MySQL Update

Your name
Your title
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Hardware and Software
Engineered to Work Together

- Built together
- Tested together
- Managed together
- Serviced together
- Based on open standards
- Lower cost
- Lower risk
- More reliable

MySQL Completes The Stack
“At Ticketmaster, we use MySQL and Oracle Database to complement each other. The end result is a highly-distributed, optimal-performing database environment that powers one of the largest e-commerce and ticketing sites in the world.”
Investment in MySQL
Rapid Innovation

• Make MySQL a Better MySQL
  • #1 Open Source Database for Web Applications
  • Most Complete LAMP Stack
  • Telecom & Embedded

• Develop, Promote and Support MySQL
  • Improve engineering, consulting and support
  • Leverage 24x7, World-Class Oracle Support

• MySQL Community Edition
  • Source and binary releases
  • GPL license
Oracle + MySQL Customers

• **Product Integration in Progress**
  • Oracle GoldenGate (Complete!)
  • Oracle Enterprise Linux + Oracle VM
  • Oracle Secure Backup
  • Oracle Audit Vault
  • Oracle Enterprise Manager

• **Support**
  • Leverage 24x7, World-Class Oracle Support
  • MyOracle Support
Announced at MySQL Sunday:
MySQL 5.5 GA in Dec, 2010

Making MySQL Better Everyday
MySQL 5.5 Early Adopters Speak!

“Thanks to the MySQL and InnoDB teams for their continued hard work and dedication to making MySQL faster as hardware evolves. I, for one, cannot wait to see what this stuff does for us. “
– Jeremy Zawodny, Craigslist

“I’m really blown away by MySQL 5.5.4’s improvements. “
- Don MacAskill, SmugMug

“My expectations for 5.5 were not high. I am pleasantly surprised!”
- Mark Callaghan, Facebook, MySQL UC Keynote
MySQL 5.5

InnoDB becomes default
• ACID Transactions, FKs, Crash Recovery

Improved Availability
• Semi-synchronous Replication
• Replication Heartbeat
• Replication Slave fsync options
• Automatic Relay Log Recovery

Improved Usability
• SIGNAL/RESIGNAL
• More Partitioning Options
• PERFORMANCE_SCHEMA
• Replication Server Filtering
• Replication Slave Side Type Conversions
• Individual Log Flushing

Better Instrumentation/Diagnostics
• InnoDB stats in 5.5 PERFORMANCE_SCHEMA
MySQL 5.5 is Faster!

InnoDB Performance improvements
- Multiple Buffer Pool Instances
- Multiple Rollback Segments
- Extended Change Buffering (with delete buffering, purge buffering)
- Improved Purge Scheduling
- Improved Log Sys mutex
- Separate Flush List mutex

MySQL Performance Improvements
- Better Metadata Locking within Transactions
- Split LOCK_open mutex
- Eliminated LOCK_alarm mutex as bottleneck
- Eliminated LOCK_thread_count as bottleneck
- Improved Performance/Scale on Win32, 64

More than 10x improvement in recovery times
MySQL 5.5 SysBench Benchmarks

Linux

MySQL 5.5 vs. 5.1 - Read Only

200% performance gain for MySQL 5.5 over 5.1.50; at scale

MySQL 5.5.6
(New InnoDB)

MySQL 5.1.50
(InnoDB Plug-in)

MySQL 5.1.50
(InnoDB built-in)

Intel Xeon X7460 x86_64
4 CPU x 6 Cores/CPU
2.66 GHz, 32GB RAM
Fedora 10
MySQL 5.5 SysBench Benchmarks

MySQL 5.5 vs. 5.1 - Read Write

369% performance gain for MySQL 5.5 over 5.1.50; at scale
Improved Performance/Scalability
- Optimized subqueries, views, push-down joins
- Batched fetch of data from storage engines (MRR, BKA)
- Focus on Windows specific optimizations

Improved Security
- External authentication
- Auditing capture and policy administration

Improved Availability
- Online operations (ALTER tables, indexes)

Improved Ease of Use
- MySQL Scripts and Utilities
- Management/Monitoring Tools, Universal Installer – msi

Integration with Oracle products
- Fusion MW/BI Suite, OEM, Secure Backup, Audit Vault, Golden Gate
InnoDB Performance

- Multi-threaded purge
- Kernel mutex split (cont)
- Make InnoDB mutexes green
- Improved deadlock checking
- Async flushing in master thread
- Async redo application during recovery
- Page_hash patch with multiple buffer pools
- Performance improvements on Windows
- Optimized for SSD

InnoDB Ease of Use

- Metrics tables
- Persistent optimizer statistics
- Fulltext search
- InnoDB Transportable tablespaces
Replication Ease of Use

- Server UUIDs - Unique server ids making it easier to analyze replication topologies
- Modular replication architecture - Use different replication tools to replicate to/from a MySQL server
- Scriptable replication - Write your own plugin (e.g. replication filtering on data or statement type, extraction of data, preheating of caches)
- Replication checksums - Detect transmission or disk corruptions
- Transactional replication information - Automatically recover from a slave crash
- Informational events - Original statement for RBR, User and IP of statement executor, engine dependent information
- High resolution replication delay measurement - IO and SQL delay separately measured in milliseconds
- Information schema for replication state - Query the state instead of using show commands
Replication Performance

• Multithreaded slave for higher performance - Reduce possibility for slave to lag behind master
• Preallocated binlog files - Improve performance by not having to append to files
• Options for writing full or partial row images in RBR - Optimize for performance, disk size, or functionality
• DTrace replication probes - Internal performance monitoring and debugging
MySQL on Windows
The Right Choice

Significant Developer Adoption
- Windows is the #1 development platform for MySQL
- Making MySQL better on Windows

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<th>Performance &amp; Scalability</th>
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<td>• Improved on Windows</td>
<td>• More Affordable</td>
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<td>• MySQL 5.5 Benchmarks</td>
<td>• Easier to Administer</td>
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<th>Ease of Use</th>
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<td>• MySQL Workbench</td>
<td>• 20+ Platforms</td>
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<td>• New Connector/NET 6.3</td>
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MySQL 5.5 SysBench Benchmarks

Windows

MySQL 5.5 vs. 5.1 - Read Only

538% performance gain for MySQL 5.5 over 5.1.50; at scale

MySQL 5.5.6
(New InnoDB)

MySQL 5.1.50
(InnoDB Plug-in)

MySQL 5.1.50
(InnoDB built-in)

Intel x86_64
4 CPU x 2 Cores/CPU
3.166 GHz, 8GB RAM
Windows Server 2008
MySQL 5.5 SysBench Benchmarks

Windows

MySQL 5.5 vs. 5.1 - Read Write

MySQl 5.5.6  
(New InnoDB)

MySQL 5.1.50  
(InnoDB Plug-in)

MySQL 5.1.50  
(InnoDB built-in)

1561% performance gain
for MySQL 5.5 over 5.1.50; at scale

Intel x86_64
4 CPU x 2 Cores/CPU
3.166 GHz, 8GB RAM
Windows Server 2008
MySQL on Windows Priorities – FY2011-12

• Universal Windows Installer
  • Installs, configures, upgrades

• Native Windows authentication
  • MySQL Enterprise Authentication

• Windows Eco-system Support
  • Visual Studio
  • Entity Framework
  • Windows administration tooling
  • Connector Enhancements

• Windows Performance & Scalability optimizations
  • Added Performance Enhancements
  • Additional Windows Eco-system Support
MySQL Cluster 7.1

- **Improved Administration**
  - NDBINFO: Real time status & usage statistics
  - MySQL Cluster Manager (CGE Only)

- **Higher Performance**
  - MySQL Cluster Connector for Java
  - Native Java & OpenJPA access to MySQL Cluster

- **Carrier Grade Availability & Performance**
  - Shared nothing, distributed design for 99.999% availability
  - Sub-Second Failover & Self Healing Recovery
  - On-Line Scaling and Maintenance
  - Parallel Multi-Master Architecture
  - Low Latency, Real Time Responsiveness
MySQL Enterprise Edition

Database
- MySQL Database
- Regular Updates, Bug Fixes
- Hot Fix Program

Management
- Global Monitoring
- Query Analysis, Tuning
- Online “Hot” Backup, Recovery
- Visual Design, Development Tools
- Administration, Management Tools

Support
- Oracle’s Premier Technical Support
- 24 x 7 x 365 Problem Resolution
- Consultative Help
- Integrated with Enterprise tools
MySQL Enterprise Backup

- Online Backup for InnoDB & MyISAM
- High Performance Backup & Restore
- Compressed Backup
- Full Backup
- Incremental Backup
- Partial Backups
- Point in Time Recovery
- Unlimited Database Size
- Cross-Platform
  - Windows, Linux, Unix
MySQL Enterprise Backup 3.5
What’s New

- Incremental Backup
- Support for InnoDB Barracuda file format
- Backup of compressed tables
- Backup of partition files
- Backup of in-memory database
  - With –exec-when-locked option
- Adds MySQL system tables to keep backup status, progress and history
MySQL Enterprise Monitor

- Single, consolidated view into entire MySQL application development environment
- Auto-discovery of MySQL servers, replication topologies
- Automated, customizable rules-based monitoring, tuning, SNMP/SMTP alerts
- Query Analyzer for query monitoring, analysis, tuning, source code tracing
- Application Tuning during Dev/QA/Roll out
- Reduces risk of problems after apps are deployed

A Virtual MySQL Tuning Assistant!
“The MySQL Query Analyzer allows us to quickly identify and optimize our most expensive queries so that we can constantly improve our platform and scale more efficiently.”

Jeff Freund
CEO, Clickability
MySQL Enterprise Monitor 2.3
What’s New

New Cluster Advisor and Graphs
• Monitoring of Data Nodes
• Up/down status
• Memory
• undo/redo buffer, logs

Improved Advisors and Graphs
• Monitoring of transactions
• Binlog cache and space usage
• Disk space, I/O

Integrated with My Oracle Support
Query monitoring via Connectors
MySQL and MyOracle Support

MySQL Enterprise Monitor

- Collect MySQL diagnostics and upload to MOS SR (now!)
- Track SRs from Enterprise Dashboard (CY 2010)
- Create/maintain SRs (CY 2011)
- Saves DBA time
  - collecting data for Support team, tracking status
MySQL Workbench 5.2

• SQL Development
  • SQL Editor - Color Syntax Highlighting
  • Object Management - Import/Export, Browser, Edit
  • Connection Management - Wizard, SSH Tunnel

• Database Administration
  • Status, Configuration, Start/Stop, Replication
  • Users, Security, Session Management
  • Import/Export Dump Files

• Data Modelling
  • Visual Design
  • Forward/Reverse Engineer
  • Schema Validation, Schema Doc

• Scripting & Plug-in Support

Since July 2010
“Absolutely loving the MySQL Workbench!”

“MySQL Workbench is freaking awesome. It makes my life a whole lot easier.”

“@MySQL Workbench is awesome! Microsoft could learn from this product! LIVE database changes are so quick to synch with local model!”
MySQL Product Releases
Continuous Innovation

A Better MySQL
Key Takeaways

• MySQL is important to Oracle and our customers
  • Part of our Complete, Open, Integrated strategy
• Oracle is making MySQL better today
  • Major Feature, Performance, Scalability enhancements
  • 24x7, Global support in 145 countries

Download MySQL 5.5 Now!
http://dev.mysql.com/downloads