Release Bulletin

SDK for SAP ASE 16.0

HP-UX

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Contents

Product Summary

This release bulletin provides information about SDK for SAP® ASE version 16.0.

SDK for SAP ASE 16.0 is compatible with HP HP-UX Itanium 32-bit and 64-bit operating system configuration.

For the most current list of supported operating systems, see the platform certifications page at *http://certification.sybase.com/ucr/search.do*. For a list of platforms, compilers, and third-party products on which SDK for SAP ASE is built and tested, see the *New Features Bulletin SAP Open Server 16.0 and SDK for SAP ASE 16.0 for Windows, Linux, and UNIX*.

Product Components

See the *New Features Bulletin SAP Open Server 16.0 and SDK for SAP ASE 16.0 for Windows, Linux, and UNIX* for list of SDK for SAP ASE components and the platforms supported.

Availability with 64-bit Libraries

SDK for SAP ASE 16.0 is available in 64-bit versions.

Use the `-DSYB_LP64` flag when compiling applications that use the 64-bit libraries.

Utilities

Utilities that are supported by SDK for SAP ASE 16.0.

There are two versions of the **bcp**, **isql**, **defncopy**, **cobpre**, and **cpre** utilities; nonthreaded and native-threaded. The native-threaded version names have "`_r`" suffixes.

POSIX threads and pthreads Libraries

POSIX threads and pthreads libraries for SDK for SAP ASE 16.0.

SAP® Open Client™ uses POSIX threads. When you use threaded libraries (`*_r`), link with the `pthreads` library.

See the *Open Client and Open Server Programmers Supplement for UNIX* for information about Open Client libraries.

Note: DB-Library™ does not support any type of thread interface.

IPv6 Support

SDK for SAP ASE 16.0 supports IPv6.

This is a sample `interfaces` file entry:

```
BARNARD_OS
   master tcp ether barnards.sybase.com 18200
   query tcp ether barnards.sybase.com 18200
   master tcp ether barnards.v6.sybase.com 18200
   query tcp ether barnards.v6.sybase.com 18200
   master tcp ether
     fd77:55d:59d9:165:203:baff:fe68:aa12 18200
   query tcp ether
     fd77:55d:59d9:165:203:baff:fe68:aa12 18200
```

Note: All master and query lines in the `interfaces` file must begin with a tab.

Sample Files

You can find sample source code files in the SDK for SAP ASE installation directory `$SYBASE/$SYBASE_OCS/sample`. Available sample files for SDK for SAP ASE 16.0.

Interoperability Matrix

The interoperability matrix of SDK for SAP ASE, SAP® Open Server™, SAP® Adaptive Server® Enterprise (SAP® ASE), and SAP® Replication Server® that are installed on the same machine.

For specific platform information, refer to the respective product certification reports.

Although two or more products can be interoperable, remember that new features introduced in a newer version of a product may not be supported with older versions of the same or other products.

SDK for SAP ASE	SAP Open Server			SAP ASE				SAP Replication Server					
16.0	16.0	15.5	15.0	16.0	15.5	15.0.*x*	12.5.*x*	15.7	15.5	15.2	15.1	15.0.1	12.6
HP HP-UX PA-RISC 32-bit	n/a	nx/a	x	n/a	nn/a/a	n/a	x	n/a	n/a	n/a	x	x	x
HP HP-UX PA-RISC 64-bit	n/a	nx/a	x	n/a	nx/a	x	x	n/a	n/a	n/a	n/a	n/a	n/a
HP HP-UX Itanium 32-bit	x	xx	x	n/a	nn/a/a	n/a	n/a	n/a	n/a	n/a	n/a	x	x
HP HP-UX Itanium 64-bit	x	xx	x	x	xx	x	x	x	x	x	x	n/a	n/a
LEGEND: x = interoperable; n/a = product not available or does not work with SDK for SAP ASE on that platform.													

Note: The SDK for SAP ASE interoperability information shown in the table is relevant only if the interoperable products are installed in different `$SYBASE` directories.

Guidelines for Installing SDK for SAP ASE with Other SAP Products

Guidelines for installing SDK for SAP ASE on the same machine with other SAP products.

- In general, SAP recommends that you place the new installation of SDK for SAP ASE in separate directories from other SAP products, such as SAP Replication Server, SAP® OpenSwitch™, Enterprise Connect™ Data Access, and SAP® IQ, unless SAP Technical Support has specifically recommended installation in the same directory to address an issue.
- Installing SDK for SAP ASE 16.0 on the same machine as Adaptive Server 15.0.*x* could cause SAP Adaptive Server to fail to start. To configure this, either upgrade SAP Adaptive Server to 16.0, or follow the directions in the *SDK for SAP ASE and SAP Open Server Installation Guide for Microsoft Windows*.
- SAP recommends that you do not mix versions of SDK for SAP ASE and SAP Open Server in the same directory. For example, do not install SDK for SAP ASE 16.0 in a directory containing Open Server 15.5—in this case, upgrade both SDK for SAP ASE and SAP Open Server to 16.0.

SDK for SAP ASE and SAP Open Server Compatibility

For SDK for SAP ASE and SAP Open Server compatibility, the header files included in an application must be the same version level as the library with which the application is linked.

DB-Library Compatibility with Client-Library

Learn about DB-Library™ compatibility with Client-Library issues.

DB-Library compatibility issues include:

- Support for new features in SAP Open Client or SAP Adaptive Server have been made primarily to the Client-Library API. This includes support for LDAP, SSL, high availability failover, bulk-copies into DOL tables, and so on. For this reason, SAP recommends that you create all new applications using the Client-Library API. You may also need to migrate, to Client-Library, older applications written in DB-Library that can be run against SAP Adaptive Servers that offer newer technology.
- Support for new features are not added to the DB-Library.
- Although DB-Library and Client-Library calls can exist in the same application, SAP does not test or certify combining the two different APIs. If you must use the two APIs together, ensure that the libraries are not only at the same major release level but also at the same ESD level.

For help on converting a DB-Library application to a Client-Library application, see the *Open Client Client-Library Migration Guide*.

Special Installation and Configuration Instructions

Installation and configuration instructions for SDK for SAP ASE 16.0.

See the *SDK for SAP ASE and SAP Open Server Installation Guide* for your platform for instructions on how to install the software. For guidelines for installing SDK for SAP ASE with other SAP products on the same server, see *Guidelines for installing SDK for SAP ASE with other SAP products*.

Warning! If you install both SDK for SAP ASE and SAP Open Server in the same directory, SAP recommends that you use the same version and ESD levels. Because SDK for SAP ASE and SAP Open Server share files, using different version and ESD levels can cause product failures.

For instructions on configuring your environment, see the *Open Client and Open Server Configuration Guide* for your platform.

For information about compiling and executing SAP Open Server and SAP Open Client applications, including the sample programs, see the *Open Client and Open Server Programmers Supplement* for your platform.

See also

- *Guidelines for Installing SDK for SAP ASE with Other SAP Products* on page 3

Installing EBFs

To ensure that your installation is the most current, SAP recommends that, after installing SAP Open Server, you download and install the corresponding latest available EBF.

1. Download product updates from Downloads at *http://downloads.sybase.com*.
2. To verify that you are using the correct version of SDK for SAP ASE, enter this command to check the version string of the SDK library:

   ```
   isql -v
   ```

   A sample SDK for SAP ASE version string might be `Client-Library/16.0 SPxx PLyy/P-EBFXXXXX ESD #X`, where *XXXX* identifies the Client-Library file and the other SDK for SAP ASE files.

Running InstallAnywhere and InstallShield Multiplatform Installers

Some of the files generated by InstallAnywhere and InstallShield Multiplatform share the same file names.

This becomes an issue when you use both InstallAnywhere and InstallShield technologies to install or uninstall products in the same installation directory, because files that are used by both installers are overwritten or removed without warning. SAP recommends that you do not use InstallShield and InstallAnywhere to install to or uninstall from the same installation directory.

Changed Functionality in this Version

Changed functionality for SDK for SAP ASE 16.0 is described in *New Features Bulletin SAP Open Server 16.0 and SDK for SAP ASE 16.0 for Windows, Linux, and UNIX*.

Known Issues

Review known issues and workarounds, listed by Change Request (CR) number.

Note: If you have a Sybase® support contract, you can search the Sybase Web site for solved cases. Choose **Support > Solved Cases** or go to *http://search.sybase.com/search/simple.do?mode=sc*. You need a MySybase account to view solved cases in the archive.

If you have an SAP® support contract, use the Sybase xSearch to search for knowledge-based articles and solved cases. Go to the SAP Sybase Support Portal at *http://service.sap.com/sybase/support*, log in, and select **KBAs & Solved cases** to start the xSearch.

Key to issue types:

- **RTC –** SAP® Release to Customer tracking number.
- **CSN –** SAP Customer Services Network tracking number.
- **CR –** Sybase® Change Request number.
- **AG –** Agentry® tracking number.
- **N/A –** No tracking number.

Known Issues for SAP Adaptive Server Enterprise ODBC Driver

Known problems and workarounds, if any, for SAP Adaptive Server Enterprise ODBC Driver.

Table 1. SAP Adaptive Server Enterprise ODBC Driver issues

CR#	Description
682086	**The bulk insert functionality of the ODBC Driver available with SQLBulkOperations has not been tested with large object (LOB) columns marked for in-row storage on allpages-locked (APL) tables. Using this API against such APL tables could result in errors or corrupted data.** **Workaround:** Do not mark LOB columns for in-row storage on APL tables if you are using **SQLBulkOperations** to bulk load data into the tables.

CR#	Description

	You see an error if you do not specify the precision and scale using the ODBC API method – SQLSetDescField – when retrieving data from `numeric` or `decimal` columns in a table.
	
	Workaround: Specify the **SQLSetDescField** with value types SQL_DESC_PRECISION and SQL_DESC_SCALE.
	
	This code illustrates how to retrieve a numeric column from a table specifying a precision and scale.
	`/*`
	`Insert values`
	`Execute select statement`
	`*/`
	
	`/*`
	`Fetch Values`
	`*/`
	
	`#define ROW_SIZE 10`
	`SQLRETURN sr;`
	`SQL_NUMERIC_STRUCT g[ROW_SIZE];`
	`SQLLEN gLen[ROW_SIZE];`
	`SQLINTEGER intVal[ROW_SIZE];`
	`SQLLEN intLen[ROW_SIZE];;`
	
	`sr = SQLBindCol(hStmt, 1, SQL_C_LONG, intVal, sizeof(SQLINTEGER), intLen);`
	`sr = SQLBindCol(hStmt, 2, SQL_C_NUMERIC, g, sizeof(SQL_NUMERIC_STRUCT), gLen);`
	
	`SQLHDESC hdesc = NULL;`
	`SQLGetStmtAttr(hStmt, SQL_ATTR_APP_ROW_DESC, &hdesc, 0, NULL);`
	`SQLSetDescField(hdesc, 2, SQL_DESC_PRECISION, SQLPOINTER) 5, 0);`
	`SQLSetDescField(hdesc, 2, SQL_DESC_SCALE, (SQLPOINTER) 2, 0);`
	`SQLUSMALLINT rowStatus[ROW_SIZE];`
	
	`sr = SQLSetStmtAttr(hStmt, SQL_ATTR_ROW_STATUS_PTR, rowStatus, 0);`
	`for (short i = 0; i < ROW_SIZE; i++)`
	`{`
	`memset(&g[i], '\0', sizeof(SQL_NUMERIC_STRUCT));`
	`memset(g[i].val, 0, 16);`
	`}`
	`sr = SQLFetch(StatementHandle);`
	
	See the Microsoft ODBC API Reference at *http://msdn.microsoft.com/en-us/library/ms713560%28v=VS.85%29.aspx*.

Installer Issues

Known issues and workarounds, if any, that you might encounter when installing SDK for SAP ASE.

Table 2. Installer Issues

CR#	Description
583979	**The installer does not validate feature names specified in the response file when you install in silent mode.** **Workaround:** Ensure that the specified feature names are correct.

General Issues

Known programming issues and workarounds, if any, for SAP Open Client products.

Table 3. Programming Issues

CR#	Description
	Upgrading to a new version **Workaround:** For statically and dynamically linked SAP Open Client applications (**dblib**, **ctlib**, and **esql**)(**dblib** and **ctlib**), SAP recommends the following: • Rebuild all statically linked SAP Open Client applications (**dblib**, **ctlib**, and **esql**) (**dblib** and **ctlib**) using the new version of software. Recompile and relink the applications using the new header files and libraries. • For dynamically linked SAP Open Client applications, recompile and relink with the SDK libraries that now include “syb” in the library names. **Note:** If you have made any changes to the application files, you must recompile. Ensure that the runtime libraries are for the same major release as the version used to build the application.

Client-Library Issues

Known programming issues and workarounds, if any, of Client-Library.

Table 4. Programming issues of Client-Library

CR#	Description
	ct_poll **Workaround:** Do not call **ct_poll** from within any Client-Library callback function or from within any other function that can execute at the system-interrupt level. Calling **ct_poll** at the system-interrupt level corrupts SAP Open Client and SAP Open Server internal resources and causes recursion in the application.
	Asynchronous operations **Workaround:** To properly exit Client-Library, wait until all asynchronous operations are complete, then call **ct_exit**. If an asynchronous operation is in progress when **ct_exit** is called, the routine returns CS_FAIL and does not exit Client-Library properly, even when CS_FORCE_EXIT is used. Client-Library fully supports asynchronous operations on UNIX platforms. See *Asynchronous Programming* in the *Open Client Client-Library/C Reference Manual*.
	Registered procedure notifications **Workaround:** The `CS_ASYNC_NOTIFS` connection property controls how a Client-Library application receives registered procedure notifications from an SAP Open Server application. Currently, the SAP Open Server application sends a notification to the client as one or more Tabular Data Stream™ (TDS) packets. However, the client application does not learn of the notification until Client-Library reads the notification packets from the connection and invokes the application's notification callback. To trigger the application's notification callback on a connection that is otherwise idle, set `CS_ASYNC_NOTIFS` to CS_TRUE for **ct_poll**. In other words, unless the application is actively sending commands and reading results on the connection, it does not receive notifications when `CS_ASYNC_NOTIFS` is CS_FALSE (the default).

Embedded SQL Issues

Known programming issues and workaround, if any, specific to Embedded SQL.

- Embedded SQL/C version 15.0 and later.
- Embedded SQL/COBOL version 15.0 and later.

For a list of platforms on which Embedded SQL/C and Embedded SQL/COBOL are available, see the *New Features Bulletin SAP Open Server and SDK for SAP ASE 16.0 for Windows, Linux, and UNIX*.

Table 5. Embedded SQL Issues

CR#	Description
	Sharing Embedded SQL/C objects among multiple threads **Workaround:** By default, Embedded SQL/C connections, cursors, and dynamic statements cannot be shared by multiple threads. The namespace for each of these object types is limited to the currently executing thread; one thread cannot refer to objects that were created by another thread. Objects can be shared by setting the macro **CONNECTIONS_ARE_SHARED_ACROSS_THREADS** to 1 by using the `-D` compiler option when compiling the `sybesql.c` module. **Warning!** If Embedded SQL/C objects are shared by multiple threads, the application programmer must add thread serialization code to ensure that objects associated with a single connection are not used simultaneously by multiple threads. Normally, dynamic descriptors can be shared by multiple threads. To give each thread its own namespace for dynamic descriptors, when compiling the `sybesql.c` module, use the `-D` compiler option to set the macro **DESCRIPTOR_SCOPE_IS_THREAD** to 1.
	Precompiler -p option **Workaround:** Applications that rely on inserting empty strings instead of NULL strings when the host string variable is empty does not work if the `-p` option is turned on. The persistent bind implementation prevents Embedded SQL from circumventing Client-Library protocol (which inserts NULL strings).
	Embedded SQL/C sample programs **Workaround:** When you enter an incorrect password, sample programs `example1.pc` and `example2.pc` generate incorrect error numbers. You can ignore these numbers.
	Embedded SQL/COBOL sample programs **Workaround:** The shared library path for compiling the sample programs must include `$COBDIR/lib` and `$SYBASE/$SYBASE_OCS/lib`. The path must also include `$COBDIR/bin` and `$SYBASE/bin`.

Documentation Changes

Updates, corrections, and clarifications to the documentation released with SDK for SAP ASE 16.0.

Enabling DB-Library Kerberos Authentication Component

To use the Kerberos Authentication Component capability in SDK for SAP ASE, you must enable the DB-Library Kerberos Authentication Component.

1. In DB-Library, include `sybdbn.h` instead of `sybdb.h`.
2. Using `dbsetversion`, set the DB-Library version to DBVERSION_100 or above. If you do not set DB-Library to the latest version, DB-Library reverts to the default version of DBVERSION_46, which does not support the new option at the Tabular Data Stream (TDS) protocol level.
3. Enable the new option using `DBSETLNETWORKAUTH` or `DBSETLMUTUALAUTH`, then call `dbopen`.

   Note: If the server's principal name does not match the server's directory entry name, call `DBSETLSERVERPRINCIPAL` to set the server's principal name before calling `dbopen`.

   All calls to `DBSETLNETWORKAUTH`, `DBSETLMUTUALAUTH`, or `DBSETLSERVERPRINCIPAL` after calling `dbopen` remain invalid until the next time the application calls `dbopen`.
4. Recompile the application.

   Note: On Linux 32-bit, the dblib application need to be linked with system lib –lrt. Without –lrt, the dblib application may encounter this error:

   ```
   symbol lookup error: <your $SYBASE>/OCS-16_0//lib/libsybskrb.so.
   16.0.00.00: undefined symbol: pthread_once
   ```

pthread_once() for UNIX Platform

To use the LDAP or Kerberos drivers, you must use the **_r** utility (**isql_r**, **isql64_r**), or the threaded version of libraries for your custom build program.

Programmers Supplement

Updates, corrections, and clarifications to the *Open Client and Open Server Programmers Supplement Guide*.

compile-and-link Lines for 64-bit Mode

Correction to compile-and-link lines for 64-bit mode in the *Open Client and Open Server Programmers Supplement for UNIX* .

For the 64-bit examples, add **-DSYB_LP64** to the compile lines. See `$SYBASE/$SYBASE_OCS/sample/ctlibrary/sybopts.sh` for samples.

See also

- *Table 1-4: Static compile-and-link Commands for Client-Library* on page 16
- *Table 1-5: Debug compile-and-link Commands for Client-Library* on page 17
- *Table 1-6: Shareable compile-and-link Commands for Client-Library* on page 17
- *Table 1-7: Thread-Safe compile-and-link Commands for Client-Library* on page 18

Table 1-4: Static compile-and-link Commands for Client-Library

Updated *Table 1-4: Static compile-and-link Commands for Client-Library* of *Open Client and Open Server Programmers Supplement for UNIX* .

Platform	Command
HP HP-UX Itanium 32-bit	`cc +DD32 -Wl,-aarchive_shared -I$SYBASE/$SYBASE_OCS/include -Dhpia64=1 program.c -L$SYBASE/$SYBASE_OCS/lib -lsybct -lsybtcl -lsybcs -lsybcomn -lsybintl -lsybunic -lcl -lm -ldld -o program`
HP HP-UX Itanium 64-bit	`cc +DD64 -DSYB_LP64 -Wl,-aarchive_shared -I$SYBASE/$SYBASE_OCS/include -Dhpia64=1 program.c -L$SYBASE/$SYBASE_OCS/lib -lsybct64 -lsybtcl64 -lsybcs64 -lsybcomn64 -lsybintl64 -lsybunic64 -lcl -lm -ldld -o program`

Table 1-5: Debug compile-and-link Commands for Client-Library

Updated *Table 1-5: Debug compile-and-link Commands for Client-Library* of *Open Client and Open Server Programmers Supplement for UNIX* .

Platform	Command
HP HP-UX Itanium 32-bit	`cc -g -DDEBUG +DD32 -Wl,-aarchive_shared -I$SYBASE/$SYBASE_OCS/include -Dhpia64=1 program.c -L$SYBASE/$SYBASE_OCS/devlib -lsybct -lsybtcl -lsybcs -lsybcomn -lsybintl -lsybunic -lcl -lm -ldld -o program`
HP HP-UX Itanium 64-bit	`cc -g -DDEBUG +DD64 -DSYB_LP64 -Wl,-aarchive_shared -I$SYBASE/$SYBASE_OCS/include -Dhpia64=1 program.c -L$SYBASE/$SYBASE_OCS/devlib -lsybct64 -lsybtcl64 -lsybcs64 -lsybcomn64 -lsybintl64 -lsybunic64 -lcl -lm -ldld -o program`

Table 1-6: Shareable compile-and-link Commands for Client-Library

Updated *Table 1-6: Shareable compile-and-link Commands for Client-Library* of *Open Client and Open Server Programmers Supplement for UNIX* .

Platform	Command
HP HP-UX Itanium 32-bit	`cc +DD32 -I$SYBASE/$SYBASE_OCS/include -Dhpia64=1 program.c -L$SYBASE/$SYBASE_OCS/lib -lsybct -lsybtcl -lsybcs -lsybcomn -lsybintl -lsybunic -lcl -lm -ldld -o program`
HP HP-UX Itanium 64-bit	`cc +DD64 -DSYB_LP64 -I$SYBASE/$SYBASE_OCS/include -Dhpia64=1 program.c -L$SYBASE/$SYBASE_OCS/lib -lsybct64 -lsybtcl64 -lsybcs64 -lsybcomn64 -lsybintl64 -lsybunic64 -lcl -lm -ldld -o program`

Table 1-7: Thread-Safe compile-and-link Commands for Client-Library

Updated *Table 1-7: Thread-safe compile-and-link Commands for Client-Library* of *Open Client and Open Server Programmers Supplement for UNIX* .

Platform	Command
HP HP-UX Itanium 32-bit	`cc +DD32 -mt -I$SYBASE/$SYBASE_OCS/include -Dnthread_hpia=1 program.c -L$SYBASE/$SYBASE_OCS/lib -lsybct_r -lsybtcl_r -lsybcs_r -lsybcomn_r -lsybintl_r -lsybunic -lpthread -lrt -lcl -lm -ldld -o program`
HP HP-UX Itanium 64-bit	`cc +DD64 -DSYB_LP64 -I$SYBASE/$SYBASE_OCS/include -Dnthread_hpia64=1 program.c -L$SYBASE/$SYBASE_OCS/lib -lsybct_r64 -lsybtcl_r64 -lsybcs_r64 -lsybcomn_r64 -lsybintl_r64 -lsybunic64 -lpthread -lrt -lcl -lm -ldld -o program`

Libraries for 32-bit and 64-bit Threaded and Nonthreaded Applications

Correction to Open Client and Open Server libraries for 32-bit and 64-bit threaded and nonthreaded applications in the *Open Client and Open Server Programmers Supplement for UNIX*.

- Nonthreaded libraries:
  - 32-bit nonthreaded libraries are `libsybcomn.a`, `libsybintl.a`, and so on.
  - 64-bit nonthreaded libraries are `libsybcomn64.a`, `libsybintl64.a`, and so on.
- Threaded libraries:
  - 32-bit threaded libraries are `libsybcomn_r.so`, `libsybintl_r.so`, and so on.
  - 64-bit threaded libraries are `libsybcomn_r64.so`, `libsybintl_r64.so`, and so on.

New isql Message

The new **isql** message `Failed to delete temporary> file '%1!` has been documented in *Utility Messages* in the *Open Client and Open Server - Programmers Supplement for UNIX*.

bcp Behavior Changes

Changes to **bcp** behavior in *Open Client and Open Server Programmers Supplement > Utility Commands > bcp*.

bcp does not insert any row that contains a noncharacter entry that exceeds the length of the corresponding target table column. For example, **bcp** does not insert a row when an input value of 65000 is supplied for a target table column of type smallint. Instead, **bcp** reports a

conversion error and skips the row. Also, **bcp** does not insert truncated noncharacter data into the table. The conversion error is as follows:

```
cs_convert: cslib user api layer: common library error: The result is
truncated because the conversion/operation resulted in overflow
```

To track data that violates noncharacter type length requirements, run **bcp** with the **-e log-file name** option. **bcp** records the row and the column number of the rejected data, the error message, and the data in the log file you specify.

bcp truncates and inserts any row that contains a character type entry that exceeds the length of the corresponding target table column. Although the same overflow message is raised as for noncharacter type overflows, an error file is not created.

CT-Library Samples

Correction to the book reference and the updated sample list in *Open Client and Open Server Programmers Supplement for UNIX*.

The book reference is documented as *Installation Guide Adaptive Server Enterprise 15.7* in *Open Client and Open Server Programmers Supplement for UNIX > Open Client Client-Library/C > Using Client-Library sample programs*. However, the correct book reference is *Installation Guide Adaptive Server Enterprise 15.7 for [Sun Solaris|Linux|IBM AIX|HP-UX]*.

Description for these header files are missing from the *Open Client and Open Server Programmers Supplement for UNIX*:

Sample Header File	Description
`ctxact.h`	This file contains header files for the two phase commit functions in `ctxact.c`.
`example.h`	This is the header file that goes with the Client-Library example programs.
`exasync.h`	This is the header file which defines constants and data structures which are used in the async example program.
`exutils.h`	Header file which contains the defines and prototypes for the utility functions in `exutils.c` and `exutils2.c`.
`thrdfuc.h`	Header file which contains the defines and prototypes for the utility functions in `thrdfunc.c`.

Sample Header File	Description
`thrdutil.h`	Header file which contains the defines and prototypes for the utility functions in `thrdutil.c`.
`wide_example.h`	This is the header file that goes with the Client-Library example programs. It is used in `wide_*.c` programs.

These CT-Library sample program files are missing from the *Open Client and Open Server Programmers Supplement for UNIX*:

CT-Library Sample Program Files	Description
`csr_disp_scrollcurs3.c`	This example demonstrates using a scrollable, read-only cursor. This cursor also used REL-LOCKS_ON_CLOSE to instruct ASE to close a read-only cursor that uses shared level 1 locks. It opens a cursor with a canned query. It processes the results using the standard **ct_results()** while loop. It binds the column values to program variables. It then fetches and displays the rows in the standard **ct_scroll_fetch()** loop. This example uses a single `prefetch` buffer (CS_CURSOR_ROWS = 1) and regular program variables. See the `csr_disp_scroll-curs2` example for a scrollable cursor with a user-defined array and array binding.
`dynamic.c`	This program uses Dynamic SQL to retrieve values from the `titles` table in the `tempdb` database. The select statement, which contains placeholders with identifiers, is sent to the server to be partially compiled and stored. Therefore, every time when select is called, new values are passed for the key value, which determines the row to be retrieved. The behavior is similar to passing input parameters to stored procedures.

CT-Library Sample Program Files	Description
`exutils2.c`	This example file contains utility routines which are used only by the scrollable cursor sample programs. This file is used with the `csr_disp_scrollable` and `csr_disp_scrollable2` examples. It uses an array of index values to simulate a user driving the `ct_scroll_fetch()` API. The values are chosen by passing a numerical list (sequence of valid integers) to generate a pattern of commands retrieving random data off a read-only scrollable cursor. The `csr_disp_scrollable` example uses a section out of this file based on program variables only, `prefetch` count is set to 1. The `csr_disp_scrollable2` example uses arrays plus array binding. These examples are illustrative.
`id_update.c`	This is the example program that demonstrates the use of `identity_update` option. It connects to a server, creates `test_table` in the `pubs2` database, inserts a couple of rows with an identity field, then turns on the `identity_update` option and updates the identity in one of the rows with a user-specified value.
`lobdynamic.c`	This example demonstrates how to send **CS_TEXT_TYPE** and **CS_IMAGE_TYPE** parameters in chunks in a dynamic SQL statement to a server. This sample can be run against ASE 15.7 or later version, or against Open Server sample `paramreader`. The sample creates a table `LOBtable`, insert two rows into the table and the use a dynamic select statement to run a couple of queries on the table.

CT-Library Sample Program Files	Description
`lobrpc.c`	This example program demonstrates sending a RPC command to a server containing a mixture of (LOB) parameters. The example uses standard ANSI C for input/output and memory management. All work is performed synchronously.
`locator.c`	This example program demonstrates the use of LOB locators. A lob locator value is retrieved from the server, including some pre-fetch data from the entire LOB value in the server. Operations on the LOB in the server are being performed using the retrieved locator value.
`thrdutil.c`	This example file contains utility routines which are used by multithreaded sample program. It demonstrates how an application can hide some of the implementation details of CT-Lib from higher level programs.
`uctext.c`	This example program how to perform partial text updates. The text is retrieved from an ASE. ASE doesn't support. The text is retrieved from an ASE. ASE doesn't supports partial updates of text so, a request is sent to an Open Server that does not support it. The Open Server program provides the server part of the example. In a more realistic scenario, the Open Server sends the updatetext (partial update) command to a server that does support the functionality (for example, MSSQL). In this sample, the Open Server sends a message back to the client indicating the text received. The example uses standard ANSI C library routines for input/output and memory management. All work is performed synchronously.

Multiple Data File Usage Clarification

Additional information for multiple data file usage clarification in *Open Client and Open Server Programmers Supplement > Utility Commands > bcp*.

When using the **bcp** command, you can specify multiple partitions and data files. Use commas to separate each partition name or data file.

- With **bcp out**, multiple files are used only with partitions in a one-to-one relationship.
- With **bcp in**, multiple files can be used with or without partitions. If you use them without partitions, input data files are read in order of their listing in the command line arguments.

Batched Parameters Samples

See *Support for batched parameters* under 15.7 *New Features for ESD #4* in the *New Features Bulletin SAP Open Server and SDK for SAP ASE 16.0 for Windows, Linux, and UNIX*.

Clarification on Statement for Meaning SQLCODE=0

Open Client Embedded SQL/COBOL Programmers Guide > Handling Errors > Testing for errors > Using SQLCODE meaning for *SQLCODE=0* is incorrect.

Read the correct meaning for *SQLCODE=0* as `no error occurred` or `no error occurred but warning might have been occurred`.

Correction to sqlwarn flags table- sqlwarn[2]

Embedded SQL™/C Programmers Guide and *Embedded SQL™/COBOL Programmers Guide > Handling Errors > Testing for warning conditions > sqlwarn flags* correction to the **sqlwarn[2]** description.

If **sqlwarn[2]** is set to *W* character:

- At least one null value was eliminated from the argument set of a function.
- The input sent to SAP Adaptive Server Enterprise contained a null value in an illegal context, such as in an expression or as an input value to a table that prohibits null values.

SQLCA Structure - sqlwarn[2] Description

Client-Library/C Reference Manual > Client-Library Topics > Client-Library and SQL Structures > SQLCA structure correction to the **sqlwarn[2]** description.

If **sqlwarn[2]** is *W* variable:

- At least one null value was eliminated from the argument set of a function.
- The input sent to Adaptive Server Enterprise contained a null value in an illegal context, such as in an expression or as an input value to a table that prohibits null values.

resultlen Parameter Description for cs_convert Routine

Correction to *resultlen* parameter description for **cs_convert** routine in the *Open Client and Open Server Common Libraries Reference Manual*.

The reference manual incorrectly documents that **cs_convert()** sets **resultlen* to CS_UNUSED when **cs_convert()** fails; **cs_convert()** does not set **resultlen* to CS_UNUSED upon failure.

Consider the return value of **cs_convert()** rather than the value of **resultlen* to check if the routine has succeeded.

Update to the Connection Parameters Table

The connection parameter table has been updated with the `DSServiceName` property in *Adaptive Server Enterprise 15.7 SP100 ODBC Driver by Sybase Users Guide for Microsoft Windows and UNIX > Connections to a Database > Connections Using a Datasource*.

Property Names	Description	Required	Default Value
`DSServiceName`	The service name of the LDAP Sybase server object.	No	Empty

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