Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decision. The development, release, and timing of any features or functionality described for Oracle’s products remains at the sole discretion of Oracle.
MySQL Matters!
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
Oracle Database and MySQL
Complementary

- Together Servicing Broader User Needs
- MySQL Well Suited for Web-based Apps, Custom Departmental apps and Embedded apps
- Users can Benefit by Running MySQL and Oracle Together
MySQL is Powering the Web

Customers Succeed with MySQL

- Google
- eBay
- Flickr
- Zillow.com
- Wikipedia
- Mixi
- YouTube
- Travelocity

Web

- Facebook
- Yahoo!
- Adobe
- SafeNet
- Check Point
- TRIPWIRE
- Adaptec
- NetQoS

OEM / ISV’s

- SurfControl
- Go Daddy
- Zimbra
- Right Now Technologies
- F-Secure

SaaS, Cloud

- Virgin Mobile
- Deutsche Telekom
- CISCO
- Comcast
- Ericsson
- Alcatel-Lucent
- Telenor

Telecommunications

- Lafarge
- Toys "R" Us
- Associated Press
- Rikspressstyrelsen
- Shinsei Bank

Enterprise 2.0

MySQL IS POWERING THE WEB
MySQL 5 - Features

**PERFORMANCE**
- Stored Procedures
- Query Optimizations
- Archive Engine
- InnoDB storage
- Geospatial Data
- Table/Index Partitioning
- Full-Text Improvements
- Archive Improvements
- Faster DDLs
- Parallel Data Import
- New Load Testing Utility
- MyISAM Memory Option
- New Diagnostics

**EASE OF USE**
- Instance Manager
- Information Schema
- Cursors
- Enhanced GUI Tools
- Migration Toolkit
- MySQL Workbench

**RELIABILITY**
- Stored procedure
- SQL Mode
- Triggers
- Views
- Precision Math
- Distributed Transactions
- Increased object support
- Row-Based Replication
- Federated Engine Txn
- Row-Based Binary Log Analysis

**PERFORMANCE**
- Faster DDLs
- Parallel Data Import
- New Load Testing Utility
- MyISAM Memory Option
- New Diagnostics

**EASE OF USE**
- XML/XPath Support
- Task Scheduler
- Storage Engine Plug-in API

**RELIABILITY**
- Row-Based Replication
- Federated Engine Txn
- Row-Based Binary Log Analysis
Pluggable Storage Engine Architecture

**Connectors**
Native C API, JDBC, ODBC, .NET, PHP, Python, Perl, Ruby, VB

**MySQL Server**

**Connection Pool**
Authentication - Thread Reuse - Connection Limits - Check Memory - Caches

**SQL Interface**
DML, DDL, Stored Procedures, Views, Triggers, etc.

**Parser**
Query Translation, Object Privilege

**Optimizer**
Access Paths, Statistics

**Caches & Buffers**
Global and Engine Specific Caches & Buffers

**Pluggable Storage Engines**
Memory, Index & Storage Management

- InnoDB
- MyISAM
- Cluster
- Archive
- Merge
- Memory
- Partner
- Community
- Custom

**File System**
NTFS - NFS
SAN - NAS

**Files & Logs**
Redo, Undo, Data, Index, Binary, Error, Query, and Slow

ORACLE®
More GA Products Than Ever Before
Continuous Innovation

- MySQL Database 5.5
- MySQL Enterprise Backup 3.5
- MySQL Enterprise Monitor 2.3
- MySQL Cluster Manager 1.1
  All GA now!

A Better MySQL

MySQL Workbench 5.2
GA

MySQL Enterprise Monitor 2.2
GA

MySQL Cluster 7.1
GA

MySQL Cluster Manager 1.0
GA

Q1 CY2010  Q2 CY2010  Q3 CY2010  Q4 CY2010
MySQL 5.5 – Highest Quality Release Ever

InnoDB becomes default storage engine
- ACID Transactions, FKs, Crash Recovery

Improved Performance
- Enhancements in MySQL DB
- Enhancements in InnoDB
- + 360% over 5.1 on Linux
- + 1500% over 5.1 on Windows

Improved Availability
- Semi-synchronous Replication
- Replication Heartbeat

Improved Usability
- SIGNAL/RESIGNAL
- More Partitioning Options
- New PERFORMANCE_SCHEMA
A Better MySQL at Oracle

• Improved Engineering Processes. MySQL Benefits from Oracle’s Experience

• Largest MySQL Engineering & Support Organization. Hundreds of Experts, including Core MySQL Engineers plus Performance and Database Gurus

• Investing and Delivering New & Better Products. Oracle’s Human and Capital Investment in MySQL unmatched, and far Exceeds Levels Contributed by Other Sponsors

You’re An Expert? We’re Hiring!
You Shape The Products! Oracle Engaged With the Community

- Social Media (Oracle MySQL blog, Facebook, Twitter, Forums, MySQL Community Managers…etc)
- Oracle MySQL ACEs
- Advisory Boards: Customers & Storage Engine Vendors
- Engagement with IOUG and other User Groups
- Open Bug DB Here to Stay, Acting on Reported Issues
- Strong MySQL Presence at Collaborate 11, & OOW 2011
- We Are Listening to You!
Download Now!
MySQL 5.6 Community Edition Development Release

Making MySQL Better Everyday
MySQL 5.6 – A Better MySQL.
Download Now!

Better Performance, Scalability, Monitoring

• Optimizer based performance improvements
  • Index Condition Pushdown (ICP)
  • Multi-Range Read (MRR)
  • File sort optimization

• Partitioning
  • Enable explicit partition selection – queries, pruning
  • Enable import/export to/from partitioned tables

• PERFORMANCE_SCHEMA
  • Table, Index, Waits/Locks, Summaries

http://dev.mysql.com/downloads/mysql/
Better InnoDB

- Persistent Optimizer Stats
- New INFORMATION_SCHEMA tables:
  - Metrics table
  - System tables
  - Buffer pool information table
- Split the kernel mutex
- Multi-threaded purge
- Add LRU list to data dictionary
- New page_cleaner thread – for flushing of dirty pages

MySQL 5.6 – A Better MySQL.
Download Now!

http://dev.mysql.com/downloads/mysql/
MySQL 5.6 – A Better MySQL.
Download Now!

Better Replication

• Crash-Safe Slaves
• Replication Checksums
• Reduced Binlog size – options for writing full/partial RBR images
• Slave batched update for non-indexed tables
• Time-Delayed Replication
• Informational Log Events
• Remote Binlog Backups
• Server UUIDs

http://dev.mysql.com/downloads/mysql/
MySQL 5.6:
NotOnlySQL: Memcached API

• Fast, simple access to InnoDB
  • Accessed via memcached API
  • Use existing memcached clients
  • Bypasses SQL transformations

• NotOnlySQL access
  • Memcached for key-value operations
  • SQL for rich queries, JOINs, foreign keys, etc.

• Implementation
  • memcached daemon plug-in to mysqld
  • memcached protocol mapped to the native InnoDB API
  • Shared process space for ultra-low latency
  • Additional implementations in future DMs
MySQL 5.6 – A Better MySQL.
Download Now!

- Replication
  - Multi-threaded Slaves
- PERFORMANCE_SCHEMA
  - Net I/O
  - Session/user/statement level instrumentation, metrics
  - Show contents of host cache – centralized logging of connection errors
- More to come, early and often…
A Better MySQL: MySQL Cluster 7.2 Development Release
MySQL Cluster
High Write Scalability, Real Time Performance, 99,999% Uptime

• Telecoms
  • Subscriber Databases (HLR/HSS)
  • Service Delivery Platforms
  • VoIP, IPTV & VoD
  • Mobile Content Delivery
  • On-Line app stores and portals
  • IP Management
  • Payment Gateways

• Web
  • User profile management
  • Session stores
  • eCommerce
  • On-Line Gaming
  • Application Servers
MySQL Cluster Architecture
High Write Scalability, Real-time Performance, 99.999% uptime
MySQL Cluster 7.2 – A Better MySQL

• 20x+ Higher Complex Query Performance
  • Adaptive Query Localization (aka Push Down JOINs, SPJ)
  • Ships the query to the data, reducing overhead

• Schema Flexibility
  • 4x increase in column support, 128 to 512 columns
  • Can be added on-line to existing tables, no service interruption

• User Data Consolidation
  • Centralizes user privileges to data nodes, accessible from all MySQL Servers
  • Radically simplifies provisioning and administration
MySQL Cluster: SQL & NoSQL Combined

- NoSQL -- 3 Ways to bypass SQL, and maximize performance:
  - 1) NDB API. C++ for highest performance, lowest latency
  - 2) Cluster/J for optimized access in Java
  - 3) NEW! Memcached. Use all your existing memcached clients. No need to change applications.

Mix & Match!
Same data accessed simultaneously through SQL & NoSQL interfaces
MySQL Cluster 7.2: NotOnlySQL: Memcached API

- Build update-intensive, highly available services with MySQL Cluster back-end
  - Accessed via memcached API

- Consolidate caching and database tiers
  - Use existing memcached clients & avoid application changes
  - Support for update-intensive workloads, eliminate cache invalidation
  - Scalable, persistent, HA data store
  - Simpler re-use of data across services

- Implementation
  - Memcached driver for NDB plug-in to memcached server
  - Direct access to NDB API
Testing of Adaptive Query Localization has yielded over 20x higher performance on complex queries within our application, enabling Docudesk to expand our use of MySQL Cluster into a broader range of highly dynamic web services.

Casey Brown
Manager, Development & DBA Services, Docudesk
New Applications with the LAMP Stack

- Highly Popular for Web and Cloud Based Applications
- Oracle Delivers the Industry’s Most Complete LAMP Stack
- One Stop Shop Opportunity for Support Across the LAMP Stack

Announcing the First Oracle VM Template for MySQL! Available within 90 Days.
Oracle VM Template for MySQL
Integrated & Tested OS, VM and Database Stack

Fastest, simplest & most reliable way to deploy virtualized, cloud-ready MySQL instances, certified for production use

- Rapid DEPLOYMENT
- Increased RELIABILITY
- Higher AVAILABILITY
- Lower COST

Oracle VM is Based on the Open Source Xen Hypervisor Technology
Template Components
Certified for Production Deployment

• Oracle Enterprise Linux 5 Update 6 with the Unbreakable Enterprise Kernel
• Oracle VM 2.2.1
• Oracle VM Manager 2.1.5
• Oracle Cluster File System 2 (OCFS2). OCFS2 & BTRFS: IP contributed to Linux by Oracle
• MySQL Database 5.5.9 (Enterprise Edition)

Pre-Installed & Pre-Configured
Full Integration & QA Testing
Single Point of Support
# MySQL on Windows

<table>
<thead>
<tr>
<th>Lower TCO</th>
<th>Cross-Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 90% TCO Savings</td>
<td>• 20+ Platforms</td>
</tr>
<tr>
<td>• Calculator: mysql.com/tco</td>
<td>• No Lock-in</td>
</tr>
<tr>
<td>• Easier to Administer (Replication…etc)</td>
<td>• Flexibility to Choose LAMP for Web Applications</td>
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<thead>
<tr>
<th>Performance &amp; Scalability</th>
<th>Ease of Use</th>
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</thead>
<tbody>
<tr>
<td>• Improved on Windows</td>
<td>• MySQL Hallmark/15 min Rule</td>
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<tr>
<td>• MySQL 5.5 Benchmarks</td>
<td>• Windows Env. Integration</td>
</tr>
<tr>
<td>• Continued Investment</td>
<td>• MySQL Tools</td>
</tr>
</tbody>
</table>
MySQL vs. Microsoft SQL Server
3 Year TCO

- Term: 3 Years
- Users: Unlimited (web)
- Servers: 4
- Hardware: Intel x86
- CPUs/Server: 4
- Cores/CPU: 4
- MySQL: MySQL Enterprise Edition
- Microsoft: SQL Server Enterprise Edition

MySQL Enterprise Edition: $60,000
Microsoft SQL Server Enterprise Edition: $769,860
MySQL on Windows, Priorities

- Windows Performance & Scalability optimizations
  - Additional Performance Enhancements
- 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
MySQL Usability

Introducing MySQL Installer 1.0 for Windows
MySQL Usability

• 15 Minute Rule down to **3 Minutes**
  - What will you do with all that time?!
MySQL Enterprise Edition

- MySQL Visual Development, Monitoring, Backup tools, and Oracle Lifetime Support services
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 DBA Assistant!
MySQL Query Analyzer

- Centralized monitoring of Queries across all servers
- No reliance on Slow Query Logs, SHOW PROCESSLIST;, VMSTAT, etc.
- Aggregated view of query execution counts, time, and rows
- Integrated with Monitor graphs so work loads can correlated with query activity
- Traces queries back to source code
- Saves time parsing atomic executions for total query expense
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 Modeling
• Visual Design
• Forward/Reverse Engineer
• Schema Validation, Schema Doc

Scripting & Plug-in Support
MySQL Enterprise Backup 3.5

- Online Backup for InnoDB & MyISAM
- High Performance Backup & Restore
- Full, Incremental, Partial Backups
  - Compressed Tables
  - Partition files
  - In-memory database
- Compression
- Point in Time Recovery
- Metadata on status, progress, history
- Unlimited Database Size
- Cross-Platform
  - Windows, Linux, Unix
MySQL Enterprise Monitor 2.3

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

Query monitoring via Connectors
- Trace queries back to source

Integrated with My Oracle Support
• Collect MySQL diagnostics and upload to MOS SR
• Track SRs from Enterprise Dashboard. Create/maintain SRs (CY 2011)
• Oracle Customers Get One Stop Shop Support via Their Familiar Environment
• Instant Access to World Class Support Infrastructure for new Customers
• Saves DBAs time, collecting data for Support team, tracking status
Enterprise Edition Priorities

• Tight integration across products

• Visual Backup/Recover Management

• Visual Scheduling, Monitoring of Backup/Recover Operations

• Visual Configuration, Instance Deployment and Management

• Integration with industry standard backup media
Oracle + MySQL Customers

Product Integrations in Progress
• Oracle VM Template for MySQL
• Oracle GoldenGate (MySQL Capture is now GA!)
• Oracle Fusion Middleware Certifications
• Oracle Secure Backup
• Oracle Audit Vault
• Oracle Enterprise Manager

Support
• Leverage 24x7, World-Class Oracle Support
• My Oracle Support
ISVs: MySQL is Great Choice

- Lower Cost of Good Sold (COGS)
- Ease of Use “Designed In”: 15 min Rule
- Over 2,000 OEM/ISVs Distribute MySQL as “Zero Admin” Embedded Database
- Support for 20+ Platforms
- OEM/ISVs Embedding MySQL Ship into More Markets and Provide more Flexibility to End Users
Summary

Oracle is Making MySQL a Better MySQL

Oracle Database 11g and MySQL Are Complementary

Get Going with MySQL Now!
MySQL 5.5 & MySQL Cluster 7.1 (GA); MySQL 5.6 & MySQL Cluster 7.2 (DM)
Additional Resources www.mysql.com

• MySQL Enterprise Edition Trial
• MySQL on Windows Resource Center
• TCO calculator
• Whitepapers, Case studies, Webinars…etc

MySQL Developer Day – May 3rd, Santa Clara
MySQL @ Oracle OpenWorld 2011

• October 2 – 6, SF
• Dedicated MySQL Track
• 40+ Technical Sessions
• MySQL Community Reception
Hardware and Software
Engineered to Work Together