

# COBOL Compiles on the Cloud

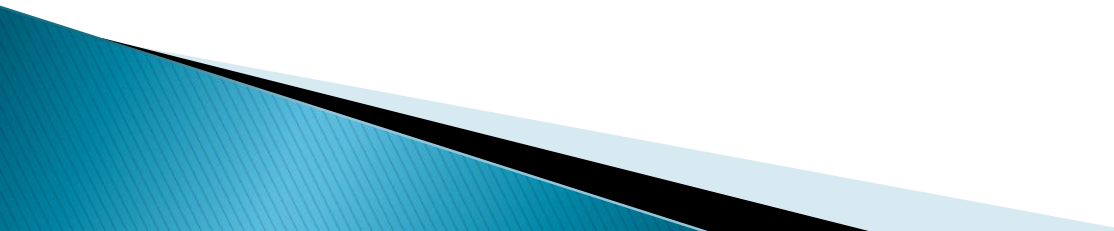
Richard Ralston  
Humana Inc.

Share - San Francisco  
Session 12918  
February 6, 2013 - 15:00

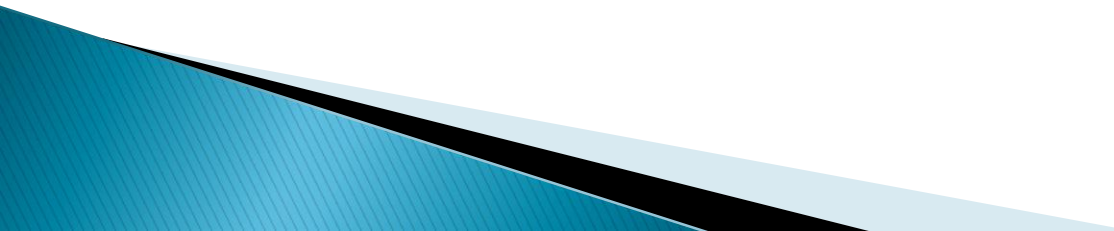
# Its All About Saving Money

- ▶ Mainframe cost containment, software and hardware forces us to continually look for more cost effective solutions
- ▶ The mainframe is here to stay
  - It's the heart of IT
  - Major business processes all have the majority of their data in mainframe storage
- ▶ We've already picked the low hanging fruit
- ▶ We've provided a slower cost growth
  - Sub-Capacity pricing, audited and verified every month
  - Hardware upgrades
    - Technology dividend on software – VWLC/AWLC pricing
    - Better lease/purchase terms
  - Software cost offload – zIIPs, zAAPs
  - LPAR Defined Capacity/Group Capacity Limits
  - Negotiated better pricing on 3<sup>rd</sup> party software
  - Eliminated unused software
  - Replaced software where appropriate with lower cost equivalents
  - Finding and fixing inefficient application code

# COBOL Cost Containment

- ▶ At one point in time we had 4 different COBOL compiler versions
  - ▶ Over time we eliminated 2 old versions
  - ▶ We started upgrading the current version of COBOL and eliminating its predecessor
  - ▶ We still have some 24 bit COBOL which we are slowly upgrading as these programs get upgrades
- 

# COBOL Issues

- ▶ The COBOL compilers were licensed for all machines
  - ▶ Some programs got tested with one version of COBOL and placed in production with another
  - ▶ Mismatched compile options between test and production
- 

# Solving the Problems

- ▶ A co-worker developed a compile process for test and production to solve the compile version and options problems
- ▶ We canceled the 24-bit COBOL license, all COBOL compiles must now convert to the current (31-bit) COBOL version (IBM COBOL V4 5655-S71)
- ▶ We were planning on a multi-job process routing all compiles to LPARs on one machine
  - IDMS and DB2 binds
  - Reduce licenses to one machine, reducing cost

# COBOL Compiles on the Cloud

- ▶ We found a provider offering COBOL compiles on the cloud, Cloud Compiling
  - Cloud compile is the ability to shift the compiles off your mainframe to the vendor's data center
- ▶ Eliminates the need for multi-job compile processes
- ▶ Our contract negotiation provided lower cost than our IBM VWLC costs
  - We pay an attractive percentage of the IBM VWLC cost for COBOL compiles
  - We audit the cloud compile usage and VWLC cost with LCS from I/S Management Strategies, Ltd.

# IBM COBOL

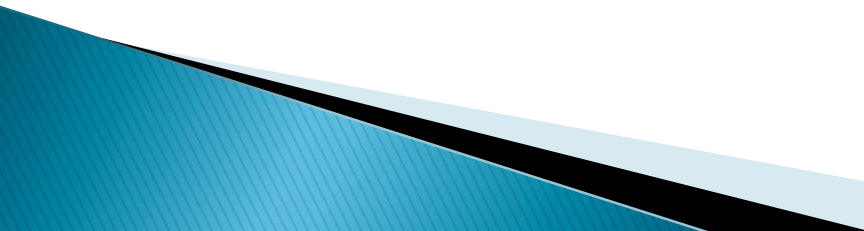
- ▶ We kept our license for IBM COBOL V4 (5655-S71) so we could do compiles in-house if the network connections or service are not available
- ▶ The COBOL V4 no 89 parameter in SCRT was set to \*NONE
  - \* IBM ENTERPRISE COBOL FOR Z/OS V4
  - 5655-S71=\*NONE
- ▶ We pay the 0-3 MSU charge every month to keep the compiler available

# How does Cloud Compile work?

- ▶ By using customized software (named exactly the same as the compiler), the following occur:
  - The compile is intercepted at the compile job step
  - The cloud compile software dynamically builds FTP files to send the expanded source code to the vendor site
  - Once the source FTP (USS task) is successfully completed the in-house compile job is placed into a wait state.
  - The vendor site compiles the source
  - A FTP of the output of the vendor compile back to the original compile job is invoked
  - Once the FTP is successfully completed, the in-house compile job continues through the rest of its steps
- ▶ Note, all compile options must be specified to guarantee a proper compile



# The Implementation Path for Cloud Compile

- ▶ The customized software was initially implemented into a “TEST” library
  - ▶ A wide variety of tests were submitted using the test library (CICS, IDMS, DB2, Batch, and combinations of software)
  - ▶ When testing was complete, the standard compilation tool was modified to use the new library
  - ▶ When it proved to be fully functional, the new test library members were copied into the production libraries for all compiles to use
- 

# The Differences Between Cloud Compiles and In-house Compiles

- ▶ There are three identifiable output files that come out of Cloud Compile that do not come out of in-house compiles.
  - TCCPRINT contains the following:
    - TCC0001I The Cloud Compiler CC 5655-S71 V3R1.3 starting at 12:43:02 on 12/06/2012 (Build 208011818)
    - TCC0002I Copyright 2009, 2010, 2011 Charles Mills Consulting, LLC
    - TCC0042I Cloud Compiler parameter file is CLOUDCMP.CNTL(SVCPARMS)
    - TCC0057I Starting processing on Facility FNTS at 12:43:02
    - TCC0035I Cloud Compiler terminating at 12:43:09, return code 0
  - TCCFTP contains all information about the FTP processes to and from the cloud compile vendor's location.
  - TCCSYSMS contains the JES2 Job Log from the vendor's location for the compile.
- ▶ The cloud compile program creates USS tasks to perform the FTP processes with the proper parent child relationships

# Cloud Compile Results

- ▶ CPU utilization in the compile step is 2 to 3 times higher with cloud compile due to the dynamic FTP steps. While it is higher, it is still a miniscule amount.
- ▶ The wall clock time is about 2 to 3 times longer in the compile step.
- ▶ Because of the USS FTP tasks, we discovered COBOL compiles that we didn't know about, occurring in TSO
- ▶ Having multiple CEC's and LPAR's several of which are licensed to use the compilers, is a significant software licensing cost. By eliminating the need for these licenses, a significant savings is achieved
- ▶ So far we have had no legal, security, or integrity issues with sending our COBOL programs to the cloud for compiling
- ▶ THE JUICE IS worth the squeeze!

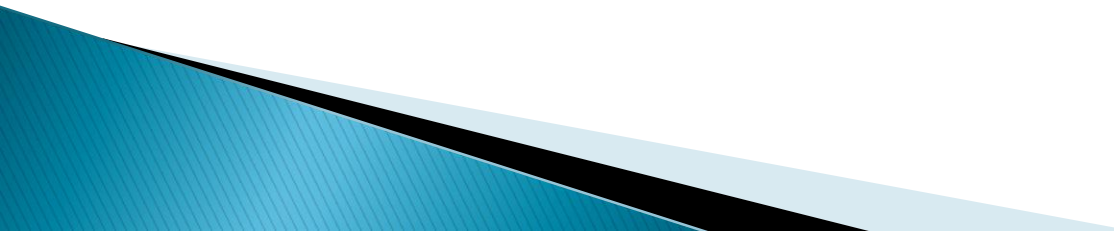
# A Quick Aside

- ▶ We also looked at our C++ compiler
- ▶ It was licensed on one machine only
- ▶ We found out we had done 3 C++ compiles in the previous 12 months
  - 2 users
  - 3 tests
- ▶ We cancelled the license for the compiler
- ▶ Since that time we have had 1 time we needed it to compile a vendor exit, it was rewritten in assembler

Questions?



# Thanks!

- ▶ Rick Howlett, Humana – The Compile process, implementation and the significant portions of this presentation
  - ▶ Tom Wilson, Humana – Installation of the Cloud Compile software
  - ▶ Al Sherkow, I/S Management Strategies – LCS enhancements to audit/report on cloud compile usage
- 

# Who provides Cloud Compile?



**Budd J Rutter II | Founder**

Phone: 651-216-2222

Toll Free: 877-245-4322

Email: [budd.rutter@CloudCompiling.com](mailto:budd.rutter@CloudCompiling.com)

[www.CloudCompiling.com](http://www.CloudCompiling.com)