Caveat Emptor!!!

15/1/2018

Check the forum thread in case more things have surfaced…
https://www.zen-cart.com/showthread.php?223357-using-utf8mb4_unicode_ci-for-database-character-set-and-collation

Why bother doing this?
https://mathiasbynens.be/notes/mysql-utf8mb4

I've detailed what I did to change my Zen Cart database from a utf-8 database to utf8mb4_unicode_520_ci.
If you still have a latin1 database you need to stop reading this and research much more!
The MySQL server should be 5.5.3 or higher.

The process is to build a list of SQL queries for your specific db that you can then run on the production db in one go.
The description of this process is carried in phpMyAdmin.

It goes without saying that you practise this on a development server!!

1) Modify the database

ALTER DATABASE CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_520_ci;

2) Modify the tables

a) Everyone's database will have extra tables in it, depending on their addons, and any keys with varchar(255) will need their own manual modifications.

So, to generate an initial list of SQL commands that include all the tables in YOUR database, run this query:

```
SELECT CONCAT("ALTER TABLE ", TABLE_SCHEMA, '.', TABLE_NAME," CONVERT TO CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_520_ci;") AS ExecuteTheString
FROM INFORMATION_SCHEMA.TABLES
WHERE TABLE_SCHEMA="yourDatabaseName"
AND TABLE_TYPE="BASE TABLE";
```

It will produce a list that is probably truncated. Click on Options, select Full Texts and run it again.
Then drag the right edge of the column away to show the commands in their full glory.
You should have a list of the tables like this:

```
ALTER TABLE address_book CONVERT TO CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_520_ci;
ALTER TABLE address_format CONVERT TO CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_520_ci;
ALTER TABLE admin CONVERT TO CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_520_ci;
ALTER TABLE admin_activity_log CONVERT TO CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_520_ci;
…etc
```

Copy and paste these into a text file (obviously delete the "ExecuteTheString" lines that appear a couple of times in the listing), and you are ready to start testing.

b) When checking against a Zen Cart 1.55f database, apart from my plugin's tables, I found the following tables in my database which I could Drop as they were not used. You may find the same.

```
#ZC1.3 only, dropped for ZC1.5x
DROP TABLE `customers_wishlist`;
```

```
#unused payment modules
DROP TABLE `linkpoint_api`;
DROP TABLE `nochex_apc_transactions`;
DROP TABLE `nochex_sessions`;
```

c) Now you can run your SQL list and see which tables return an error:

#1071 - Specified key was too long; max key length is 1000 bytes

This is due to some columns defined as varchar(255) which need to be reduced before it will allow collation conversion.
In this repository is an example SQL command list for Zen Cart 1.55f vanilla. You can clearly see in the listing, tables/columns that needed some extra tlc, so you can copy those into your listing to save you some tedium.

For other plugin tables, you'll need to manually look at them as necessary.

Look at the table that causes the error, Structure, to see the column that is defined as varchar(255). This needs to be reduced in conjunction with the collation change. However, you don't want to change the other parameters like NULL or default.
So, to get an example of the format of the SQL query required, click on Change.
Reduce the varchar to 191 and also change the collation to utf8mb4_unicode_520_ci.
Click on Preview to copy the SQL to your SQL query list, then run it.

You should end up with something like this:

```
ALTER TABLE admin_menus CHANGE `menu_key` `menu_key` VARCHAR(191) CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_520_ci NOT NULL DEFAULT '';
ALTER TABLE admin_menus CHANGE `language_key` `language_key` VARCHAR(191) CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_520_ci NOT NULL DEFAULT '';
ALTER TABLE admin_menus CONVERT TO CHARACTER SET utf8mb4 COLLATE utf8mb4_unicode_520_ci;
```

Note the original table command still needs to be run after changing the columns.

Continue running the SQL block and making these per-table commands until it runs 100% without errors.

3) Select all the tables, then CHECK, then REPAIR, then OPTIMIZE.

4) In Zen Cart in the various configure.php (admin web and local, catalog, web and local), set

```
define('DB_CHARSET', 'utf8mb4'); // 'utf8' or 'latin1' are most common
```