

GemStone/S 64bit

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GemStone Corporate Update

GemStone Corporate Overview

- Founded 1982
- 100 employees
- Worldwide Offices
 - Beaverton, OR (headquarters)
 - San Jose, CA
 - New York, NY
 - Washington, DC
 - Pune, India

GemStone Corporate Overview

- Privately Owned Company
- Sound Financial Position
- 100 Employees Strong and Growing
- Expanded Product Line
- Strong Partnerships
- 200+ Customers
- Bright Prospects Ahead

GemStone Corporate Overview

- 4 Product Lines
 - GemStone/S
 - Facets
 - Java-based OODB
 - GemFire Enterprise
 - Distributed, customizable object caching
 - Java and C++ bindings
 - GemFire Real Time Events
 - Continuous SQL query of a data stream

GemStone Smalltalk Business

- Smalltalk Market is Growing
- Loyal Customer Base
- Maintenance Renewals at 90+%
- Large VAR and Distribution Channel
- Vertical Market Expansion
- Global Systems Deployed – 7X24
- High Interest in 64 bit Smalltalk
- Affordable subscription price models.



*GemStone Smalltalk
Product Roadmap*

GemStone 6.1

- Very stable, reliable product.
- Current version: 6.1.4
- Platforms:
 - Sun Solaris 2.8, 2.9
 - HP HPUX 11.0, 11.11
 - IBM AIX 5.1, 5.2
 - Red Hat Linux AS 2.0, 3.0
 - Microsoft Windows 2000, XP

GemStone 6.1

- Customer Feedback:
 - keep it current, keep it stable
- Direction:
 - Fix bugs
 - Keep up with platform and OS releases
 - Don't introduce instability (major features, etc)

GemStone 6.1

- Next Release
 - GemStone/S 6.1.5
 - Late 2005 or early 2006
 - Planned Features:
 - Solaris 10 support
 - AIX 5.3 support
 - Bug fixes



64 Bit GemStone/S Product Roadmap

Why GemStone/64?

- 32 bit computing has architectural limitations.
- Largest GemStone customers has hit these limitations
- GemStone/64 fully exploits 64-bit advantages in 2 areas:
 1. Performance: very large object caches
 2. Scalability: very large repository sizes and object counts

Performance Improvements

- Maximum shared page cache sizes:
 - GemStone 6.1
 - 1.9 GB (HP)
 - 3.75 GB (Sun)
 - 2.5 GB (AIX)
 - 2.0 GB (Linux)
 - 1.7 GB (Windows XP)
 - GemStone/64
 - 16 terabytes (16,384 GB)

Scalability Improvements

- Maximum Object Counts
 - GemStone 6.1
 - 1 billion
 - GemStone/64
 - 1.x: 2 billion
 - 2.x: 1 trillion (2^{40})

GemStone/64 Project

- Funded by OOCL
- 4 Year duration (2003 – 2007)
- 3 Phases

GemStone/64 High Level Roadmap

- Phase 1 (1.x) – *Ashland*
 - Addresses performance issues
- Phase 2 (2.x) – *Bend*
 - Addresses scalability issues
- Phase 3 (3.x) – *Corvallis*
 - Addresses tuning issues.

Ashland Product Features

- Key Features in 1.0
 - 64 bit code.
 - Supports shared page caches up to 16 TB (16,384 GB).
 - Redesigned Smalltalk virtual machine (~2X faster).
 - Eliminate many garbage objects
 - Large objects, not connected set, etc
 - Online backup capability (no down time required)
 - Upgrade support from GemStone 6.1.
 - Up to 2 Billion objects.

Ashland Product Features

- Platform Support
 - Server
 - Sun Solaris 2.9
 - HP HPUX 11.11 on PA-RISC
 - Smalltalk Client (Windows 2K and XP)
 - VisualWorks 5i.1
 - VisualWorks 7.3
 - IBM VisualAge 5.5.2
 - IBM VisualAge 6.0.2

Ashland Product Features

- Additional Features In Release 1.1:
 - GemConnect for Oracle
 - *System continueTransaction*
 - Epoch garbage collection
 - Soft References
 - Support on IBM AIX 5.3L

Ashland Performance Benchmarks

Test	GS 6.1	<i>Ashland</i>
50 factorial	2.459	2.175
100 factorial	2.397	2.092
Commit 6.5 MB data	54.541	20.136
Fault and verify 30 MB data	3.478	2.469
Create & de-ref 6.5MB objs	3.8879	0.3809

Ashland Highlights

- To Be Supported Later...
 - Indexes on IdentitySet/IdentityBag
 - GemEnterprise/SMF
 - GemBuilder for Java
 - 64 bit Linux (on x86-64)

Ashland Highlights

- 1.0 Delivery Schedule
 - Beta: delivered on 12/31/2004
 - GA: 3/31/2005
- 1.1 Delivery Schedule
 - Beta: 6/1/2005
 - GA: 9/7/2005

Bend Highlights

- Key Features
 - 64 bit object IDs
 - Up to 1 trillion objects
 - Larger Database Page Size
 - Increase from 8K to 16K
 - New Special Objects
 - Expanded SmallInteger Range: -2^{60} to $+2^{60}$
 - SmallFloat
 - SpecialDateTime
 - Upgrade path from *Ashland*

Bend Highlights

- Delivery Schedule
 - Project start: February, 2005
 - Beta: 12/31/2005
 - GA: 3/31/2006

Corvallis Highlights

- Key Features
 - Faster Smalltalk virtual machine
 - Multi-threaded garbage collection
 - Faster tranlog replay / restore?
 - Other features TBD.

Corvallis Highlights

- Delivery Schedule
 - Beta: 12/31/2006
 - GA: 6/30/2007

GemStone/64 Deployments

- 1 customer is now in production
- 2 more customers expect to deploy GS64 in 2005.
- 8 customers starting proof of concept (POC) projects in 2005.
- Additional POC's expected.

Comparisons from the LEI project

