Be a MySQL Ninja

http://bit.ly/mysqlninja

Sheeri Cabral

Senior DB Admin/Architect

Mozilla

@sheeri

MySQL Ninja

- Lots of tips and tricks for MySQL
- HandlerSocket plugin
- Query MySQL as if it was NoSQL/CRUD

MySQL Ninja

- Innovative ways to use a database
- MariaDB
- Examples as time permits

MariaDB

- Drop-in replacement for MySQL
  - Can go back and forth
- Extra features
- Mostly storage engines
- Cannot install these SEs on MySQL
  - yet

Sequence Storage Engine

- Read_only
- Exists only while you use it
- Virtual
  - Not even a .frm file!

Sequence Storage Engine

- Supports indexes
- Supports XA transactions
- Installation is easy

```
INSTALL PLUGIN SEQUENCE SONAME 'ha_sequence';
```

Sequence Storage Engine

- SELECT * FROM seq_x_to_y
- Odd #’s from 9 backwards to 1
- You want a "step"
- Table seq_x_to_y_step_z
- e.g. SELECT * FROM seq_9_to_1_step_2

Sequence Storage Engine

- Find all prime numbers < 25
- A prime # x means only x and 1 are divisors
  - seq_2_to_25
  - No step (increment=1)

Find Prime Nums <25

- For all y, x % y leaves a remainder
  - x is a possible prime number
  - x is one sequence
  - y is another sequence
  - y is the divisor
  - y is not 1 or x
- Only need to check y up to $\sqrt{x}$

Sequence Storage Engine

- Find all prime numbers < 25

```
SELECT x.seq FROM seq_2_to_25 x
WHERE 0 NOT IN
(SELECT x.seq % y.seq FROM seq_2_to_25 y
WHERE y.seq < sqrt(x.seq));
```

Sequence Storage Engine

- Can I name a regular table seq_1_to_100?
  - If a temp table, yes
  - Otherwise, not if sequence SE is installed
  - Can ALTER TABLE to change SE
  - Then can manipulate/drop
  - But…just don't do it

CassandraSE

- Opposite of HandlerSocket plugin
- Separate plugin package
- Use MySQL to access Cassandra
  - Column families
- Use familiar SQL

CassandraSE

- JOIN Cassandra and MySQL tables
- Flexible Schema
  - Uses dynamic columns

Dynamic Columns

- Built-in, not a separate plugin
- BLOB data type
- Functions to store multiple values
- Key/value pairs
- Since 5.3, but better in 10

Store

- Sells CDs, DVDs, games, t-shirts, posters
- Each has price, inventory ID, manufacturer
- DVDs, CDs, game have titles
- CDs have artists and tracks
- T-shirts have different sizes and colors
- Posters have no extra information

Dynamic Columns

- Table w/ price, inventory ID, manufacturer
- "extra" dynamic column
- Just a BLOB

Dynamic Column Example

COLUMN_CREATE

COLUMN_GET

COLUMN_EXISTS

- COLUMN_EXISTS(dyn_col, part_name)
- If dynamic column undefined, returns NULL
- If part name exists, returns 1
- If part name does not exist, returns 0
  - Dynamic column is defined

Other Functions

- COLUMN_LIST(extra)
  - List the dynamic columns in a BLOB
  - Dynamic parts not indexable
- COLUMN_JSON(extra)
  - Because everyone loves JSON

Other Functions

- COLUMN_ADD
  - Preserve existing parts while adding more
  - COLUMN_CREATE overwrites
- COLUMN_DELETE(field, part)
- COLUMN_CHECK(field)
  - Returns 1 if field is a dynamic column
  - Returns NULL if field is not a dynamic column

Nested Dynamic Columns

- Dynamic column
  - Has parts
  - A part can be a dynamic column itself
  - @part=COLUMN_CREATE('part','value')
  - blob_col=COLUMN_CREATE('dyn_col',@part)
  - blob_col=COLUMN_ADD('dyn_col',@part)

MySQL Storage Engines

- CSV
  - Built-in
- Federated/FederatedX

CONNECT Storage Engine

- Remote databases
- Native or ODBC

```
CREATE TABLE remote_table ENGINE=connect
```

CONNECT Storage Engine

- Remote databases
- Native or ODBC

```
CREATE TABLE remote_table ENGINE=connect
TABLE_TYPE=MYSQL
```

CONNECT Storage Engine

- Remote databases
- Native or ODBC

```
CREATE TABLE remote_table ENGINE=connect
TABLE_TYPE=MYSQL connection='mysql://
username
```

CONNECT Storage Engine

- Remote databases
- Native or ODBC

```
CREATE TABLE remote_table ENGINE=connect
TABLE_TYPE=MYSQL connection='mysql://
username:password
```

CONNECT Storage Engine

- Remote databases
- Native or ODBC

```
CREATE TABLE remote_table ENGINE=connect
TABLE_TYPE=MYSQL connection='mysql://
username:password@hostname
```

CONNECT Storage Engine

- Remote databases
- Native or ODBC

```
CREATE TABLE remote_table ENGINE=connect
TABLE_TYPE=MYSQL connection='mysql://
username:password@hostname:port
```

CONNECT Storage Engine

- Remote databases
- Native or ODBC

```
CREATE TABLE remote_table ENGINE=connect
TABLE_TYPE=MYSQL connection='mysql://
username:password@hostname:port/db_name
/table_name';
```

CONNECT Storage Engine

- Remote databases
- Native or ODBC

```
CREATE TABLE remote_table ENGINE=connect
TABLE_TYPE=MYSQL connection='mysql://
username:password@hostname:port/db_name
/table_name';
```

- Specify table fields for partial tables

Remote CONNECT Tables

- SELECT
- INSERT
- UPDATE
- DELETE
- Multi-table queries allowed
- All tables must be defined locally

CONNECT To Text Files

- CSV
- INI
- XML
- DBF
- FMT
- BIN

CONNECT Storage Engine

- MERGE functionality
- TBL Type
- Exact schema match NOT required

CONNECT Storage Engine

- Pivot table
  - Easily aggregate data
- Unpivot
  - "OCCUR"

CONNECT Storage Engine

- Filesystem
- DIR table type
- Filenames, sizes, extensions and more
- Query datadir .ibd files, compare to I_S

CONNECT Storage Engine

- Lists of objects

Parent	Children
Donna	Adam,Sam,Tommy
Peter	Nina
Tony	
Jack	Maya,Elan
Amy	Eli,Ethan,Ben,Lily

CONNECT Examples

- INI
- XML
- MERGE functionality (TBL)
- Pivot/unpivot table
- Filesystem (DIR)
- Lists of objects

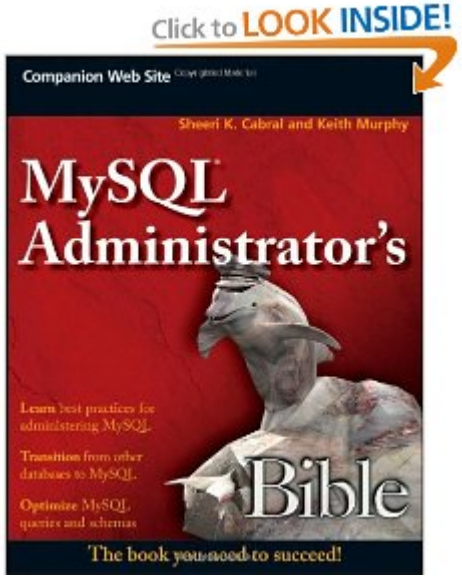
More Resources

www.mysqlmarinate.com

lynda.com

scabral@mozilla.com

OurSQL podcast (oursql.com)



slides: http://bit.ly/mysqlninja

youtube.com/tcation

http://planet.mysql.com