The Care and Feeding of a MySQL Database for Linux Adminstrators

Dave Stokes
MySQL Community Manager
David.Stokes@Oracle.com

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Session Overview

1. Basics of a database server
2. Hardware
3. MySQL Configuration
4. Monitoring Operations
5. Backups
6. Replication
7. Indexes

How does a Database server work

Client

Server

```
SELECT phone
FROM friends
WHERE name = ‘Joe’;
```

Who does a Database server work

<u>Client</u>

SELECT phone

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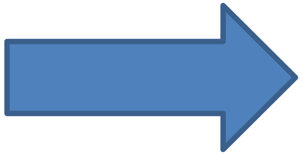


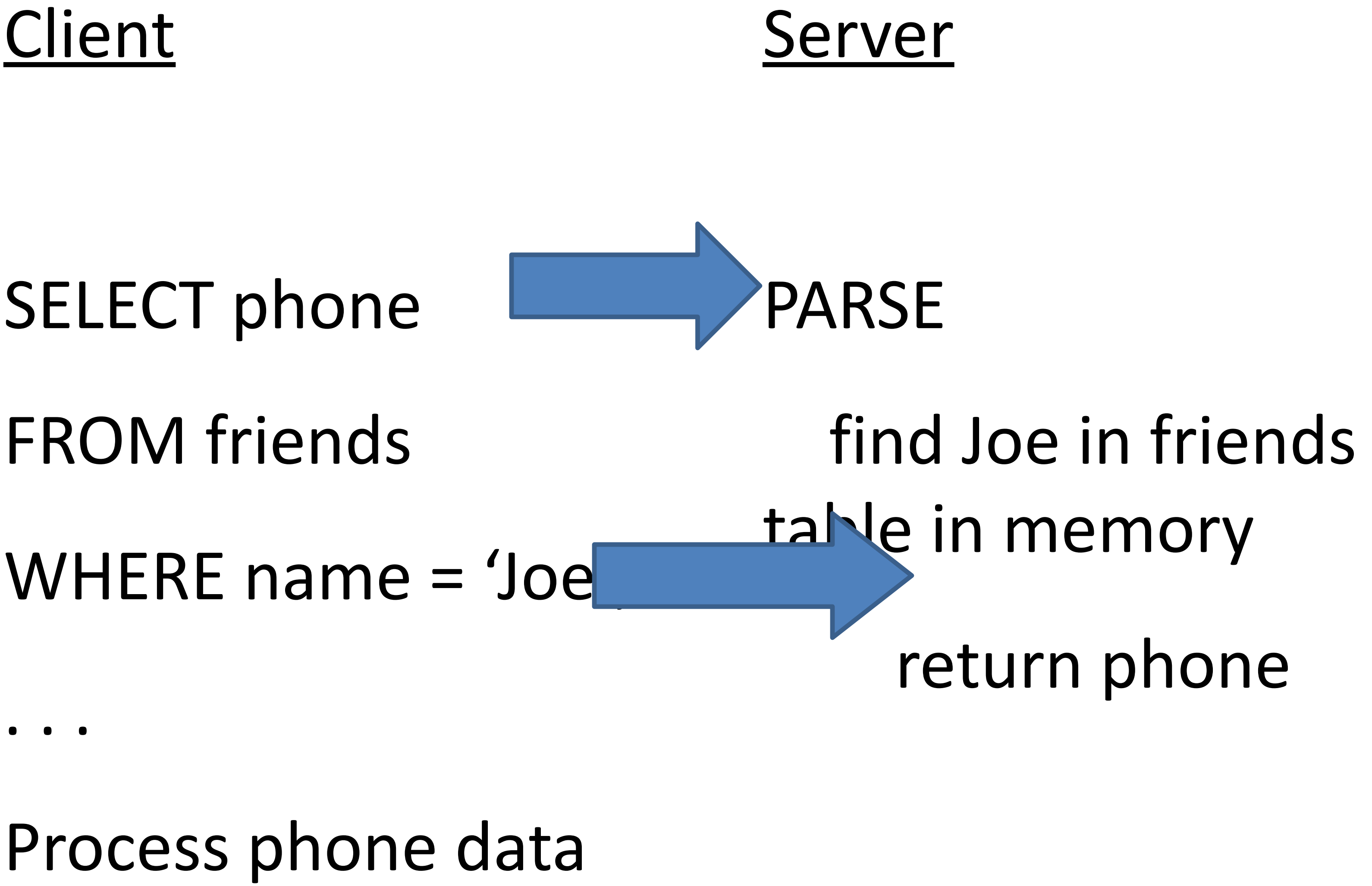
<u>Server</u>

PARSE

find Joe in friends
table in memory

return phone

Who does a Database server work



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Process phone data

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<u>Client</u>	<u>Server</u>
SELECT phone	PARSE
FROM friends	find Joe in friends table in memory
WHERE name = 'Joe'	
	return phone
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Process phone data	

What was that about memory???

Rule #1

- Databases love data in memory

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Corollary #1 – getting data in/out of memory will cause you nightmares!

What if it is not in memory?

<u>MySQL</u>

Please give me the data from the city table →

<u>OS</u>

What if it is not in memory?

MySQL

Please give me the data from the city table →

OS

Get inode

What if it is not in memory?

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Ask disk for data

What if it is not in memory?

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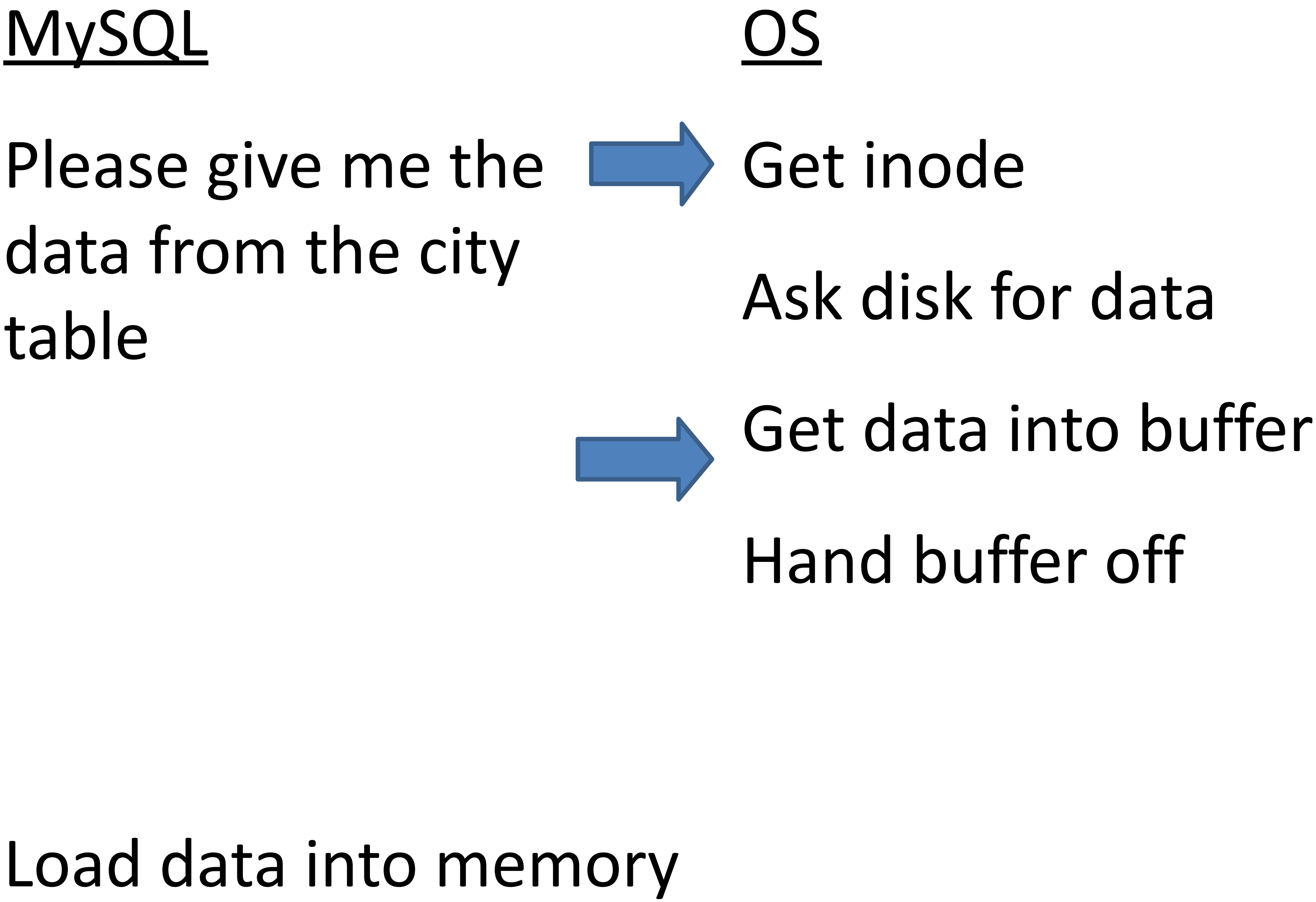
Ask disk for data

Get data into buffer

What if it is not in memory?



MySQL

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Get inode

Ask disk for data

Get data into buffer

Hand buffer off

Load data into memory

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Much longer than just reading from memory

Load data into memory

Rule #2

- Databases have to do unpredictable queries, random I/O, and sequential scans so slow I/O kills performance

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Corollary #2 – You need to have good gear

or

going cheap = going slow

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4. CPUs, Core less important

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6. Backups are necessary – and practice recovery!

Monitoring Operations

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4. More in tuning ….

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Be paranoid!!!!!

Replication

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1. Asynchronous – server does not check changes sent to slave before proceeding
2. Semi Synchronous – server checks that server received changes before proceeding

Replication -- threads

Currently single threaded – 5.6 will fix that

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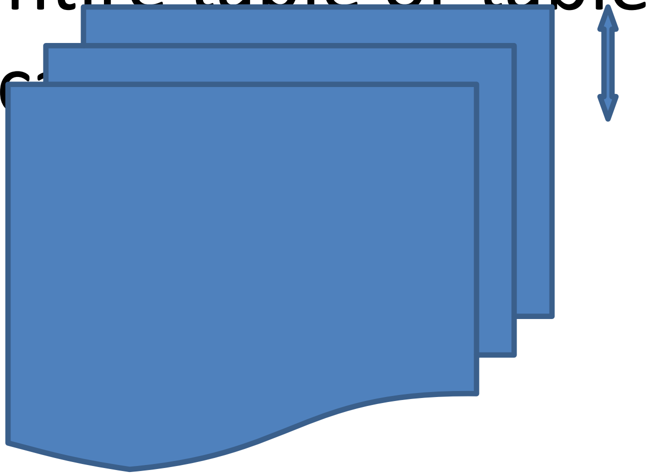
Do not have to replicate all tables/databases to all slaves. Cut down on traffic by replicating what is needed!

Indexes are good

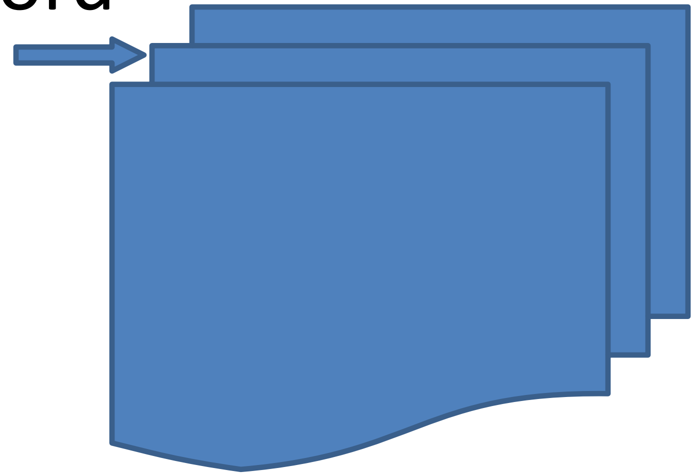
Without Index

DB needs to scan entire table or table sc



With Index

DB can go right to record



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- Overhead -- space, speed, maintenance
- Not a panacea – does not cure all problems
- Will not help if you need to perform a table scan
- Composite indexes can be tricky – YearMonthDay usually better than DayMonthYear

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- Review your SQL statements

Tuning Past 80%

Q&A