GemStone/S 64 Update

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ESUG 2015
Brescia, Italy
July 13, 2015

Agenda

- GemTalk addYears: 2
- GemStone/S 64 v 3.3
- GemStone/S 64 v 3.4
- GemBuilder For Smalltalk
- Licensing Options

GemTalk addYears: 2

- GemTalk Turned 2 on May 1!
- Year 2 Milestones:
  - 6 Product Releases
  - New Website
  - Financial Goals Achieved
  - No Staff Turnover

GemStone/S 64

- Latest Release: 3.2.7 (July, 2015)
- Next Major Release: 3.3 (September, 2015)

GemStone/S 64 3.3

- Smalltalk Virtual Machine Performance
  – Improved native code generation.
  – Optimize native code for branch prediction.
  – Improved math performance, especially integer math.
  – Average overall improvement:
    - 25% faster vs. GS/64 3.2

GemStone/S 3.3

- Faster Tranlog Restore
  - Optimize object table generation during restore.
  - ~30% speed improvement
  - Affects:
    - #restoreFromLogs
    - Hot Standby Systems

GemStone/S 3.3

- Access to UNIX syslog()
  - Write messages to the UNIX system log
  - New Class:
    - GsSysLog

GemStone/S 64 3.3

- SmallFraction
  - New immediate (special) class.
    - Value encoded in the object.
    - Guaranteed canonical.
  - Numerator Range:
    - -268435456 to 268435455
  - Denominator Range:
    - 1 to 134217727

GemStone/S 64 3.3

- GsFile Improvements
  - Native UTF-8 Support
  - Methods Now Implemented as Primitives:
    - `next`
    - `nextPut:`
    - `_peek:`
    - `_seekTo: opcode:`
    - `isCompressed`
    - `position`

GemStone/S 64 3.3

- Support LZ4 Data Compression
  - *"LZ4 is lossless compression algorithm, providing compression speed at 400 MB/s per core (0.16 Bytes/cycle). It also features an extremely fast decoder, with speed in multiple GB/s per core (0.71 Bytes/cycle)."* -http://cyan4973.github.io/lz4/
  - Up to 10X faster than zlib (aka gzip).
  - Compression ratio slightly worse than zlib.

GemStone/S 64 3.3

- 3.3 LZ4 Support:
  – Remote Gem to Page Server
  – Remote GCI (ST Image) to Gem
  – Stone to Remote Shared Page Cache(s)
  – Stone to hot standby server(s).

GemStone/S 64 3.3

- Remote Gem to Page Server Encryption
  - Remote Gem to Page Server connection may now use SSL/TLS.
  - Enabled with new `GEM_PGSVR_USE_SSL` option.
  - Remote client to Gem connection already uses SSL/TLS.

GemStone/S 64 3.3

- Aggressive Commit Record Disposal
  - New configuration parameter
    - `STN_SIGNAL_ABORT_AGGRESSIVE`
  - Number of <u>additional</u> sessions told to abort when the CR backlog exceeds the threshold.
  - Default: 0
  - Maximum: 500

GemStone/S 64 3.3

- Start statmonitor automatically

- Supports various wildcard args from strftime(3)

- New Configuration parameters:

  - `STN_STATMONITOR_ARGS`
    - At stone startup

  - `GEM_STATMONITOR_ARGS`
    - At remote cache startup

  - `STN_STATMONITOR_MID_CACHE_ARGS`
    - At mid-level cache startup

GemStone/S 64 3.3

- Make `pageaudit` Command Multi-threaded
  - Used to audit the repository for page-level consistency.
  - Up to 20 X faster than 3.2

GemStone/S 64 3.3

- Object Canonicalization Framework
  - A framework of classes that may be used to canonicalize instances of domain classes.
    - AbstractReferencingObjectPolicy
    - ReferencingObjectPolicy
    - CanonicalObjectManager
    - CanonicalObjectPolicy
    - CanonicalObjectRegistry
- Developed by a GemTalk – Customer partnership.

GemStone/S 64 3.3

- LDAP Authentication Improvements
  - Support for resolving DN with authenticated LDAP binds.
  - Previously, a DN could only be resolved with an anonymous bind.
  - Some organizations disable all anonymous binds.

GemStone/S 64 3.3

- Page Server Changes
  - Previously (before 3.3)
    - 1 <u>process</u> (page server) is started for 1 remote gem.
    - 3000 sessions == 3000 page servers!
    - Page Table Memory Problems (especially Linux)
  - Now (3.3 and later)
    - 1 page server process is started for *all* gems on a remote host.
    - 1 <u>thread</u> is started for 1 remote gem.
    - Each remote gem uses 1 native thread in the page server.

3.2 Architecture
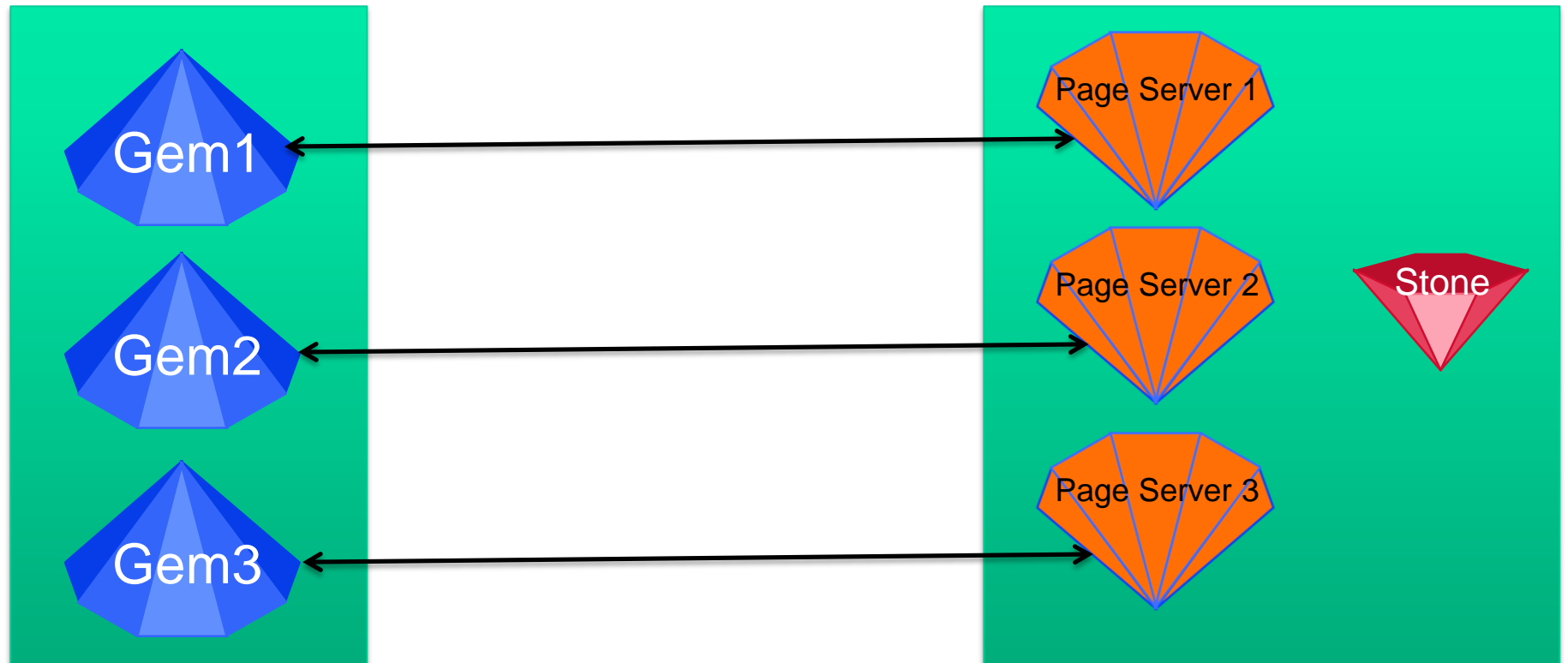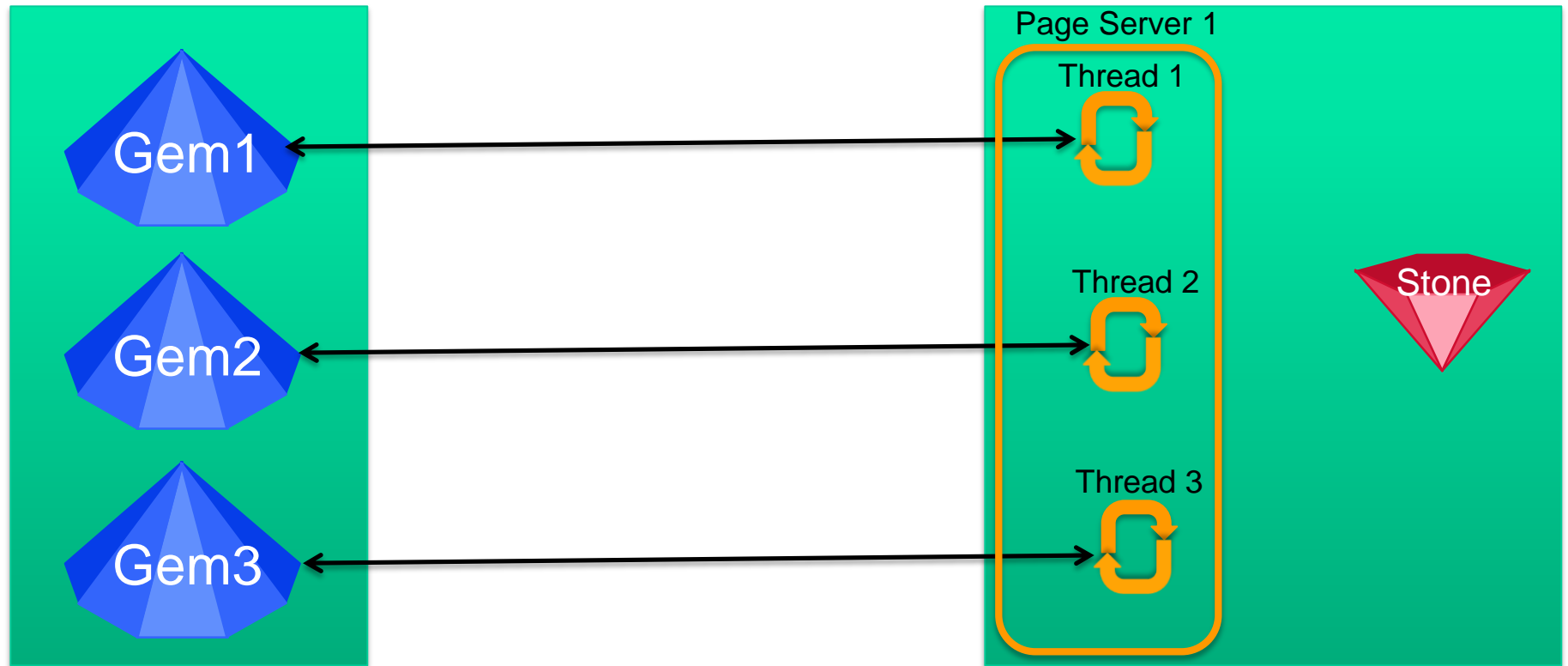
3.3 Architecture

GemStone/S 64 3.3

- Cache Warming With Mid Caches
  - Leaf Caches may now use mid caches during cache warming.
  - Advantageous for highly distributed, cloud based architectures.

GemStone Cloud Architecture

Remote Data Center (Cloud)

Main Data Center

Mid-Level Cache

SSL / TLS

Slow WAN

Main Cache

Stone

Leaf Cache 1

Leaf Cache 2

Gem

Gem

Leaf Cache 3

Storage

Gem
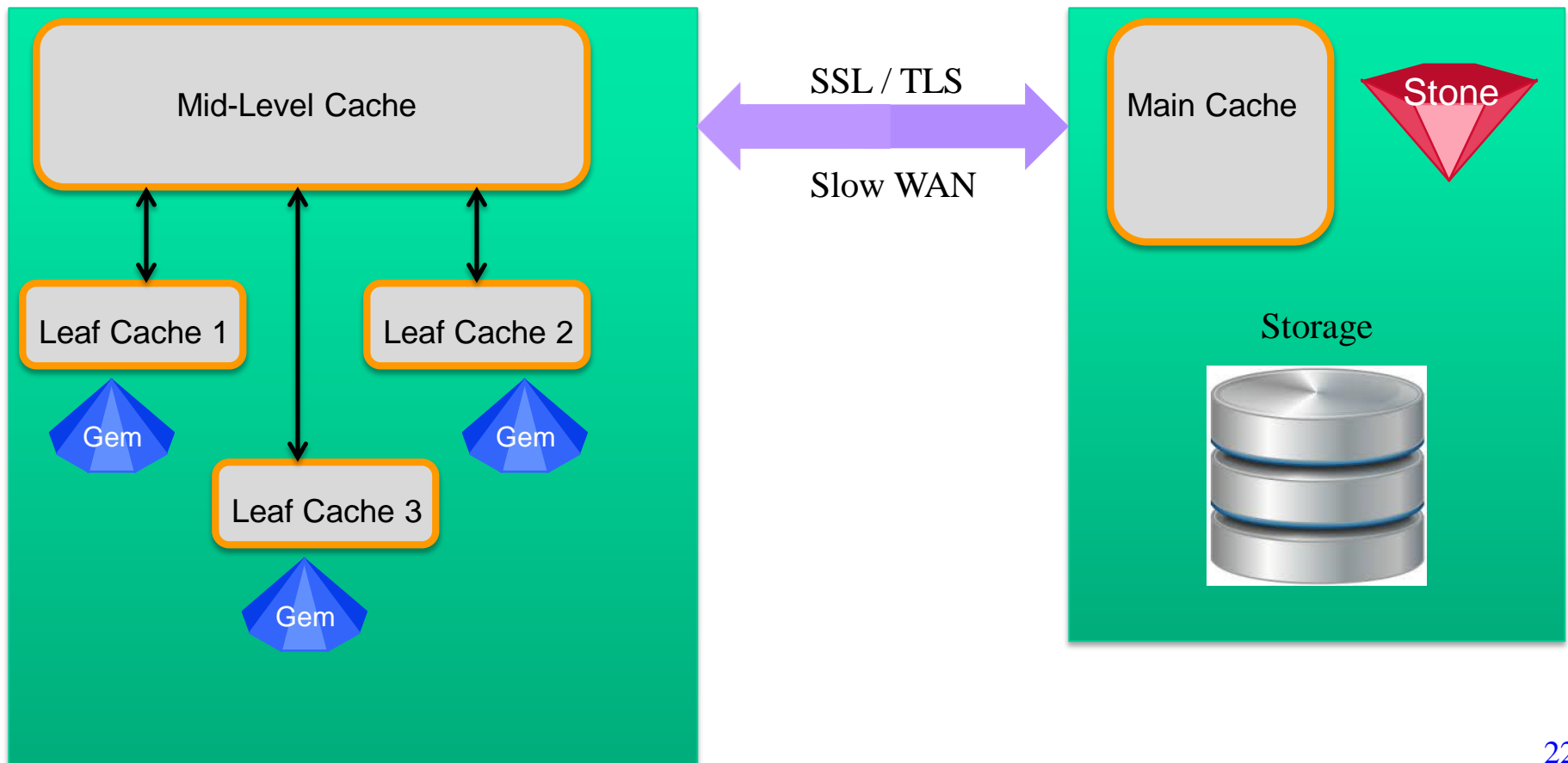
GemStone/S 64 3.3

- Clear the Shared Page Cache
  - Removes all pages that are not locked from the local shared page cache.
  - Private method: use as your own risk.
  - Requires #SystemControl privilege.
  - `System _checkCacheAndClear: true`

GemStone/S 64 3.3

- GC Configuration Access via Smalltalk Methods
  - Run-time Access to garbage collection gems
  - Update methods require #GarbageCollection privilege.
  - Class methods on `System`
    - `getReclaimConfig: aSymbol`
    - `setReclaimConfig: aSymbol toValue: aValue`
    - `getAdminConfig: aSymbol`
    - `setAdminConfig: aSymbol toValue: aValue`
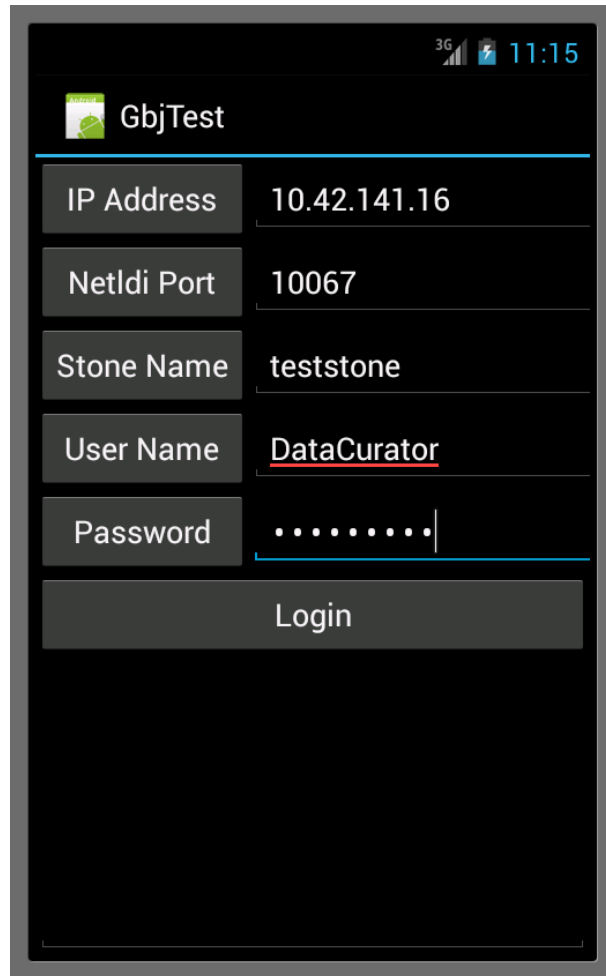
GemBuilder for……..Android?!?

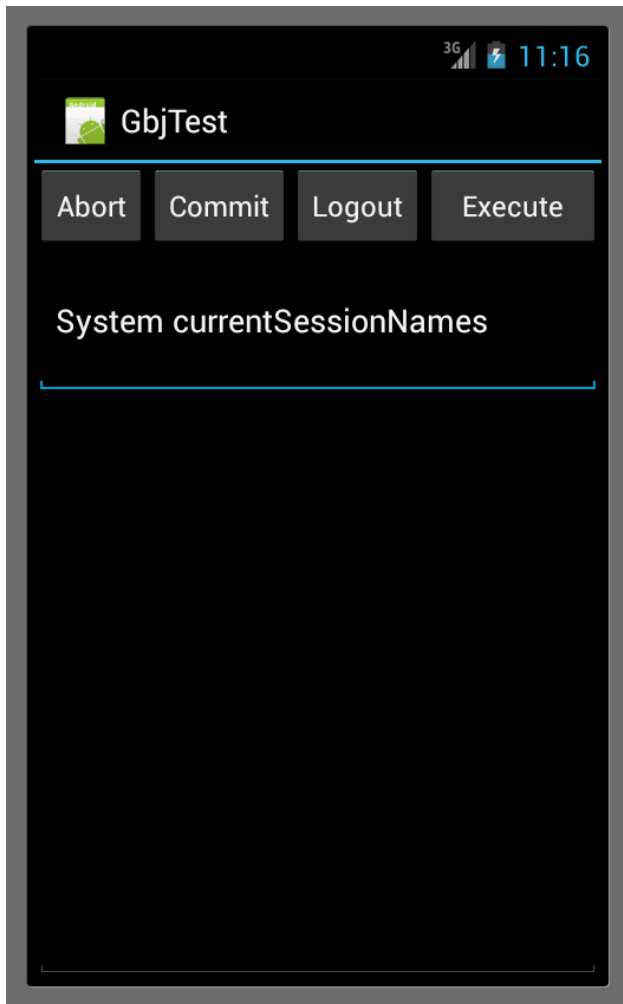- Experimental Project to Access GemStone from Android Devices
- Uses GemBuilder for Java (GBJ)

(OpenSSL)
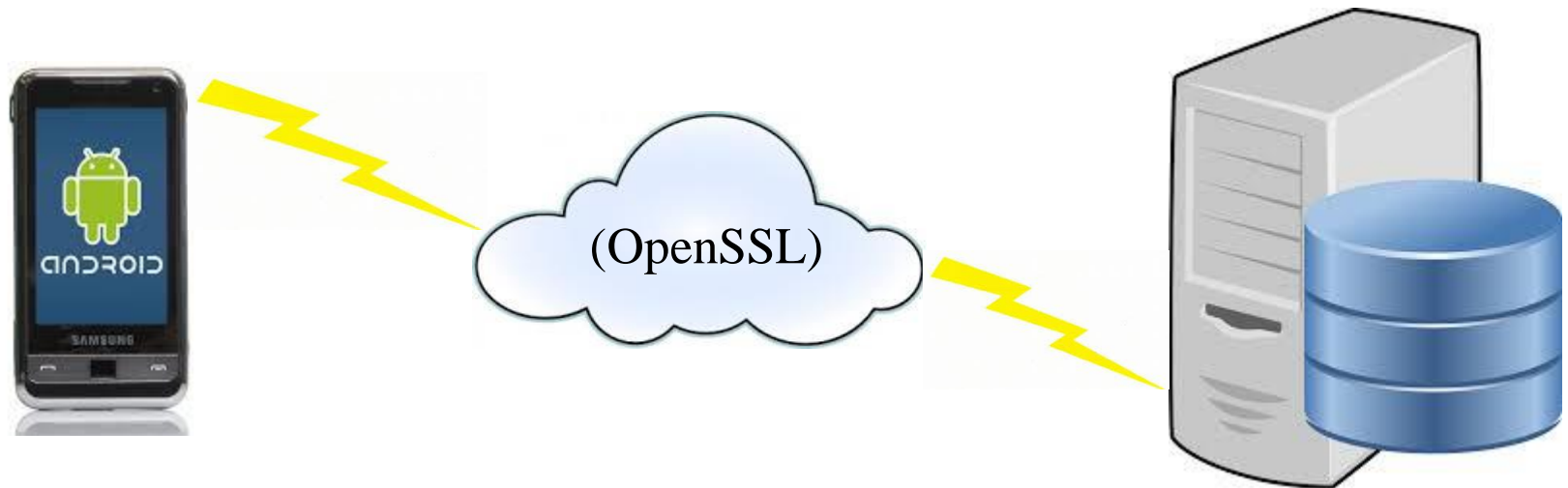
GbjTest App on Android

Login Screen

GbjTest App on Android

Command Execution
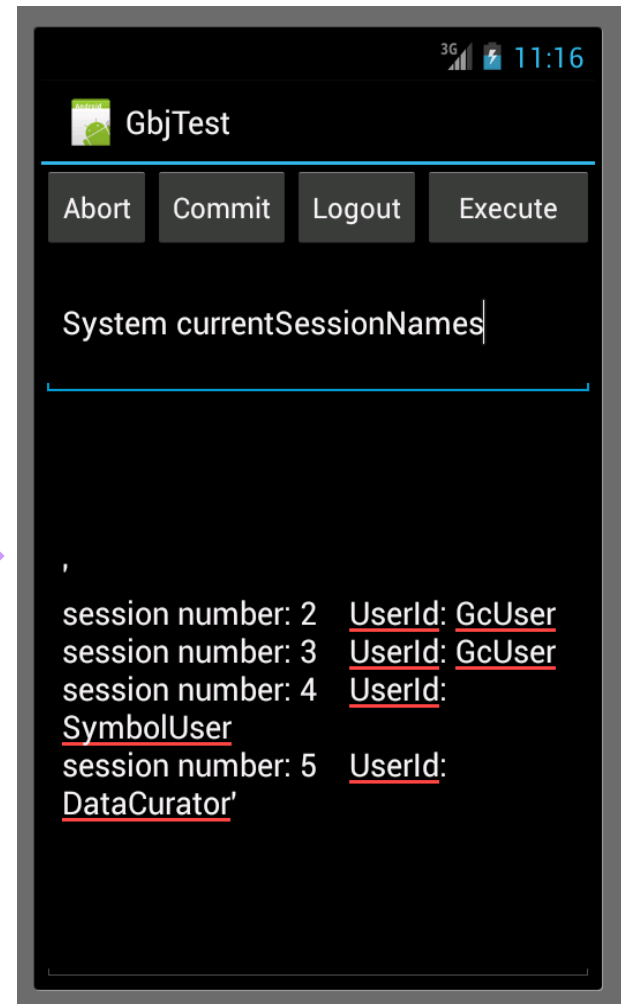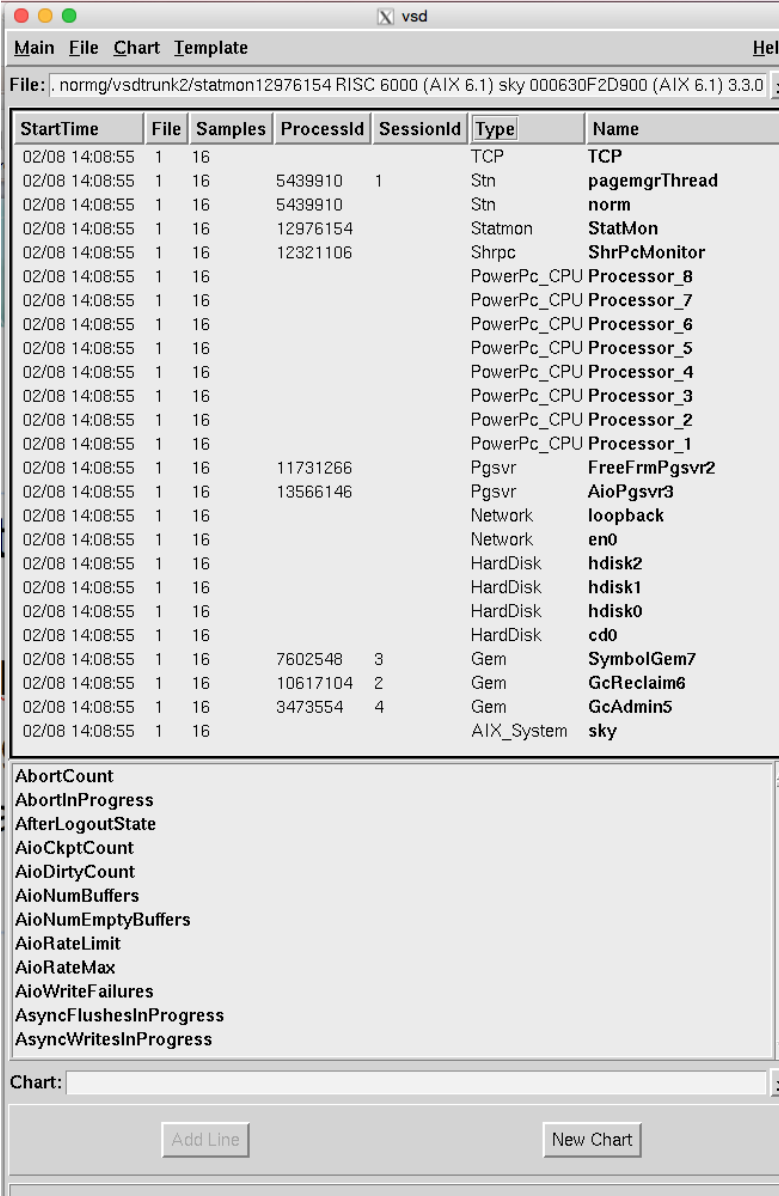
Android Test App Source Code

- Application Code:
  - ftp://ftp.gemtalksystems.com/pub/GBJ/GbjTest.zip
- Contact:
  - bill.erickson@gemtalksystems.com

GemStone/S 64 3.3

- VSD 5.0 Improvements
  - Update TCL/TK to 8.6
  - Replace obsolete BLT package
  - Set a master background color for all windows
  - Right-click to copy Y Value of a point to the clipboard.

GemStone/S 64 3.3

- Copy Y Value Example

GemStone/S 64 v3.3 Platforms

- Object Server (Database)
  - Linux x86_64
  - Apple Darwin 64 bit
  - Oracle Solaris 64 bit
  - Oracle Solaris SPARC 64 bit
  - IBM AIX 64 bit

- Cincom® VisualWorks® 7.9.1 / 7.10.1 Clients
  - MS Windows 7/8 32 bit
  - MS Windows 7/8 64 bit
  - Linux 32/64 bit
  - Solaris SPARC 32/64 bit

- Instantiations VA Smalltalk™ 8.6 / 8.5.2 Clients
  - MS Windows 7/8 32 bit

GemStone/S 64 3.4

- More lz4 Support:
  - Statmonitor
  - VSD
  - Copydbf
  - GsFile
  - Backup/Restore

GemStone/S 64 3.4

- Multi-threaded Mid Cache Page Server
- Improve commit performance
  - Reduce memcpy() calls
- <Your Suggestions Here>

GemStone/S 64

- Common Feature Request:
  - *"Add more login/authentication options."*
- But which ones?

Today We Support:
  - GemStone User ID / password
  - LDAP
  - UNIX password / PAM

GemStone/64 3.4

- Options:
  - GSSAPI with Kerberos
  - SSL Certificate
  - RADIUS (Remote Authentication Dial In User Service)
  - SSPI (Security Support Provider Interface)
- Please tell us which would be most useful.

GemBuilder for Smalltalk (GBS)

- GBS 8 for Cincom® VisualWorks®
  - VisualWorks® 7.9 and 7.10 Support
  - Support for GS/64 3.3
  - Improved replication performance
  - Bug Fixes
  - Beta now available upon request.
  - GA: August 2015
- GBS 9 for Cincom® VisualWorks®
  - VisualWorks® 8.x Support
  - GA: December 2015

GemBuilder for Smalltalk (GBS)

- GBS 5.4.3 for VA Smalltalk™
  - Support for GS/64 3.3
  - Support for VA Smalltalk™ 8.6.1
  - GA: September, 2015

- GBS 10
  - Integrated code base.
  - Support both Cincom® VisualWorks® and VA Smalltalk™
  - 2017

GemStone/S Licensing Models

- Perpetual
  - Buy once, own it forever
- Annual Subscription
  - Pay annually, cancel any time.
- Value Added Reseller (VAR)
  - Percentage of royalties

GemStone Community Edition

- Formerly *GemStone Web Edition*
- As of April 30, 2014

	Starter	Limited	Full	Extended SPC	Extended CPU	Extended Full
License Kind	Perpetual	Subscription	Subscription	Subscription	Subscription	Subscription
Cores	2	2	2	2	4	4
SPC	1 G	2 G	2G	4G	2G	4G
Gems	10	20	Unlimited	Unlimited	Unlimited	Unlimited
Disk	10G	50G	Unlimited	Unlimited	Unlimited	Unlimited
Development DB	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Production DB	1	2	Unlimited	Unlimited	Unlimited	Unlimited
Tech Support	Community	Community	5 tickets	10 tickets	10 tickets	20 tickets
Price	Free	Free	$1500/yr	$3000/yr	$3000/yr	$6000/yr
Distribution	With Product	Email addr	Sales	Sales	Sales	Sales

Source: http://gemtalksystems.com/index.php/lc-licensing/

Questions?

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