JES3 to JES2 Conversion – A User's Experience

One of the most infamous sessions ever sponsored by the SHARE JES2 Project was the "JES3 to JES2 Conversion – A User's Experience", presented at SHARE 75 in New Orleans by Liz Quackenbush from AT&T in Kansas City, MO. Many remember this session well because Liz's conclusions were not exactly what the sponsors of the session wanted to hear. Their displeasure was evidenced all too clearly in the look on the face of the session chair as she spoke.

Her foils were very simple. (In those days, foils were intended primarily as an outline to the speaker.) Those that attended her presentation may recall she spoke at length about each topic. In particular, she spent time discussing the reasons for the conversion and how, in retrospect, they really made no sense. It was clear from her comments that she considered the conversion to have been a mistake. Functionality was lost, performance suffered, and more manpower was required to run the data center after the conversion than before. Her presentation was given more than two years after the actual conversion, so she had plenty of time to assess the post-conversion results.

What's especially interesting is that most of her complaints about the JES2 environment remain valid to this day – some 13 years later. Functions such as dependent job control, deadline scheduling, high water mark setup, device pooling, job class constraints, greater than 36 job classes, setup and main barriers, JMF, and more continue to be available only to JES3 installations. She complained that batch performance seemed slower and was not well balanced (the image submitting the jobs dominated) and that JES2 consumed more memory and CPU resources than JES3. We know these problems still exist today, even in the most advanced JES2 installations.

The only complaints that appear to have been addressed are those regarding operator consoles (lack of single system image) and the lack of a composite (merged) log. Today, sysplex MCS consoles provide equivalent function to both JES2 and JES3 installations (JES3-managed consoles don't even exist any more except for RJP workstations) and the sysplex operations log (Operlog) provides merged log capability to both JES2 and JES3 installations. However, poor performance, sysplex- rather than JESplex-wide merging, and the requirement for coupling facility hardware have prevented widespread Operlog acceptance, even by the JES2 installations that need it most.

I was fortunate enough to have attended this session personally (it was my first SHARE). This document contains a scanned reproduction of my original handout. A couple of the pages have my original hand-written notes scribbled on them. These notes impart some sense of the commentary Liz provided as she discussed those points in her presentation.

Ed Jaffe

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SHARE 75

O422

JES3 TO JES2 CONVERSION

A USER'S EXPERIENCE

AUGUST 14, 1990

Liz Quackenbush

AT&T

Kansas City, Mo.

ON JUNE 12, 1988 THE AT&T

KANSAS CITY DATACENTER

CONVERTED A JES3 5-PLEX

TO JES2

AGENDA

WHY WE CONVERTED

HARDWARE CONFIGURATION

SOFTWARE ENVIRONMENT

WORKLOAD

TIMELINE

PLANNING TEAM

CONVERSION APPROACH SELECTED

PREPARING THE PEOPLE

PREPARING THE WORK

TESTING

CONVERSION

RESULTS

CONCLUSIONS

WHY WE CONVERTED

- **PORTABILITY OF APPLICATIONS**

- **SHARED LABOR POOL**

In retrospect:
JES was not the issue. Original reasons were not important,
[redacted] Application portability was not affected.
Next door was JES2 shop,

Another site converted from JES2 to JES3.
Where? Denver Colorado.

- **LOCAL SITE DECISION, NOT A CORPORATE DIRECTION**

DATA CENTER ORGANIZATION

- OPERATIONS
- RESOURCE/HARDWARE MANAGEMENT GROUP
- PRODUCTION CONTROL
- SYSTEMS PROGRAMMING--REPORTS TO HEADQUARTERS
- APPLICATION DEVELOPMENT--LOCAL and REMOTE

HARDWARE ENVIRONMENT

SY1 3090-200E LOCAL TSO,BATCH

SY3 3090-300E LOCAL TSO,IMS,BATCH

SY4 3090-200E LOCAL IMS,BATCH

SY5 3081 GLOBAL BATCH,TEST SYSTEMS

SY6 3081 LOCAL IMS,BATCH

HARDWARE ENVIRONMENT

650 DASD actuators

128 Cartridge tape

16 reel tape

45 RJE stations

85 NJE nodes

JES2 ADDITIONAL HARDWARE

16 Cartridge tape

1 Solid State device

2 Tape library displays

JES3 SOFTWARE ENVIRONMENT

JES3 2.1.5

MVS 2.1.7

UCC7

Limited user mods and DSP's

JES2 SOFTWARE ENVIRONMENT

JES2 2.1.5

MVS 2.1.7

UCC7

STAM → JES3 provided

SUPERCONSOLES → JES3 provided

JESMASTER → (E)JES

MSX → JES3 provided (sort of)

JCLCHECK

Limited mods

WORKLOAD

- 8,000 JOBS per DAY
- 108,400 TAPE MOUNTS per MONTH
- MIX OF TEST AND PRODUCTION
- MOST PRODUCTION SCHEDULED IN DATA CENTER
- SOME WORK SCHEDULED FROM VM, UNIX, RJE
- NJE PRIMARILY SYSOUT TRANSMISSION
- TWO CHANNEL EXTENDED LOCATIONS

TIMELINE

- JAN 88 PRELIMINARY PLANNING
- MAR 88 INTENSIFIED PLANNING
- MAR 88 BEGAN POSITIONING ACTIVITIES
- MAY 88 SYSTEMS PROGRAMMING TEST
- MAY 88 USER TEST
- JUN 88 FLASH CUT

PLANNING TEAM

- SYSTEMS SOFTWARE
- DEVELOPMENT--TECHNICAL SUPPORT GROUP
- DATA CENTER
  - OPERATIONS
  - PRODUCTION CONTROL
  - RESOURCE MANAGEMENT

APPROACH SELECTED

- MAKE CHANGES AHEAD OF TIME, AUTOMATED CHANGES
- FLASH CUT THE COMPLEX
  - RISKIER, BUT EASIER TO MANAGE
  - AVOIDED SWING HARDWARE
  - AVOIDED CONSTANT JCL CHANGES
  - AVOIDED SCHEDULING CONFUSION
- MANAGEMENT SELECTED SHORT TIME FRAME
- NEW STANDARDS IMPLEMENTED AT THE SAME TIME

PREPARING PEOPLE

- OPERATIONS---JES2 training

  OJT at co-located data center

- PROD. CTL.-----Training on new tools

  Used co-located data center

- APPL DEVLP---Training on new tools

  Training seminars

- SYS PGMER----Discussions with other centers

  Trained 1 person on JES2 after cut

  Provided documentation to other groups

- VM/UNIX ---Broadcast messages issued to all users

PREPARING THE WORK

- DONE AHEAD OF THE FLASH CUT
- AUTOMATED MOST JCL CHANGES
- CONVERTED JOB CLASSES
- IMPLEMENTED MELLON BANK MODS--/*RESOURCE
- USED //OUTPUT DELETED //*FORMAT

TESTING

- NO TEST PROCESSOR
- SYSTEMS PROGRAMMING TEST
  - IPL AND BASIC TEST FOR 8 HOURS
  - MEMORIAL WEEKEND TEST FOR 16 HOURS
- USER TEST
  - MEMORIAL DAY 12 HOUR
- PERIODIC STATUS MEETINGS

CONVERSION WEEKEND

- SHUT DOWN SITE 16 HOURS EARLY
- HARDWARE INSTALLATION
- NEW ENVIRONMENT ESTABLISHED
- NEW ENVIRONMENT TEST BY SYSTEMS PROGRAMMING
- OPERATIONS TESTING FOR 4 HOURS
- USER TESTING FOR 12 HOURS
- STATUS MEETING THROUGHOUT FOR TRACKING
- TESTING FLOWED INTO PRODUCTION
- RESOLVED PROBLEMS AS WE WENT

RESULTS

- DJC
  - Test systems given to production control
  - Some done manually
- DEADLINE
  - Home grown product provides some function
- PRE-FETCH
  - Not a big loss
  - Some fetch list created for large jobs
  - Tape library redesigned
- HWS
  - Device allocation recovery, jobs get cancelled
- DATA SET AWARENESS
  - MSX provides function

RESULTS

- DEVICE POOLING
  - Major loss
  - Cannot manage channel extended tape
  - Required application changes
- JOB CLASS CONSTRAINTS
  - Lost
- JOB CLASSES
  - 36 is too limiting--needed modification
- PRINTER CONTROL
  - More difficult to control
  - Jes3 provided more information and control
  - Jes3 commands simpler

RESULTS

- CONSOLES
  - Loss of single system image
  - Console package not as effective
  - Message routing by device group lost
- HOT JOBS
  - No setup or main barrier
- DIAGNOSTICS
  - Miss JMF and composite console log
- NJE ACCOUNTING
  - Information not easily obtained or manipulated
- DISK READER
  - Local substitute

RESULTS

- PRODUCTIVITY
  - More people
- NJE
  - Path manager good but hard to understand in large network
- BROWSE SPOOL
  - Great for looking at syslog and output
- PERFORMANCE
  - No effect on TSO or IMS
  - Some batch streams seemed to take longer
  - HSM 0C4 abends when recalling JES3 migrated data sets
- OTHER
  - Execution JCL and job books are a mess

RESULTS

- RESOURCE CONSUMPTION
  - JES2 took 3 times more real memory
  - JES2 and extra products consumed 10% more cycles
  - JES3 took 40K of CSA per image
  - JES2 took 175-250K of CSA per image

RESULTS

- **BATCH WORKLOAD BALANCING**

  - **The image with the automated scheduler dominates**

CONCLUSION

- A LOT OF WORK TO CONVERT
- EXPENSIVE TO CONVERT
- RESULTS WILL BE DIFFERENT FOR EACH USER