:

```
/MODIFY-MSG-FILE-ASSIGNMENT ADD-FILE=<message-file>
```


3. If you want to use the database contact in independent mode, you must load a suitable database handler before you can start a precompiler run. In linked-in mode, the precompiler is operated as a SESAM/SQL linked-in application. In any case, you must always assign the SESCONF link name to an appropriate configuration file before compiling with database contact:

```
/SET-FILE-LINK LINK-NAME=SESCONF -
/           ,FILE-NAME=<configuration-file>
```


4. The CRTE library must have been assigned when the precompiler is called up. Use the following statement to specify this library:

```
/SET-FILE-LINK LINK-NAME=BLSLIBnn  -
/           ,FILE-NAME=$<crte-id>.SYSLNK.CRTE
```

(00<=nn<=99)
(Recommendation: nn = 00, i.e. the first BLSLIB that is searched)

5. The library containing the SESAM/SQL-Server database modules (usually SYSLNK.SESAM-SQL) must always be specified. Use at least one of the following assignments for this:

```
/SET-FILE-LINK LINK-NAME=SESAMOML, -
/               FILE-NAME=$<sesam-id>.<sesam-mod-lib>

/SET-TASKLIB LIBRARY=$<sesam-id>.<sesam-mod-lib>

/SET-FILE-LINK LINK-NAME=BLSLIBnn,   -
/               FILE-NAME=$<sesam-id>.<sesam-mod-lib>
```

 (00<=nn<=99)

The user is offered two options for starting a precompilation task:

1. Call up the ESQL precompiler and input the options with the SDF command
START-ESQLCOB, e.g.:

```
/START-ESQLCOB -
/        SOURCE=<esql-cobol-program> -
/        ,PRECOMPILER-ACTION=(SQL-ENTRY-NAME=<entry-name>) -
/        ,AUTHORIZATION=<dbuser>
```

2. Call up the precompiler with the SDF command START-PROGRAM and then
input the options with the program statements PRECOMPILE and END, e.g.:

```
/START-PROGRAM FROM-FILE=*MODULE -
/        (LIBRARY=$<esql-id>.SYSLNK.ESQL-COBOL.030 -
/        ,ELEMENT=ESQLCOB -
/        ,PROGRAM-MODE=ANY -
/        ,RUN-MODE=ADVANCED -
/            (ALTERNATE-LIBRARIES=YES -
/            ,LOAD-INFORMATION=REFERENCES -
/            ,UNRESOLVED-EXTRNS=DELAY -
/            ,MESSAGE-CONTROL=ERROR -
/            ) -
/        )
//PRECOMPILE  -
//       SOURCE=<esql-cobol-program> -
//       ,PRECOMPILER-ACTION=(SQL-ENTRY-NAME=<entry-name>) -
//       ,AUTHORIZATION=<db-user>
//END
```

3.5 Obsolete functions (and those to be discontinued)

The following functions are no longer supported as of this version:
        none

The following functions are supported for the last time in this version:
        none

3.6 Incompatibilities

ESQL-COBOL V3.0 is fully compatible to ESQL-COBOL V2.0A, apart from the fol-
lowing restrictions:
        none

3.7 Restrictions

See README file

3.8   Procedure in the event of errors

If errors occur, the following documents will be required for diagnostic purposes:

-   a detailed description of the error condition with information as to whether and how the error can be reproduced

-   the source program, if possible

-   the generated host program, if available

-   the runtime log

-   a list of the options used

-   version number of the precompiler (from the screen or from the generated host program)

-   version numbers of the installed CRTE and the SESAM/SQL-Server

-   a dump, if available

See also:
ESQL-COBOL User Guide V3.0, "Creating Diagnostic Documentation"

4 Hardware Support

*3   ESQL-COBOL V3.0D is executable on all central processing units supported by
*2   BS2000/OSD as of V6.0B.