
Fujitsu Technology Solutions

DRIVE-COMPILER (BS2000/OSD)
Version 3.1A10
April 2012

Release Notice

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1 General

This Release Notice is a summary of the major dependencies and operating information with respect to

DRIVE-COMP (BS2000 *) V3.1

DRIVE-COMP V3.1 is an additional product to DRIVE V3.1, in order to make DRIVE applications running more performantly. Such an application should be tried first in interpreter mode, as far as it works correct. The advantages of the interpreter mode for the interactive generation and test can therefore be used completely.

DRIVE-COMP V3.1 is the follow-up version of DRIVE-COMP V2.2.

DRIVE programs for newstyle and oldstyle, already developed, may be compiled further with DRIVE-COMP.

The DRIVE compiler is called as a subroutine of the DRIVE interpreter within TIAM or UTM mode. The compiler options, which are required, are specified with the command COMPILE or they are part of the source. The source to be compiled is read by the compiler out of an PLAM library.

The compiler generates an object module out of the drive program. In addition there is generated a data module for the main program in TIAM mode.

For the product use of compiled applications on remote computers in BS2000 the runtime system of the DRIVE compiler can be ordered separately.

This Release Notice is also supplied as a file in uppercase/lowercase.

If subsequent changes are made, this file will be updated. Changes will be marked with (*n) in the columns 2 and 3.

The content refers to release level: V3.1A10 of April 2012.

All changes over the release level from November 2001 are marked in the left margin.

- Marking N1 = release level V3.1A10 from March 2009

- Marking N2 = release level V3.1A10 from April 2012

This file can be printed out by means of:

```
/PRINT-FILE FILE-NAME=SYSFGM.DRIVE-COMP-DOC.031.E,-  
CONTROL-CHARACTERS=EBCDIC(CONTROL-CHAR-POS=STD)
```

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1.1 Ordering

DRIVE-COMP V3.1 or DRIVE-COMP-LZS V3.1 can be ordered from your local distributor of Fujitsu Technology Solutions. DRIVE-COMP V3.1 is subject to the general terms and conditions for the purchase, use and maintenance of software products.

1.2 Delivery

DRIVE-COMP V3.1 files are supplied via SOLIS

The SOLIS delivery letter lists the valid file and volume attributes.

A list of the delivery parts you will find in the table at the end of section 2.4

1.3 Documentation

For the package for DRIVE-COMP V3.1 there hold furtheron the manuals of the version 2.1:

Title	Order number
DRIVE/WINDOWS-COMP (BS2000) V2.1 Benutzerhandbuch (German)	U21453-J-Z125-2
DRIVE/WINDOWS-COMP (BS2000) V2.1 User Guide (English)	U21453-J-Z125-2-7600

- Note:
- Please regard also the section "Supplement to the manual" in the file SYSRME.DRIVE-COMP-DOC.031.E which is included in the delivery of DRIVE-COMP .
 - The manuals for the DRIVE interpreter may be ordered separately.

2 Technical information

2.1 Resource requirements

The minimum virtual address space required for a compilation (newstyle) without interpreter is: 1.6 MB

For the virtual address space required by the interpreter see release notice DRIVE (BS2000) V3.1

2.2 Software configuration

The following software requirements apply to the use of DRIVE-COMP (BS2000) V3.1:

	Operating system	as of BS2000/OSD V3
N2 N2 N2	Runtime system	as of CRTE V2.1B as of CRTE V2.7F in OSD V7.0 as of CRTE V2.8E in OSD V8.0 as of CRTE V2.9A in OSD V9.0
	DC interface	as of UTM V5.0
	Format handling system	as of FHS V8.2
	Editor	as of EDT V16.6
	Data access system	as of LMS V3.0 as of SESAM/SQL V2.2 SESAM/SQL V3.1 if extensions to be used according to this
	DRIVE interpreter	DRIVE V3.1A

2.3 Product installation

The installation of the product has to be done with the installation monitor IMON.

2.4 Product use

1. Preparation for the use of the compiler

Previous versions of the software parts in section 2.2 (e.g. for CRTE with ILCS, LMS) have to be removed out of the subsystem. This holds even, if no use of the actual interpreter or the actual runtime system of the compiler as a part of the subsystem is intended.

There is no installation required.

The start procedure for the interpreter has to be completed by the command SET-FILE-LINK for the newstyle compiler and for the oldstyle compiler, if needed (see Table Delivery parts at the end of this section).

During the compilation process a scratch file is generated with linkname IDCHPLAM and filename S.DRIVE-COMP.suffix . At normal end of the compilation process this file will be erased.

At abnormal end such a file will not be erased, the linkname IDCHPLAM, however, will be released.

After a compilation process before starting a tiam or utm application there have to be released all the TFT entries for the linknames BLSLIBnn, as otherwise there is loaded from wrong libraries during the starting process.

2. Preparation for the use with DSSM/SCCM

For the newstyle and oldstyle compiler no use of DSSM/SCCM is supported.

For the runtime system of the newstyle compiler the product installation is recommended with SCCM like for the newstyle interpreter provided that BS2000 is used as of version OSD V1. Since the appropriate module has LLM format there is no installation process necessary.

For the oldstyle interpreter together with the runtime system of the oldstyle there is as in the past an installation process required for the use with DSSM:

The procedure PREPARE.RTS.DSSM
within the library SINPRC.DRIVE-COMP-LZS.031.OLD
generates for use in the declaration file for DSSM
the library SYSLNK.DRIVE-COMP.031.COMP.DSSM .
The parameters of the procedure have to be updated if necessary.
The procedure ist described within the procedure source.

3. Parallel object mode of V2.2 and V3.1 with DSSM

A parallel mode of the versions V2.2 and V3.1 with DSSM/SSCM is not possible for newstyle and oldstyle.

If the versions V2.2 and V3.1 are used simultaneously, there must not be shared loaded any newstyle or oldstyle component of both of these versions.

4. Deinstallation of DRIVE-COMP

Before taking the newstyle components and the oldstyle components of interpreter and runtime system of V3.1 into the subsystem any subsystem of the version V2.2 DRTS22 (Newstyle) and DRIVE (Oldstyle) which is still present, has to be removed.

5. Transfer via DSSM/SSCM

- SSCM (newstyle)

The delivered declaration file for SSCM

```
SYSSSC.DRIVE-COMP-LZS.031
```

is inserted into the catalogue for the subsystem.

While generating the subsystem DRTS31 the message

```
SCM4153 Incompatible SSC-OBJ-FILE SYSSSC.DRIVE-COMP-LZS.031
```

means that the version of sscm on the target system and the version V02.3B10 of sscm, which was applied for the SSC-OBJ-FILE, are not compatible.

The SSC-OBJ-FILE then has to be generated once more using the procedure DRC.SYSSSC in SYSPRC.DRIVE-COMP-LZS.031

- DSSM (oldstyle)

The contents of the generated library

```
SYSLNK.DRIVE-COMP.031.COMP.DSSM
```

is taken into the subsystem DRIVE via the delivered declaration file for DSSM

```
SYSSSD.DRIVE-COMP-LZS.031
```

If the use of the oldstyle compiler is intended, the subsystem DRIVE has to be installed, as described, for the oldstyle interpreter together with the oldstyle runtime system and must not be installed for the oldstyle interpreter alone, otherwise the loading of the oldstyle compiler will be interrupted later on with the message Unresolved Externals DRE#HE2C, etc.

For oldstyle or mixed mode with the BLS interface there is recommended the use of the subsystem DRIVE.

6. Generation and run of TIAM / UTM applications

- In control and start procedures the filenames have to be adjusted according to the table delivery parts.
- The linkname DRTOML holds only for the library of the runtime system of the oldstyle compiler.
- For applications in the DRIVE mixed mode the start procedure must contain the file command with LINK=DRTOML, even for the case that only the oldstyle interpreter, but no oldstyle objects are included. Otherwise the starting of the application is aborted with the following message:
CCM0996 NO SPACE AVAILABLE FOR RUNTIME STACK
- KDCDEF

For the newstyle and the mixed mode there is used the BLS interface. For the oldstyle mode either the DLL interface (upto UTM V5.0) or the BLS interface may be used.

All the programs connected to UTM in a newstyle application DRTRoot, DRIVRoot , DRTSTART, DRTSHUT, DRTVORG are contained as entries in the package IDCSMAIN; in the PROGRAM statement there is to be specified COMP=ILCS, the operand LIB has to be omitted.

If a newstyle program for starting a conversation was compiled with the option PERMIT=ON, there is required in addition a LOAD-MODULE statement for DRI#ERS@ in the library SYSLNK.DRIVE-COMP-LZS.031

DRIVE mixed mode

The programs connected to UTM for DRIVE mixed mode EXSTRT, EXSHUT are entries; in the PROGRAM statement there is to be specified COMP=ILCS, the operand LIB has to be omitted, the appropriate LOAD-MODULE statements have to be given for EXSTART and EXSHUTE .

For the mathematical functions there should be specified instead of both the LOAD-MODULE statements for DRTMAT20 (newstyle) and DRTMAT10 (oldstyle) only the LOAD-MODULE statement for the combined module DRTMATMI in the library SYSLNK.DRIVE-COMP-LZS.031.OLD, which contains the basic routines for the mathematical functions only once. Otherwise while starting the application there will appear the following message:
BLS0139 ENTRY 'KDCSIN###' IS DUPLICATE

- Assembling of the root table source

If the library for the system macros has another filename as \$TSOS.MACROLIB, it must be specified explicitly besides the libraries for the macros of UTM and of SESAM; otherwise there appears a flag with illegal opcode, as the system macro ETPND is not found.

- Bind and start

There is used the BINDER for binding and the BLS for loading and starting of LLM elements.

The following libraries have to be assigned with LINK=BLSLIBnn :

crtelib , lmslib , fhs-macrolib , and tiam-macrolib .

For the run of a TIAM application there is also required an assignment on the lmslib (Attention: Error in the manual, correct in the reference procedures).

If one of these assignments is missing, the start process is aborted due to unsatisfied external references.

The command for starting an LLM element reads

```
/START-PROGRAM FROM-FILE=*MOD(LIB=applilib,      -  
/          ELEM=appliname, PROG-MODE=ANY,        -  
/          RUN-MODE=ADV(ALT-LIB=YES,             -  
/          NAME-COL=ABORT,                       -  
/          SHARE-SCOPE=NONE,                     -  
/          UNRES-EXTRNS=DELAY,                   -  
/          LOAD-INF=REF))
```

Mind the position of the brackets (Attention: Error in the manual, correct in the reference procedures).

PROG-MODE = ANY since only XS mode is supported

If one of the following operands

```
ALTERNATE-LIBRARIES=YES,  
UNRESOLVED-EXTRNS=DELAY,  
LOAD-INFORMATION=REFERENCES
```

is missing, the start process is aborted due to unsatisfied external references.

7. Changes in UTM applications as compared to the manual
DRIVE-Compiler (BS2000) V1.0 Benutzerhandbuch

The remarks are valid for UTM V5.0 and SESAM/SQL as of V2.2
and are already included in the reference procedures.

generation procedure for the oldstyle mode with the DLL interface

	manual	reference procedure	
&UTMLIB	KDC.DLL.OML	SYSLNK.UTM.050	
&DRIVELIB	SYS.MOD.GEN.DRIVE	SYSLNK.DRIVE.031	
&DRTRTSLIB	SYS.MOD.DRTRTS	SYSLNK.DRIVE-COMP-LZS.031.OLD	
&FORMOML		necessary for the start procedure	
	KDCDEF	SYSPRG.UTM.050.KDCDEF	
	OPTION GEN=&GEN, TEST= &TEST	OPTION GEN=&GEN	
	PROGRAM KDCADM, COMP=SPL4,	PROGRAM KDCADM, COMP=ILCS,	
	MODULE DRTCOD10 ---	MODULE DRTCOD10 ENTRY statements	1)
	MODULE DRTPCS10 ---	MODULE DRTPCS10 ENTRY statements	1)
XS	MODULE SF2REFM	MODULE SF2REFX	
	MODULE SESUTMC	MODULE SESUTMC	
	MODULE SESORT	MODULE SESORT	
	USER CHEF, STATUS=ADMIN	USER CHEF, PERMIT=ADMIN	
UTM macros	UTM.MACLIB	SYSLIB.UTM.050.ASS	
macro KDCDB	SYS.MAC.UTM	SIPLIB.SES-SQL-GEM.vvv.MACUTM from SESAM userid	
PROG	..., SORT=Y	..., SORT=Y, LOADPT=*XS	
RESOLVE	UTM.OML.SPLRTS	SYSLNK.UTM.050.SPLRTS	
RESOLVE	---	SYSLNK.CRTE	

- 1) Missing or incomplete ENTRY statements
cause the module DRTCOD10 / DRTPCS10
to be loaded for a second UTM task once more,
though it is already in the common memory pool.

start procedure

manual	reference procedure
/FILE SYS.MOD.DRTRTS, LINK=DRIVEOML	/FILE SYSLNK.DRIVE-COMP-LZS.031.OLD, LINK=DRTOML
/SYSFILE TASKLIB= SYS.MOD.DRIVE	/FILE SYSLNK.DRIVE.031, LINK=DRIVEOML
.SESAM DBSESNAM=X .SESAM DBSESPUF=32000	/FILE &SESCONF, LINK=SESCONF 1)
.FHS MEMLLEN=31	.FHS DE=NO

8. Changes in TIAM and UTM applications
due to SESAM/SQL as of V2.2

The use of SESAM/SQL as of V2.2 requires changes in
the procedures for TIAM and UTM applications,
which are collected at this place:

SESAM/SQL V1.1 SESAM/SQL as of V2.2 2)

TIAM

linkage	//INCLUDE-MODULE --- LIB=&DRIVELIB, ELEM=DRIDUM21, TYPE=R	
	//INCLUDE-MODULE //INCLUDE-MODULE LIB=&SESAMOML, ELEM=SESDCAMX, TYPE=R	LIB=&SESAMOML, ELEM=SESMOD, TYPE=R

UTM

KDCDEF	DATABASE	ENTRY=SQLSES ,TYPE=SESAM ,LIB=&SESAMOML mode	ENTRY=SESSQL ,TYPE=SESAM ,LIB=&SESAMOML	newstyle and mixed
	DATABASE	ENTRY=SESAM ,TYPE=SESAM [,LIB=&SESAMOML] mode	ENTRY=SESAM ,TYPE=SESAM ,LIB=&SESAMOML	oldstyle and mixed

- 1) As of SESAM/SQL V2.2 there is obligatory the use of
a configuration file for the SESAM start parameters;
they must not be contained in the utm start procedure
any more.
- 2) Before use of SESAM/SQL as of V2.2
existing SESAM databases
of a version earlier than SESAM/SQL V2.0
have to be transformed on the new SESAM layout
(s. release notices of SESAM/SQL as of V2.0).

9. Migration of UTM applications
from DLL to BLS interface

KDCDEF

newstyle program NEWPROC

DLL BLS

MODULE NEWPROC@, LIB=libname, LOAD=(POOL,poolname)	LOAD-MODULE NEWPROC@, LIB=libname, LOAD-MODE=(POOL,poolname), VERSION=version
--	--

TAC unchanged

oldstyle programm OLDPROC

DLL BLS

PROGRAM OLDPROC, COMP=ASSEMB, LIB=libname, LOAD=STATIC	PROGRAM OLDPROC, COMP=ASSEMB, LOAD-MODULE=OLDPROC LOAD-MODULE OLDPROC, LIB=libname, LOAD-MODE=STARTUP, VERSION=version
---	--

MODULE OLDPROC@, LIB=libname, LOAD=(POOL,poolname)	LOAD-MODULE OLDPROC@, LIB=libname, LOAD-MODE=(POOL,poolname), VERSION=version
--	--

TACs unchanged

MODULE DRTCOD10 , DRTPCS10 , DRIPCS51

DLL BLS

MODULE DRTCOD10, LIB=libname, LOAD=(POOL,poolname)	--- The module is loaded inter- nally.
--	--

ENTRY statements

PROGRAM DRTSTARS , DRIVORG etc.

DLL BLS

PROGRAM DRTSTARS, COMP=ASSEMB, LIB=libname, LOAD=STATIC	PROGRAM DRTSTARS, COMP=ASSEMB, LOAD-MODULE=DRTSTARS LOAD-MODULE DRTSTARS, LIB=libname, LOAD-MODE=STARTUP, VERSION=version
--	---

MODULE DRTLINK# , DRTSTRT etc.

DLL BLS

MODULE DRTLINK#, LOAD-MODULE DRTLINK#,
LIB=libname, LIB=libname,
LOAD=STATIC LOAD-MODE=STARTUP,
VERSION=version

MPOOL statement

DLL BLS

MPOOL poolname, MPOOL poolname,
LIB=libname, SIZE=poolsize
SHARETAB=csectname,
SIZE=poolsize

compilation BLS

KDCSHARE source is obsolete

bind BLS

The BINDER is used
also for oldstyle applications.
The root table module is bound statically
and a RESOLVE statement is applied on
SYSLNK.UTM.vers and SYSLNK.UTM.vers.SPLRTS
For newstyle and mixed mode there are bounded statically
further modules
(see DRIVE/WINDOWS-COMP V2.1 Benutzerhandbuch, pages 54-
55).

start BLS

The command /START-PROGRAM is used
also for oldstyle applications.
For the following libraries there is required
an assignment with LINK=BLSLIBnn :
crtelib,
for newstyle and mixed mode in addition
tiam-macrolib, fhs-macrolib, lmslib
(see DRIVE/WINDOWS-COMP V2.1 Benutzerhandbuch, pages 56-
57).

If BLS is used, there has to be inserted in addition
behind the .UTM parameters: .UTM END

The following changes as compared to the manual
are recommended: :
PROG-MODE=*ANY und NAME-COLLISION=*STD

For the library with the subroutines there is valid,
if to be called by newstyle programs, LINK=USEROML ,
if to be called by oldstyle programs, LINK=DRIUSOML.

Table: Delivery parts

delivery part	meaning	access mode
SYSLNK.DRIVE-COMP.031	newstyle compiler	link BLSLIBnn
SYSLNK.DRIVE-COMP.031.OLD	oldstyle compiler	link DRICPOML
SYSSII.DRIVE-COMP.031	installation file	
SINPRC.DRIVE-COMP-LZS.031.OLD	installation procedure for DSSM oldstyle	
SYSFHS.DRIVE-COMP-LZS.031.OLD	system formats oldstyle	
SYSLIB.DRIVE-COMP-LZS.031.OLD	user interface oldstyle	
SYSLNK.DRIVE-COMP-LZS.031	- mathem. routines, - object for PERMIT display for SESAM	in UTM mode: like objects, in TIAM mode: link BLSLIBnn
SYSLNK.DRIVE-COMP-LZS.031.OLD	rts oldstyle compiler	link DRTOML
SYSPRC.DRIVE-COMP-LZS.031	reference procedures and declaration procedures for SSCM newstyle	
SYSPRC.DRIVE-COMP-LZS.031.OLD	reference procedures oldstyle	
SYSSII.DRIVE-COMP-LZS.031	installation file	
SYSSSC.DRIVE-COMP-LZS.031	declaration file for SSCM newstyle	
SYSSSD.DRIVE-COMP-LZS.031	declaration file for DSSM oldstyle	
SYSFGM.DRIVE-COMP-DOC.031.D/E	release notice (German/English)	
SYSRME.DRIVE-COMP-DOC.031.D/E	readme file (German/English)	
SYSSII.DRIVE-COMP-DOC.031	installation file	

2.5 Obsolete functions and those to be discontinued

OPTION VERSIONMIX=OFF/ON

The specification of this option is no longer supported.
It has become meaningless already as of the version V2.1 .

2.6 Incompatibilities

For the change from DRIVE-COMP V2.2 to DRIVE-COMP V3.1 the following items should be regarded:

1. Changes in generation of objects with relevance on existing DRIVE programs

none

2. Compilation

All the newstyle programs have to be recompiled.

3. Generation and run of TIAM / UTM applications

In the control and start procedures within the filenames the version changes from 022 to 031, the linknames do not change.

4. Deviation from the manual (German edition) in the section "Änderungen gegenüber der Ausgabe vom Dezember 1993":
For the use of an Oldstyle asynchronous program in server environment during the necessary recompiling of the Oldstyle program with the Oldstyle Compiler option PAR COMOPT PROGRAMTYPE = ASYNCHRON the linkage information TYPE=A, CALL=FIRST will be generated now. (previously TYPE=B)
For the use of the Oldstyle object as dialog TAC the linkage information in the KDCDEF has to be changed to TYPE=D, CALL=NEXT.
5. Due to internal interface adjustments in CRTE a link assignment BLSLIB(xx-1) to the library \$TSOS.SYSLNK.CRTE.<version>.TIMESHIFT in addition to the BLSLIBxx to the CRTE library has to be made.
For required CRTE version depending on BS2000/OSD version see chapter 2.2 Software configurations.
If the LINK assignment is missing, the start procedure fails with the following message:
"CCM0014 TIME_T OVERFLOW. PROCESSING ABORTED"

2.7 Restrictions

- Functions of DRIVE, which are not supported by the DRIVE compiler, are mentioned in the manual (German edition) in the section " Abweichungen zwischen Interpreter und Compiler " .
- As to arithmetic operations there are recommended also tests in object mode for suitable declarations of the variables.
- During the compilation of large DRIVE programs there may be reached an internal limit for the compiler. When this limit is exceeded, the compilation is aborted with the message DRI0300 .
Measurement:
OPTION NULLVALUE=OFF , SCREENCHECK=OFF (if FHS), otherwise splitting of the DRIVE program
- The number of SUBPROCEDURE statements and / or CYCLE FOR statements with variable step value and / or end value is limited within a DRIVE program by an address space of 32 KB for appropriate internal variables. When this limit is exceeded, the compilation is aborted with the message DRI0303 .
- For a statement in a DRIVE program containing a complex expression the address space for all the intermediate results with length less than 8 bytes is limited by 4 KB. When this limit is exceeded, the compilation is aborted with the message DRI0304 .
In this case the line number with respect to the expanded source will be displayed.
Measurement:
OPTION NULLVALUE=OFF , otherwise splitting of the statement in several statements
- For an assignment or a comparison between different data types out of DATE, TIME, TIME(3), TIMESTAMP(3) there is to be used the appropriate conversion function DATE or TIME or TIMESTAMP respectively, as without use of the appropriate conversion function the interpreter mode and the object mode have different results.
- The use of the drive compiler within the drive interpreter in utm mode is only possible without generated objects, as otherwise the utm application would contain the compiler and the run time system for the object mode. In such a case the conversation is terminated with the following message on SYSOUT of the utm task:
BLS0139 CSECT 'IDCHCHK' IN LLM 'DRCLLM31' IS DUPLICATE

2.8 Procedure in the event of errors

The following documents are required for diagnosis in the event of errors:

a) for errors during compilation:

- description of the phenomena,
- source of the DRIVE program,
- for programs containing DB accesses there is required the configuration of the database,
- list of the compiler options used,
- format and module libraries, if necessary,

b) for errors in the compiled application during runtime:

- description of the phenomena,
- source of the DRIVE program,
- protocols of SYSOUT and SYSLST for all the UTM tasks of the application,
- UTM dumps and USER dumps, if any,
- for programs containing DB accesses there is required the configuration of the database,
- list of the compiler options used (MONINFO=ON),
- protocol of the compilation (LISTING=LIST, LISTTYPE=USER),
- format and module libraries, if necessary,

3 Software extensions

DRIVE-COMP V3.1 is based on the scope of the language of the appropriate interpreter DRIVE V3.1 for the program mode.

The extensions for newstyle related to SESAM/SQL V3.1 are corresponding to those of the interpreter.

OPTION INDEXCHECK=OFF/ON

With this option one may specify, if coding is generated in order to check that an index variable remains in its range.

The procedure DRC.OPT.INDOFF has become obsolete.

UTM linkage information

This information is extended with respect to the BLS interface. It is also generated for newstyle programs.

For the oldstyle mode there is valid furtheron the scope of the language and the behaviour of the DRIVE compiler V1.0 .