MySQL in Mission Critical Enterprise Applications – Case SAP

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Goals of the Session

- Look at requirements of Mission Critical Enterprise Applications
- See what this means for the database
- Clarify how MySQL fit to these requirements, from an SAP point of view
- Present an overview of how MySQL is approaching to run SAP’s business solutions
What does a Mission Critical Enterprise Application need?

• The solution must fulfil the technical requirements!
• The solution needs to be scalable!
• The processing needs to be fast!
• The platform must be secure and safe!
• The complete solution should be easy to handle!
• All parts should be as inexpensive as possible!
What does this mean for the database?

The solution needs to:
• fulfil technical requirements
• scale
• be fast
• be secure and safe
• be easy to handle
• be inexpensive

The database needs:
=> 1. Required features
=> 2. Scalability
=> 3. Performance
=> 4. Reliability
=> 5. Ease of use
=> 6. Low TCO

• In the next slides we will look at each area, and see
  a) how MySQL fits the requirement, and
  b) how this is shown in the SAP project
1. Required features?

• Main SAP requirements: 4.1 5.0 5.1
  – Transactions x
  – Unicode handling x
  – Subqueries x
  – Server Side Cursors x
  – Views x
  – Stored Procedures x
  – Triggers x
  – Data Dictionary x
  – Precision Math x
  – Std Error Handling x
  – Data Warehousing x
  – Unicode feature extensions x
SAP assessment 1

• SAP has extensive feature verification tests
• Millions of statements and transactions testing their functionality requirements
• With current 5.0 beta, MySQL passed all the tests!
• But this is only the beginning...
2. Scalability

• Concurrency
  – Lock behaviour
  – Architecture

• SAP has high requirements here:
  – Large 3-tier environments
  – Hundreds – thousands of concurrent users with heavy load
SAP assessment 2

- SAP has various tests to check scalability
- Simulating various kinds of end users, in large numbers
- With the current 5.0 beta, MySQL has proven to be able to handle hundreds of concurrent simulated SAP users
- This indicates three important things:
  1. The MySQL locking mechanism can handle high concurrency
  2. The MySQL architecture can handle high concurrency
  3. The MySQL architecture can appropriately use multiple processors
- However, these are preliminary tests and not real SAP benchmarks
3. Performance

• SAP requirements:
  – The database needs to have fast:
    • Transactional processing for standard use
    • Loading capability for installations
    • Modification of table structures, indexes, etc for upgrade procedures
In our SAP project the performance is measured constantly
- Transactional processing seems to be very good
- Loading capability fulfils well the requirements
- On modification of table structures and indexes we are still a bit slow
  - We are working on big improvements in ALTER TABLE (including CREATE INDEX)
- However: Large optimisation tests are still ahead!
  - We estimate a number of optimisations still to be required in MySQL!
4. Reliability

• How to prove MySQL Reliability?
  – MySQL Code Quality!
    • Reasoning Inc: ”6 times better than proprietary DBs”
  – Real life cases of Mission Critical Installations!
    • 50 case studies currently available from a large variety of business areas, available from www.mysql.com
  – Community popularity and credibility!
    • 6 Million users!
5. Ease of use

- MySQL has always kept ease of use in focus
  - 15 min rule!

- MySQL popularity builds on ease of use
  - Web developers have traditionally picked the easiest choice
  - MySQL technology has proven to be simple to embed in various solutions
  - MySQL is very popular in education worldwide
6. Low TCO

- Low TCO means:
  - License cost
  - Support cost
  - Low Downtime
  - Easy administration
  - Easy to learn

Promise:
- "We offer 90% of the features to 10% of the cost!"

Also true for MySQL Network!

Mission statement:
- Make superior database technology available and affordable to all!
SAP Project overview
How to get MySQL into a Mission Critical Enterprise Application?
SAP Project overview
How to get MySQL into a Mission Critical Enterprise Application?

Project Goal 1:
Develop MySQL to fulfil all database requirements

Project Goal 2:
"Port MySQL" – Build and adapt all integration programs for MySQL
What is really the DbSI?

- Java Data Dictionary
- JDBI (Java layer)
- SE11: ABAP Data Dictionary
  - SDB1FMYS
  - SDB2FMYS
  - SBD2SMYS
- DynamicSQL
- SDB1FMYS
- SDB2FMYS
- SBD2SMYS
- DbSI
- DB Data Dictionary
- Synchronisation C Module
- CCMS/TCC Monitors for Administration
  - DB02 DB13
  - DB12 DB20
  - RZ20 ST04
  - ST05
- R3LOAD
  - R3LOAD LD Import
  - R3LOAD LD Export
  - R3LOAD CTL
  - R3SZCHK
- R3TRANS
- Transport Program
- SAP BW issues
- SAP INST
- SAP LICENSE
- SE11: ABAP Data Dictionary
- SAP INST
- SDB1FMYS
- SDB2FMYS
- SBD2SMYS
- SDB6FMYS
- IMIG
- SAP AS Upgrade
- R3UP
- R3TRANS
- Web AS Upgrade
- R3LOAD LD Import
- R3LOAD LD Export
- R3LOAD CTL
- R3SZCHK

Blue: C-Programs
Red: ABAP-Programs
Green: Java-Programs
Project timeline

- 3 year project, divided in 12 milestones (one for each quarter)
- We started in June 2003
- Today we have done 8/12 Milestones
Summary

• Mission Critical Enterprise Applications put a lot of needs on the database:
  => Required features
  => Scalability
  => Performance
  => Reliability
  => Ease of use
  => Low TCO

• For SAP we are rapidly fulfilling these requirements
• SAP Apps run the business critical solutions of the leading companies throughout the world

  => As a result, we see less and less resistance in our customer base, for using MySQL as database for mission critical enterprise solutions