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Subject: sqlite3 encryption

Posted by [jimlef](#) on Sat, 22 Oct 2022 04:12:41 GMT

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Just ran across this... Anyone else seen it? Any thoughts?

Encryption for SQLite3

Jim

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Subject: Re: sqlite3 encryption

Posted by [coolman](#) on Sat, 22 Oct 2022 06:24:52 GMT

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U++ sqlite plugin already uses the above implementation.

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Subject: Re: sqlite3 encryption

Posted by [jimlef](#) on Sat, 22 Oct 2022 11:42:30 GMT

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Well well :) Now I have to try this out - thank you!

Quote:coolman

U++ sqlite plugin already uses the above implementation.

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Subject: Re: sqlite3 encryption

Posted by [jimlef](#) on Sat, 22 Oct 2022 17:54:46 GMT

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So, hit and run q here (got to leave for work shortly) but...

PasswordDlg dlg;

dlg.Run() // ... <- to get password of course ;)

sqlite3.Open(dbname, password, CODEC\_TYPE\_SQLCIPHER);

Is that change enough to use the encryption? Another related link here, describing the c interface... have to read this all later.

[https:// utelle.github.io/SQLite3MultipleCiphers/docs/configuration/c onfig\\_capi/](https://utelle.github.io/SQLite3MultipleCiphers/docs/configuration/c_onfig_capi/)

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Subject: Re: sqlite3 encryption

Posted by [coolman](#) on Sat, 22 Oct 2022 18:18:58 GMT

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jimlef wrote on Sat, 22 October 2022 19:54

```
PasswordDlg dlg;
```

```
dlg.Run() // ... <- to get password of course ;)
```

```
sqlite3.Open(dbname, password, CODEC_TYPE_SQLCIPHER);
```

Yes, this is enough. Take a look to the source code of the plugin Sqlite3upp.cpp

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Subject: Re: sqlite3 encryption

Posted by [jimlef](#) on Sun, 23 Oct 2022 10:51:45 GMT

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Ok, I think I have the basic idea, Thanks!

Source

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Subject: Re: sqlite3 encryption

Posted by [coolman](#) on Sun, 23 Oct 2022 13:04:14 GMT

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You can check encrypted Sqlite before Open() the DB using the function

```
bool Sqlite::IsFileEncrypted(const char *DBfilename) {
    FileIn in(DBfilename);

    if (!in) {
        return false;
    }

    String SqlVersion = "SQLite format 3";
    int SqlVersionLength = SqlVersion.GetCount();
    in.Seek(0);
    String version = in.Get(SqlVersionLength);
    in.Close();

    return (!version.IsEqual(SqlVersion));
}
```

With combination of returned code from Open() function

...

```
int errCode = sqlite3db.GetErrorCode();
```

```

        String errMsg = Format("[ %s&&Error: %d (%s)]", t_("Loading the database has failed!"),
errMsg, sqlite3db.GetErrorCodeString());
        if (SQLITE_NOTADB == errMsg) {
            errMsg = t_("The database is encrypted but decryption failed!&[= Did you use the correct
password?");
        }
        ErrorOK(errMsg);
...

```

BR, Radek

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Subject: Re: sqlite3 encryption  
Posted by [jimlef](#) on Mon, 24 Oct 2022 08:49:45 GMT  
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Thank you again - I've done a bit more, but I wanted SQLCIPHER, so I 'updated' the sqlite3upp plugin on my side. I put the newest amalgamation files from here in lib (sqlite3mc\_amalgamation.c & .h). I removed the aeshardware.c section (threw compile errors) from sqlite3mc\_amalgamation.c & updated the Sqlite3.h & sqlite3upp.cpp files:

```

int ChangePassword(const String& password, int cipher = CIPHER_SQLCIPHER);
int CheckDBAccess();
bool Open(const char *filename, const String& password = Null, int cipher =
CIPHER_SQLCIPHER);
...
enum Ciphers {
    CIPHER_CHAHA2020_SQLEET,
    CIPHER_CHAHA2020_DEFAULT,
+ CIPHER_AES256,
+ CIPHER_SQLCIPHER
};

```

For Sqlite3upp.cpp:

```

int Sqlite3Session::SetDBEncryption(int cipher) {
    // "default:cipher" => use SQLCipher during the entire lifetime of database instance
    // CIPHER_CHAHA2020_SQLEET settings are backward compatible with the previous sqleet
    implementation in the U++
    // Note: It is not recommended to use legacy mode for encrypting new databases. It is supported
    for compatibility
    // reasons only, so that databases that were encrypted in legacy mode can be accessed.

    int retcode = SQLITE_ERROR;
    switch (cipher) {
        case CIPHER_CHAHA2020_DEFAULT: {

```

```

int value = sqlite3mc_config(db, "default:cipher", CODEC_TYPE_CHACHA20);
if (value != -1)
    value = sqlite3mc_config_cipher(db, "chacha20", "kdf_iter", 64007);
if (value != -1)
    value = sqlite3mc_config_cipher(db, "chacha20", "legacy", 0);
if (value != -1)
    value = sqlite3mc_config_cipher(db, "chacha20", "legacy_page_size", 4096);
if (value != -1)
    retcode = SQLITE_OK;
} break;
case CIPHER_CHACHA20_SQLITE: {
int value = sqlite3mc_config(db, "default:cipher", CODEC_TYPE_CHACHA20);
if (value != -1)
    value = sqlite3mc_config_cipher(db, "chacha20", "kdf_iter", 12345);
if (value != -1)
    value = sqlite3mc_config_cipher(db, "chacha20", "legacy", 1);
if (value != -1)
    value = sqlite3mc_config_cipher(db, "chacha20", "legacy_page_size", 4096);
if (value != -1)
    retcode = SQLITE_OK;
} break;
+ case CIPHER_AES256: {
+ int value = sqlite3mc_config(db, "default:cipher", CODEC_TYPE_AES256);
+ if (value != -1)
+     value = sqlite3mc_config_cipher(db, "aes256", "kdf_iter", 4001);
+ if (value != -1)
+     value = sqlite3mc_config_cipher(db, "aes256", "legacy", 0);
+ if (value != -1)
+     value = sqlite3mc_config_cipher(db, "aes256", "legacy_page_size", 0);
+ if (value != -1)
+     retcode = SQLITE_OK;
+ } break;
+ case CIPHER_SQLCIPHER:
+     default: {
+ int value = sqlite3mc_config(db, "default:cipher", CODEC_TYPE_SQLCIPHER);
+ if (value != -1)
+     value = sqlite3mc_config_cipher(db, "sqlcipher", "kdf_iter", 256000);
+ if (value != -1)
+     value = sqlite3mc_config_cipher(db, "sqlcipher", "legacy", 0);
+ if (value != -1)
+     value = sqlite3mc_config_cipher(db, "sqlcipher", "legacy_page_size", 4096);
+ if (value != -1)
+     value = sqlite3mc_config_cipher(db, "sqlcipher", "hmac_use", 1);
+ if (value != -1)
+     value = sqlite3mc_config_cipher(db, "sqlcipher", "hmac_pgno", 0);
+ if (value != -1)
+     value = sqlite3mc_config_cipher(db, "sqlcipher", "hmac_salt_mask", 58);
+ if (value != -1)

```

```
+ value = sqlite3mc_config_cipher(db, "sqlcipher", "kdf_algorithm", 2);
+ if (value != -1)
+ value = sqlite3mc_config_cipher(db, "sqlcipher", "hmac_algorithm", 2);
+ if (value != -1)
+ value = sqlite3mc_config_cipher(db, "sqlcipher", "plaintext_header_size", 16);
+ if (value != -1)
+ retcode = SQLITE_OK;
+ } break;
}
return retcode;
}
```

I haven't modded any other code sections.

I'm sure that the aeshardware section can be fixed to eliminate the aes128 related errors (well, hopeful). This otherwise seems to update things quite a bit. I'm sure I'll run into plenty of introduced issues as I code more into this project of mine, but it's a start :)

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