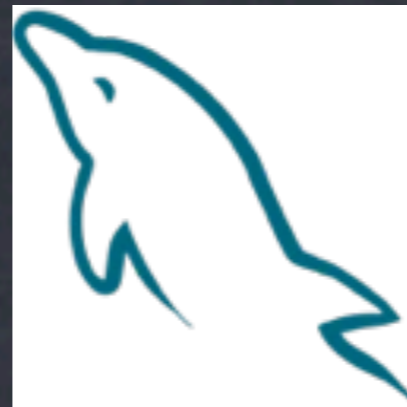# DATABASES
within your reach

Free Databases!

Meet the players

MYSQL

Percona Server

- Started branching from MySQL in 2008

- Follows MySQL releases, shares much code

- Big focus on InnoDB (=> XtraDB)

- Goal: scalability, performance, compatibility

- Drop-in replacement for stock MySQL (check versions)

MariaDB

* Started by a MySQL Ab founder (Monty) after Oracle bought Sun

* Goal: community-developed, scalability, performance, compatibility

* Shares less code with Oracle's MySQL

* Includes Percona's work on XtraDB, adds work on query optimization

* Also a drop-in replacement for stock MySQL

Drizzle

* Substantial rewrite of MySQL in C++

* Goal: get rid of everything "non-essential", scalability, cloud and massive concurrency

* Pluggable micro-kernel architecture

* Rackspace supported development for some time

* Docs site is down!

SQLite

* First release in 2000

* Written in C

* Embeddable into/linkable to compiled applications (database just an external file)

* Most popular database by market share!

PostgreSQL

* First release in 1989

* Written in C

* "World's most advanced open source database"

* Goals: reliability for high-transaction, mission critical applications

SQL Server Express

* First release in 2005

* Simplest version of full SQL Server product line

* Very functional

* Hardware limits

  * Single CPU, 1GB RAM, 10GB database size

SQL Standards

WG3:SXF-002
DM32.2-2012-00005

ISO/IEC JTC 1/SC 32

Date: 2011-12-21

IWD 9075-1:201?(E)

ISO/IEC JTC 1/SC 32/WG 3

The United States of America (ANSI)

Information technology — Database languages — SQL —

Part 1:
Framework (SQL/Framework)

Technologies de l'information — Langages de base de données — SQL —

Partie 1: Charpente (SQL/Charpente)

Document type: International Standard
Document subtype: Informal Working Draft (IWD)
Document stage: (2) IWD = unofficial 'informal working drafts'
Document language: English

SQL Standards

WHY?

* Subqueries

* Views

* Foreign Keys

* Triggers

* Stored Procedures

* UDF's

* ACID Transactions

ACID Transactions

* Atomicity

  * All or nothing, no matter what

* Consistency

  * Any changes must be in accordance with DB rules, such as constraints, cascades, triggers, etc.

* Isolation

  * Concurrent transactions don't affect each other

* Durability

  * Once committed, data will stay committed, no matter what

SQL Extensions

* GIS

    * Spatial datatypes and functions

   * Ex. Which counties does I-90 cross through?

* NoSQL = Not Only SQL

    * For huge data volumes

    * Document databases, graph stores, key-value stores, wide-column stores

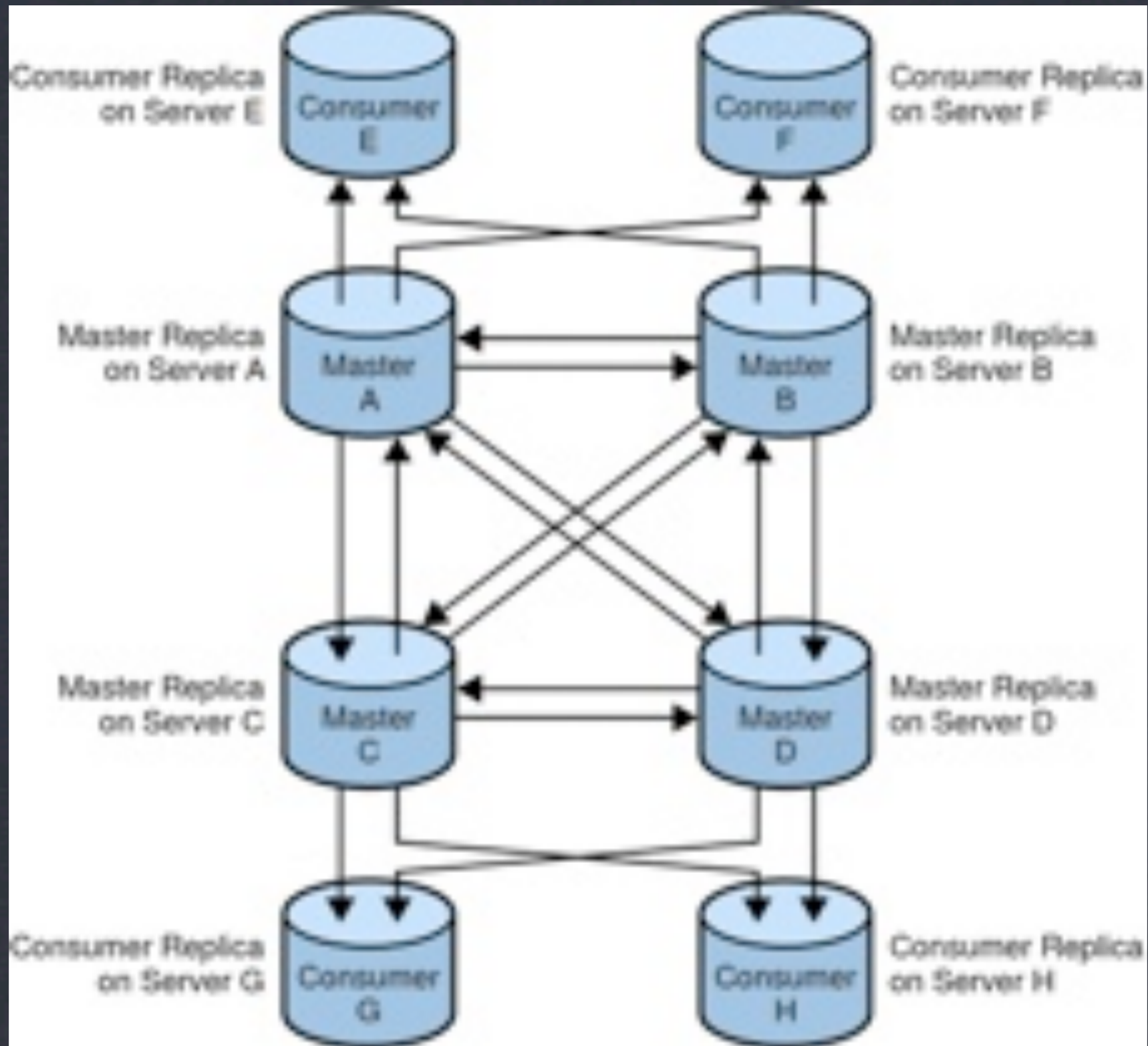|	MySQL	Percona Server	MariaDB	Drizzle	SQLite	SQL Server	Postgres QL
Subquery	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Views	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Foreign Keys	InnoDB	XtraDB	XtraDB	InnoDB	Yes	Yes	Yes
Triggers	Yes	Yes	Yes	C++	Partial	Yes	Yes
Stored Procedures	Yes	Yes	Yes	C++	No	Yes	Yes
UDF's	Yes	Yes	Yes	C++	No	Yes	Yes
ACID	InnoDB	XtraDB	XtraDB	InnoDB	Yes	Yes	Yes
GIS	MBR	MBR	Yes	?	SpatiaLite	Yes	PostGIS
NoSQL	NDB	Handler Socket	Cassandra	?	No	Azure	HStore

More criteria

* Supported OS's

* Hot Backups

* Replication
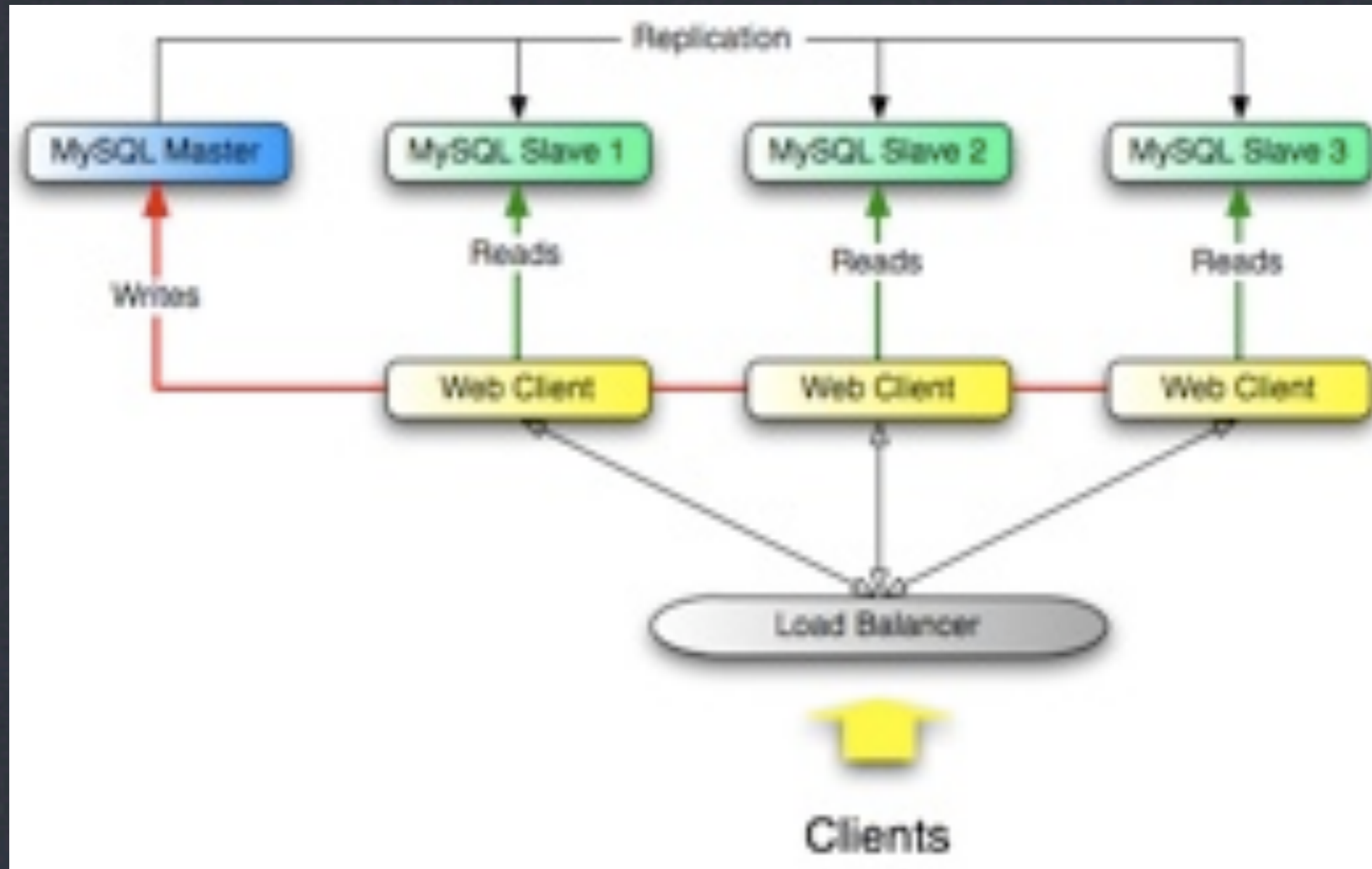
MASTER-SLAVE REPLICATION

MULTI-MASTER REPLICATION

MORE CRITERIA

	MySQL	Percona Server	MariaDB	Drizzle	SQLite	SQL Server	Postgres QL
(?:Li|U)nix	Yes	Yes	Yes	Yes	Yes	No	Yes
OS X	Yes	No	Yes	Yes	Yes	No	Yes
Windows	Yes	No	Yes	No	Yes	Yes	Yes
Hot Backup	mysql-dump	Xtra-Backup	Xtra-Backup	Xtra-Backup	Manual	BACKUP	Yes
Replication	Multi-master, master-slave	Multi-master, master-slave	Multi-master, master-slave	Multi-master, master-slave	Manual	Master-slave	Multi-master, master-slave

Bring it home

* DBD::MySQL (MySQL, Percona Server, MariaDB)

* Net::Drizzle or DBD::Drizzle

* DBD::SQLite

* DBD::Pg

* Win32::SqlServer or unixODBC + DBD::ODBC

You've got options!

CHECK 'EM OUT!