



Spider Storage Engine: The sharding plugin of MySQL/MariaDB Introducing and newest topics

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What is Spider Storage Engine

Spider Storage Engine is a plugin of MySQL/MariaDB. Spider tables can be used on other MySQL/MariaDB/OracleDB tables as local tables. And Spider can create database sharding by using table partitioning feature.



What is Spider Storage Engine

**Spider is bundled in MariaDB
from 10.0.4.**



The use of Spider

dividing huge data into multiple servers

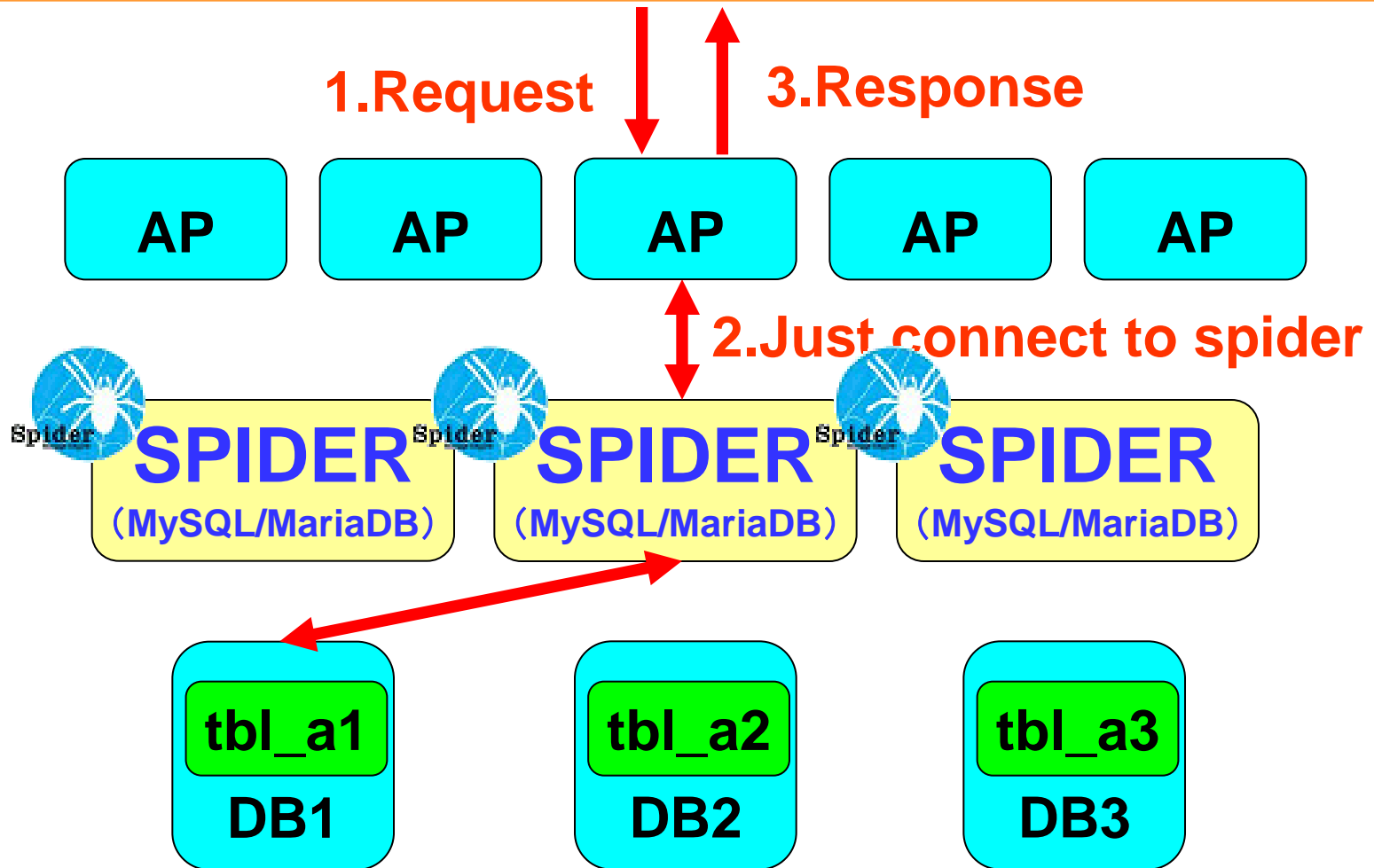
1. High traffic processing(DB sharding)
2. Parallel processing

You can use

3. multiple database for different application as one database through Spider.



Spider structure sample of database sharding



An application can use all databases by only connecting one database.



How to use Spider (1/5)

- 1. Install Spider bundled MySQL/MariaDB.**
- 2. Login MySQL/MariaDB then install Spider as a plugin.
(execute `install_spider.sql`)**
- 3. Create Spider table.**



How to use Spider (2/5)

Create one to one Spider table.

```
CREATE TABLE t1(  
  c1 int,  
  c2 varchar(100),  
  PRIMARY KEY(c1)  
)ENGINE=spider DEFAULT CHARSET=utf8  
COMMENT '  
  table "rt1", database "test", port "3306",  
  host "host name of data node",  
  user "user name for data node",  
  password "password for data node"  
'  
;
```

Set engine name to “Spider” and write connect information (and parameter) to comment.



How to use Spider (3/5)

You can create Spider table without column definition on MariaDB. In this case Spider gets column definition from data node.

```
CREATE TABLE t1
ENGINE=spider DEFAULT CHARSET=utf8
COMMENT '
    table "rt1", database "test", port "3306",
host "host name of data node",
user "user name for data node",
password "password for data node"
';
```



How to use Spider (4/5)

Create one to many (sharding) Spider table

```
CREATE TABLE t1(  
  c1 int,  
  c2 varchar(100),  
  PRIMARY KEY(c1)  
)ENGINE=spider DEFAULT CHARSET=utf8  
COMMENT 'table "rt1", database "test", port "3306",  
        user "user name for data node", password "password for data node"  
PARTITION BY RANGE(c1) (  
  PARTITION p0 VALUES LESS THAN (100000) COMMENT 'host "h1"',  
  PARTITION p1 VALUES LESS THAN (200000) COMMENT 'host "h2"',  
  PARTITION p2 VALUES LESS THAN (300000) COMMENT 'host "h3"',  
  PARTITION p3 VALUES LESS THAN MAXVALUE COMMENT 'host "h4"  
);
```

Write shared connect information to table comment,
shard specific connect information to partition comment.



How to use Spider (5/5)

You can use “CREATE SERVER” statement for defining connection information.

```
CREATE SERVER srv1
  FOREIGN DATA WRAPPER mysql
  HOST 'host name of data node',
  DATABASE 'test',
  USER 'user name for data node',
  PASSWORD 'password for data node',
  PORT 3306
;
```

You can use create server definition by writing “server” parameter into table/partition comment.

```
CREATE TABLE t1(
  c1 int,
  c2 varchar(100),
  PRIMARY KEY(c1)
)ENGINE=spider DEFAULT CHARSET=utf8
COMMENT 'table "rt1", server "srv1";
```





Spider's other features

Spider's other features

Redundant feature

You can choose redundant level per table/partition.

Fault tolerance feature

You can use not only Spider's fault tolerance feature but also other MySQL's fault tolerance solutions.

Fulltext/Geo search feature

(with table partitioning, available for patched MariaDB)

You can use backend Fulltext/Geo search feature transparently.



Spider's other features

NoSQL feature (not available for MariaDB yet)

You can use handlersocket for Spider.

OracleDB connecting feature

You can use OracleDB for data node.

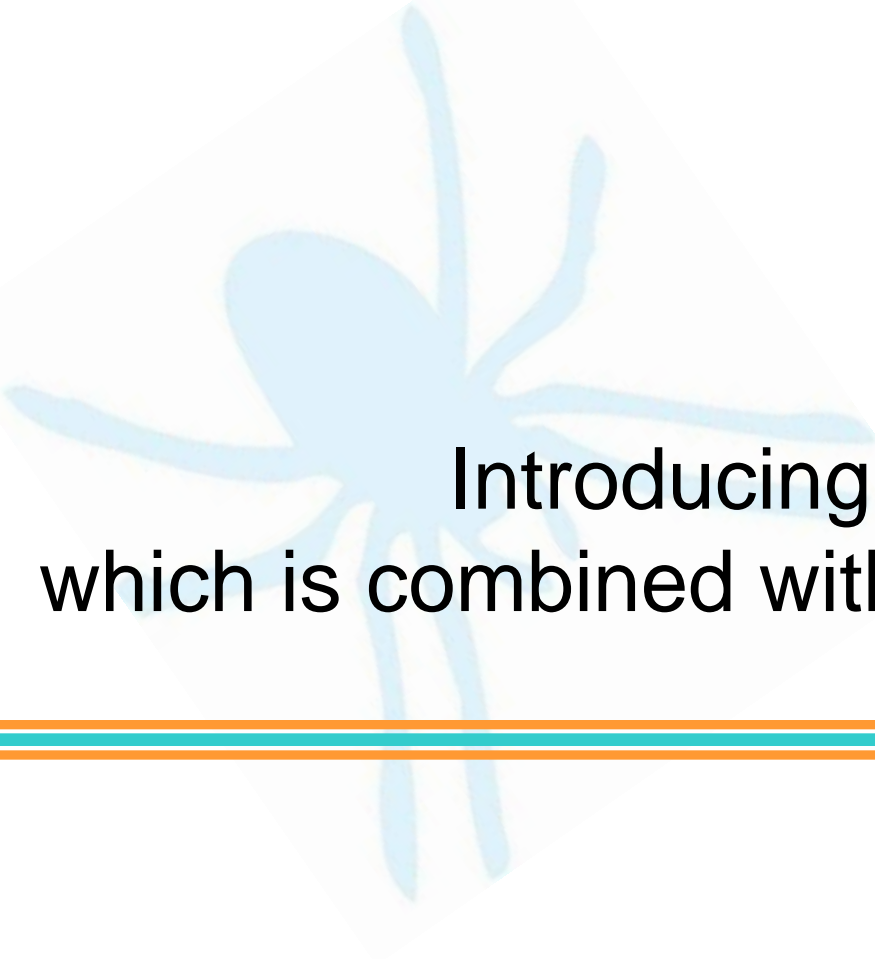
Note: You need to build from source code
for using this feature

Parallel searching feature

(available for patched MariaDB)

You can search sharded table by parallel.





Introducing other plugin
which is combined with Spider in many cases

Other plugins

1. **Vertical Partitioning Storage Engine**
2. Handlersocket Plugin
3. Mroonga Storage Engine



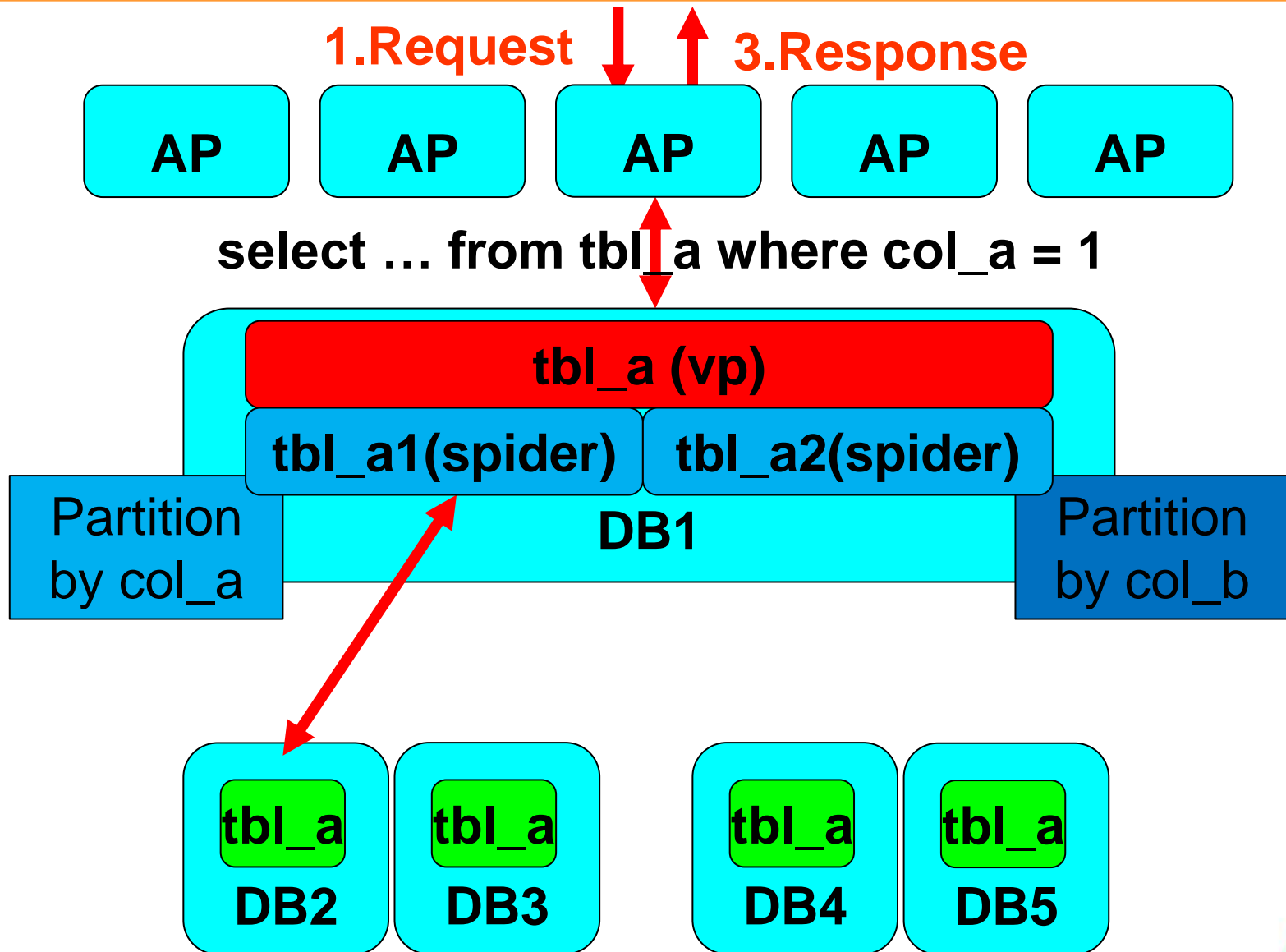
Vertical Partitioning Storage Engine

Vertical Partitioning (VP) Storage Engine's main features

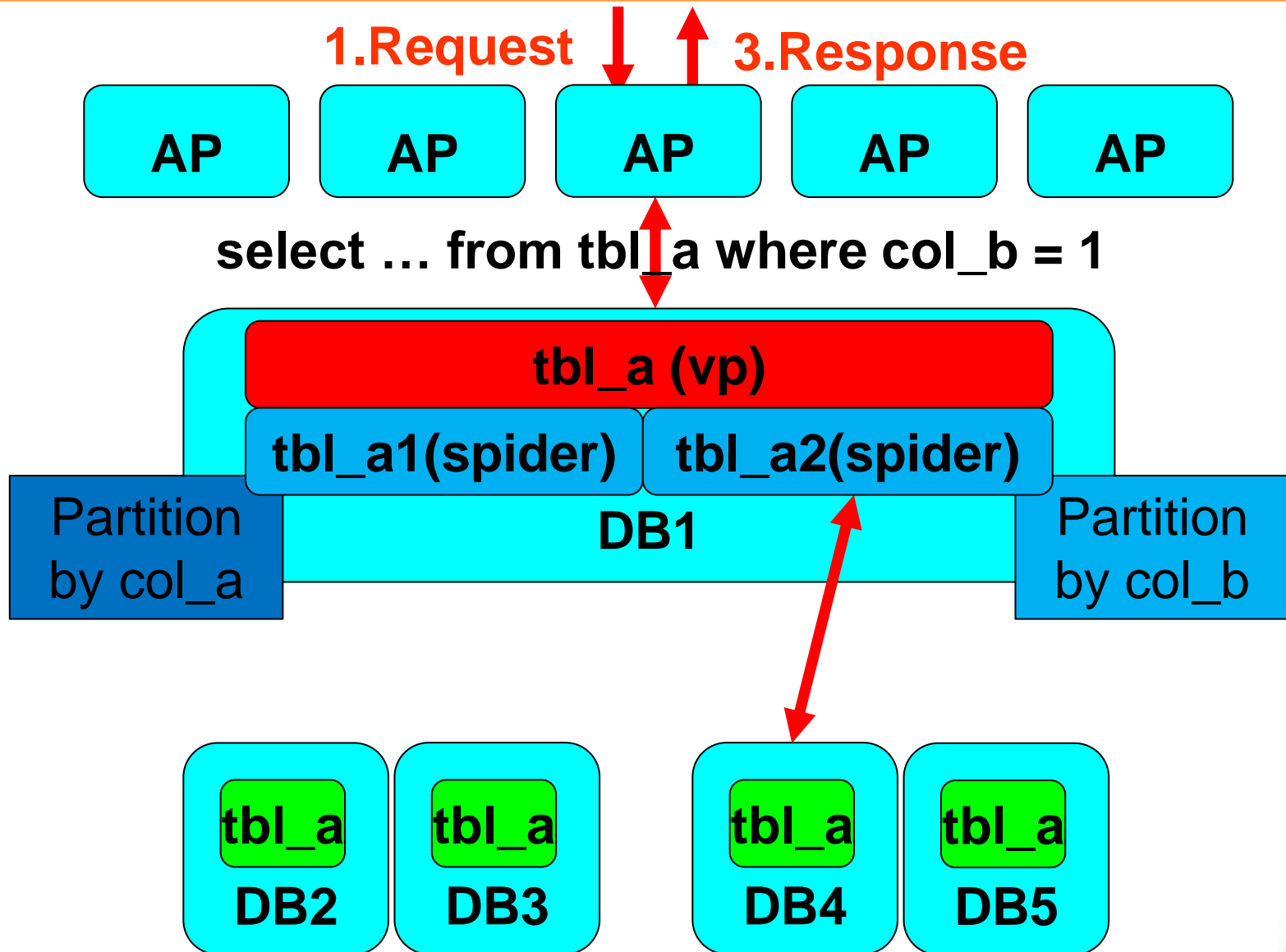
1. Column level partitioning.
2. Works like a view of one to one relation tables.
Possible to direct access to child tables.
But, VP table can use as a table including insert statement.
- 3. For using different sharding (horizontal partitioning) rules case by case.**
4. Support online coping data between child tables.



Structure sample of using different sharding rules (1/2)



Structure sample of using different sharding rules (2/2)



Other plugins

1. Vertical Partitioning Storage Engine
- 2. Handlersocket Plugin**
3. Mroonga Storage Engine



Handlersocket Plugin

Handlersocket (HS) Plugin's main features

1. Offering high-speed NoSQL access to MySQL.
2. Offering NoSQL access to sharded servers by combining with Spider.

Handlersocket is developed by Akira Higuchi.

<https://github.com/ahiguti/HandlerSocket-Plugin-for-MySQL>

Patched version for Spider is bundled with Spider bundled MySQL.

http://spiderformysql.com/download_spider.html



Other plugins

1. Vertical Partitioning Storage Engine
2. Handlersocket Plugin
- 3. Mroonga Storage Engine**



Mroonga Storage Engine (1/2)

Mroonga Storage Engine's main features

1. Offering high-speed FULLTEXT search.
2. Offering high-speed GEO search.
- 3. High-speed updating with multiple thread searching.** (lock-free model)
4. Support CJK languages.



Mroonga Storage Engine (2/2)

Mroonga Storage Engine's main features

5. You can use to add FULLTEXT/GEO search for other storage engines.
6. Offering FULLTEXT/GEO search to sharded servers by combining with Spider.

Mroonga's document is available.

<http://mroonga.github.com/>





The newest topics

Patched version of MariaDB with Spider, VP, Mroonga

Spider already bundled in MariaDB.

But Spider has a lot of patches for improvement performance and features.

Patched version of MariaDB has the following features.

- Direct updating.
- Direct aggregating.
- Engine condition pushdown with table partitioning.
- MRR(include BKA) with table partitioning.
- Fulltext/Geo search with table partitioning.
- Vertical Partitioning Storage Engine.
- And more.



Patched version of MariaDB with Spider, VP, Mroonga

You can download Patched version of MariaDB from the following.

http://spiderformysql.com/download_spider.html



Thank you for taking your time!

**Any Questions?
You can see me later!
Come to visit me!!**



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<http://spiderformysql.com>

