

MySQL Shell for Database Engineers

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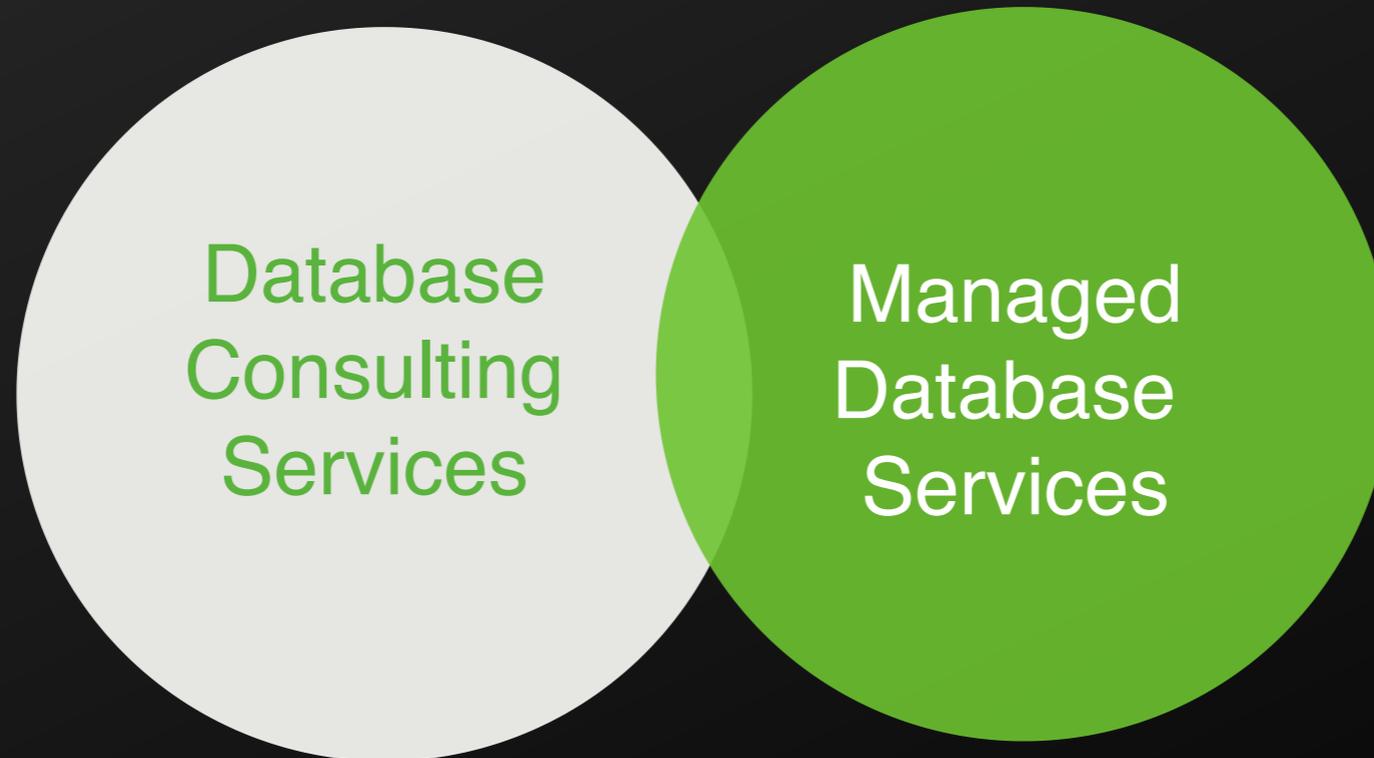
About Me



- Interested in Open Source Database technologies
- 11 Years of Experience with MySQL
- Ex-Yahoo!
- Tech Speaker/ Blogger
- CEO Mydbops

Karthik P R

Mydbops Services



Focuses on Top Opensource database MySQL, MariaDB, MongoDB and PostgreSQL ON Premises and Cloud

■ Agenda



MySQL Shell an Overview



MySQL Shell Utilities



MySQL Shell for Database Engineers

Audience

- Database Engineer
- Database Administrator
- Database Reliability Engineers
- Cloud DBA
- Devops Engineer
- SRE's



■ MySQL Shell an Overview

- Command Line based tool
- Advanced MySQL Client
- Python based Framework
- Act as a Code editor
- Support for API's
- Support MySQL / MariaDB / Percona Server / MySQL on RDS
- Open Source tool kit



Overview to MySQL Shell

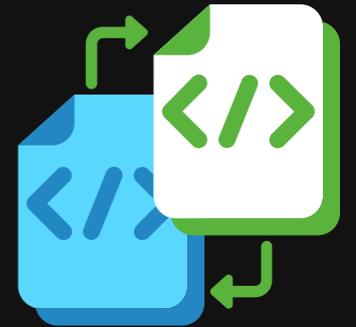
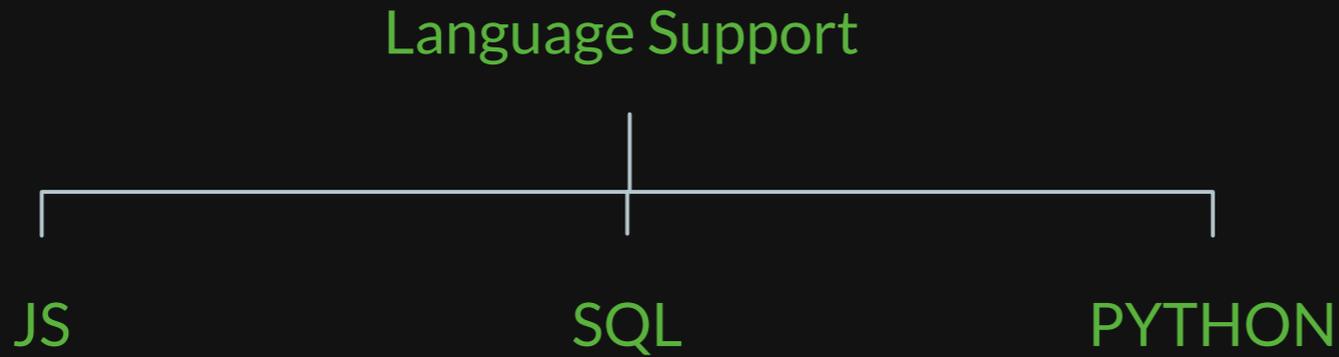
■ MySQL Shell Overview

- MySQL Shell ease Database Operations
- Admin API's for Database HA and Scalability
- Custom Extensions
- Inbuilt Utilities
- X Protocol Support



Note : Support Linux / Windows / Mac OS

MySQL Shell Overview



Note : Even it Support OS command from 8.0.18

■ MySQL Shell Overview

- Supports
 - Interactive executions
 - Batch mode executions

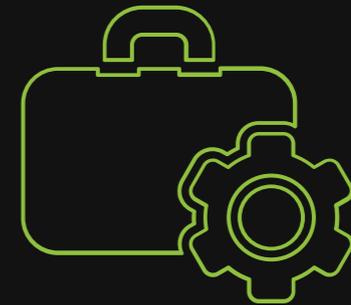
Additional features

- Auto Completion
- Support Multiple Output Formats

MySQL Shell Utilities

■ MySQL Shell Utilities

- Inbuilt Utilities makes DBA's and DBE's life better
 - Upgrade Checker
 - Json Import Utility
 - Table export Utility
 - Parallel Table Import Utility
 - Instance / Schema / Table Dump Utility
 - Dump loading Utility



MySQL Shell Utilities

Upgrade Checker

- Ease the MySQL Upgrade to latest MySQL 8 from lower major/minor versions.



```
MySQL localhost:33060+ ssl JS > util.  
checkForServerUpgrade()  dumpSchemas()          help()                   loadDump()  
configureOci()           dumpTables()             importJson()              
dumpInstance()           exportTable()            importTable()
```

■ MySQL Shell Utilities

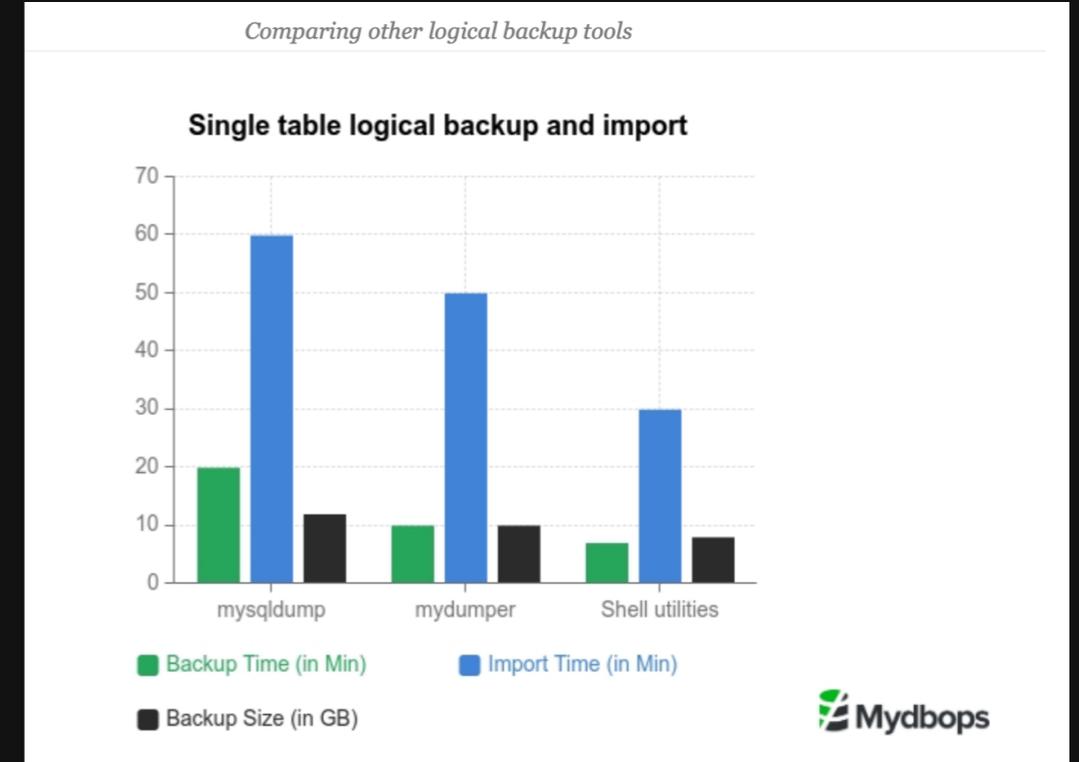
- Parallel import / Table export
 - Makes the CSV backup and loading faster.
 - `util.importTable()` & `util.exportTable()`

- Instance /Schema/ table Dump
 - Makes the logical backup faster than ever.
 - `util.dumpInstance()`, `util.dumpschemas()`, `util.loadDump()`



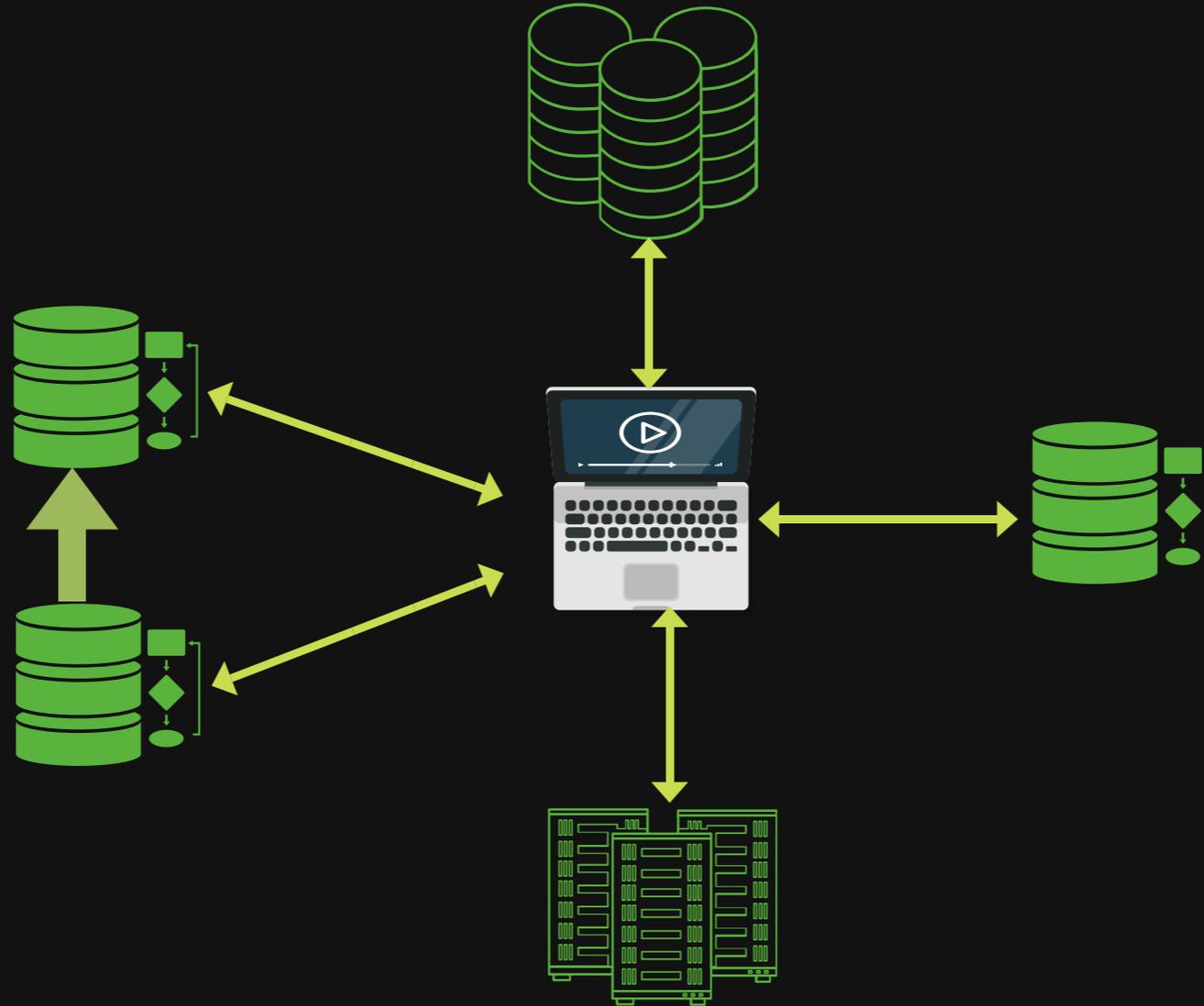
MySQL Shell Utilities

- Dump Loading Utility
 - Makes the recovery of logical backup, blazing fast even for a single table.
 - Supports GTID , Histogram , OCI import
 - `util.loadDump()`



MySQL Shell For Database Engineers

MySQL Shell For Database Engineers



■ MySQL Shell For Database Engineers

- MySQL Shell can support Databases on-premises and on-cloud.
- They can support complex DB Architecture.
- Deploy HA Solutions with MySQL Router
- Deploying and Managing InnoDB Clusters
- Creating Async slaves (InnoDB Replica Set)
- Playing with MySQL Sandboxes

■ MySQL Shell For Database Engineers

- The InnoDB Cluster can be deployed by a few lines (customised Script)

```
[root@clientServer mysqlsh]# mysqlsh -f setup_innodb_cluster.js  
InnoDB cluster set up
```

```
=====
```

```
Setting up a Percona Server for MySQL - InnoDB cluster.
```

```
Password for the MySQL root account: *****
```

```
Number of data nodes: 3
```

```
Hostname for node1: clusternode1
```

```
Hostname for node2: clusternode2
```

```
Hostname for node3: clusternode3
```

Code : https://github.com/riveraja/scripts/blob/master/setup_innodb_cluster.js

Source : <https://www.percona.com/blog/2020/05/05/setting-up-an-innodb-cluster-with-a-few-lines-of-code/>

■ MySQL Shell For Database Engineers

- The InnoDB Replicaset can be deployed by a few lines too(customised Script)

```
[root@clientServer mysqlsh]# mysqlsh -f setup_innodb_replicaset.js
InnoDB ReplicaSet set up
=====
Setting up a MySQL - InnoDB Replicaset.

Password for the MySQL root account: *****
Please enter number of data nodes:2
```

Code : https://github.com/riveraja/scripts/blob/master/setup_innodb_replicaset.js

They just need the MySQL to be installed , MySQL Shell will rebuild them using CLONE Plugin and configure the ASYNC GTID based replication

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Custom Shell Plugins.

- The Custom shell Plugins ease the job further
- Making the own utility for troubleshooting
- Connect across multiple DB components (Router / ProxySQL too)
- Customising PFS and SYS schema Queries via Java Script / Python

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Custom Shell Plugins.

- To get started Lefred has custom Plugin and they are in Git.

<https://github.com/lefred/mysqlshell-plugins>

- These plugin helps in DB Operations and DB troubleshooting Realtime.
- These plugin can be further extended based on needs.

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Custom Shell Plugins.

- Collations
- Router
- demo
- Schema
- InnoDB
- Security
- InnoDB Cluster
- User
- Maintenance
- ProxySQL

MySQL Shell For Database Engineers

Samples

Get the tables *inside* Innodb *Buffer Pool*

```
MySQL localhost:33060+ ssl JS innodb.getTablesInBP()
Processing, this can take a while (don't forget to run ANALYZE TABLE for accurate results)...
InnoDB Buffer Pool Size = 128.00 MiB (1 instance)
+-----+-----+-----+-----+-----+
| Table Name          | Pages | Total Data in BP | Total Table Size | in BP |
+-----+-----+-----+-----+-----+
| `classicmodels`.`employees` | 2 | 32.00 KiB | 48.00 KiB | 66.67% |
| `classicmodels`.`Student_details` | 1 | 16.00 KiB | 32.00 KiB | 50.00% |
| `classicmodels`.`payments` | 1 | 16.00 KiB | 16.00 KiB | 100.00 |
+-----+-----+-----+-----+-----+
```

MySQL Shell For Database Engineers

Samples

Create a MySQL user with a Random password.

```
MySQL localhost:33060+ ssl JS user.  
create_user() help()  
MySQL localhost:33060+ ssl JS user.create_user()  
Enter the new user's account: prk  
Enter the password (leave is blank to generate one):  
Does the user need to change his password ? (Y,n) n  
Do you want to lock the account after 3 failed attempts ? (Y,n) n  
+-----+-----+-----+  
| user | host | generated password |  
+-----+-----+-----+  
| prk  | %    | 7%7&*L6Rh4Avf/:AFQfE |  
+-----+-----+-----+
```

MySQL Shell For Database Engineers

Samples

Fetching the Fragmented Tables

```
MySQL localhost:33060+ ssl JS innodb.getFragmentedTablesDisk()
```

NAME	ROWS	DATA_SIZE	INDEX_SIZE	TOTAL_SIZE	DATA_FREE	FILE_SIZE	WASTED_SIZE	FREE
northwind/Categories	8	272.00 KiB	16.00 KiB	288.00 KiB	0 bytes	352.00 KiB	64.00 KiB	18.18%
classicmodels/orderdetails	2996	160.00 KiB	80.00 KiB	240.00 KiB	0 bytes	320.00 KiB	80.00 KiB	25.00%
northwind/Orders	830	144.00 KiB	96.00 KiB	240.00 KiB	0 bytes	304.00 KiB	64.00 KiB	21.05%
northwind/OrderDetails	2155	128.00 KiB	48.00 KiB	176.00 KiB	0 bytes	240.00 KiB	64.00 KiB	26.67%
sbtest/sbtest1	500	144.00 KiB	16.00 KiB	160.00 KiB	0 bytes	256.00 KiB	96.00 KiB	37.50%
sbtest/sbtest2	500	144.00 KiB	16.00 KiB	160.00 KiB	0 bytes	256.00 KiB	96.00 KiB	37.50%
sbtest/sbtest3	500	144.00 KiB	16.00 KiB	160.00 KiB	0 bytes	256.00 KiB	96.00 KiB	37.50%
sbtest/sbtest6	500	144.00 KiB	16.00 KiB	160.00 KiB	0 bytes	256.00 KiB	96.00 KiB	37.50%
sbtest/sbtest5	500	144.00 KiB	16.00 KiB	160.00 KiB	0 bytes	256.00 KiB	96.00 KiB	37.50%
sbtest/sbtest7	500	144.00 KiB	16.00 KiB	160.00 KiB	0 bytes	256.00 KiB	96.00 KiB	37.50%
sbtest/sbtest4	500	144.00 KiB	16.00 KiB	160.00 KiB	0 bytes	256.00 KiB	96.00 KiB	37.50%
classicmodels/products	110	64.00 KiB	16.00 KiB	80.00 KiB	0 bytes	160.00 KiB	80.00 KiB	50.00%
classicmodels/orders	326	48.00 KiB	16.00 KiB	64.00 KiB	0 bytes	128.00 KiB	64.00 KiB	50.00%

Thank You

Reach Us : Info@mydbops.com

