Innovative Customer Solutions to IMS Challenges

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HL

Abstract

IMS has been running the world for years. Over those years customers have hit a few bumps in the IMS road and have sometimes used innovative approaches to address the problems they have encountered. This session will look at these real world challenges and customer solutions to them.

EMEA – Financial Institution

- The Challenge
  - Replace batch processes for database backup and reorg
  - Expanding business required increasing number of HALDB databases and partitions
    - From 4 HALDBs with about 32 partitions to 8 HALDBs with about 300 partitions
  - Existing home grown process for adding partitions and doing rebalance did not scale for the future growth requirements
    - Needed 101 jobs for a 98 partition HALDB
- The Solution
  - Upgrade to an online reorg that could do the partition rebalancing during the reorg
- The Results
  - Number of jobs reduced from 101 to 5
  - Greatly reduced the time needed for HALDB maintenance and partition extension and most of the time the databases were online
  - Almost 24x7 data availability for their customers

NA – Health Care Provider

- The Challenge
  - Regulatory requirements did not allow deletion of data
  - As the active set of IMS databases reached capacity they were archived and a new set created
  - Had 15 sets of archived databases and occasionally one of these would get updated
  - Backed up all 15 sets of archive databases daily to ensure recoverability
  - Backups were running about 4 hours per day
- The Solution
  - Implemented conditional image copy
  - Only backed up archive database if it had changed
- The Results
  - Daily backup completed in 30 seconds
  - > 99% reduction in backup processing time
  - Significant reduction in space needed to hold backups

EMEA – Financial Institution

- The Challenge
  - Determine if they had applications taking too many checkpoints and using excessive CPU
  - Find any cost reduction areas they could
- The Solution
  - Ran the no charge BMC Checkpoint Frequency Analyzer (CFA) utility (see presentation at 2018 GSE UK conference for details)
  - Surprised to identify a lot of programs that issued far too many checkpoints
  - Used checkpoint pacing to eliminate many unnecessary checkpoints
- The Results
  - Enormous unexpected general processor CPU reduction
  - Deferred a planned CPU upgrade saving significant cost

NA – Data Center Services Provider

- The Challenge
  - Unable to offer 24x7 availability to customers
  - Retiring DBA's and loss of knowledge
  - At risk of losing customer revenue by not providing premium service
- The Solution
  - Convert from standard image copies to snapshot image copies
  - Convert from standard IMS reorg to online reorgs
- The Results
  - For image copies
    - 92% reduction in elapsed time
    - 57% reduction in CPU consumption
    - > 99% reduction in downtime
  - Can charge extra for a premium offering of 24x7 application availability to their customers
  - Have tools that step new people through database procedures and get through more difficult tasks

APJ – Financial Institution

- The Challenge
  - Increase availability of IMS databases
  - Improve recoverability of IMS databases
  - Remove regulatory risk on recoverability
- The Solution
  - Replace standard change accumulation with vendor product
  - Proactive management of IMS databases through using trending analysis to schedule maintenance before it becomes critical
- The Results
  - Simplified batch schedules – 32 batch change accumulation jobs reduced to 1 batch job
  - 80% CPU saving
  - Elapsed time reduced by 93% to 2.7 minutes
  - Run jobs everyday now, including weekends, reducing the time to recover if they have a problem
  - Met regulatory requirements for recovery SLAs

NA – Telecommunications Company

- The Challenge
  - Remove risks of long running reorg jobs impacting Monday morning on-line processing
- The Solution
  - Moved all IMS reorg jobs to use conditional reorg
- The Results
  - Reduced IMS reorg jobs by 90%
  - Saved CPU and elapsed time
  - Conditional reorg process highlighted unbalanced HALDB partitions so DBAs can rebalance them and stop unnecessary reorgs on those as well
  - Can safely run the entire set of conditional reorgs even on month-end or release implementation weekends with no noticeable impact

NA – Data Center Services Provider

- The Challenge
  - Wanted optics into what was running during online reorg processing
  - Needed to find BMP programs using basic versus extended checkpoints
  - Wanted to implement pause/resume processing to allow online reorgs to complete even when BMPs were running
- The Solution
  - Used the BMC Checkpoint Frequency Analyzer utility (see presentation at 2018 GSE UK conference for details) to report on the type of checkpoints the programs were taking
  - Received information on duration of BMPs with basic checkpoints
- The Results
  - Know which programs need to be converted to extended checkpointing
  - Can prevent basic checkpoint programs from running during online reorg window

APJ – Financial Institution

- The Challenge
  - Few branch banks so most customers rely on online and mobile banking
  - Two hour weekly outage for offline IMS reorgs was causing customer impact and dissatisfaction
  - Daily image copies also caused an outage
  - Wanted processes with near zero down time
- The Solution
  - Converted IMS reorgs to online reorgs
  - Used zero outage batch image copy of IMS databases to eliminate daily outage time needed to get a clean image copy
- The Result
  - Initially reduced outage time to under 2 minutes
  - Converted to using prefix swap for HALDB databases to reduce outage a further 66% to under 40 seconds

NA – Financial Institution

- The Challenge
  - Applications area needed a copy of production data to duplicate problems
  - Data needed to be correlated across multiple databases to create composite test bed
  - Current unload/load process was taking up to three weeks during which the data had to be in read only mode
  - Data integrity was regularly compromised
  - Risk for data breach and delays were prevalent as a result of unmasking the applications data
  - Very difficult and costly to maintain a pristine copy of the data
- The Solution
  - Used online reorg process to duplicate the data
  - Included inline data masking to avoid data exposure
  - Used exit to do business correlation processing
  - Used bypass pointer error processing to allow production to remain in update mode during replication
- The Result
  - Reduced time to under two days to replicate environment

NA – Data Center Services Provider

- The Challenge
  - Reduce outage window needed for IMS reorgs
  - Reduce fraudulent credit card processing for transactions that could not be validated during outage
- The Solution
  - Replace standard IMS reorg with a vendor product
- The Results
  - Workloads exploited more zIIP processing reducing monthly costs
  - Outage time was cut in half
- Late breaking news
  - Upgraded offline reorgs to one-step read only online reorgs
  - Reorgs are even faster and CPU is reduced further

EMEA – Data Center Services Provider

- The Challenge
  - IT staff could not quickly recover data that was not correctly written to IMS during client data transfers
  - These errors sometimes caused outages that made meeting service level agreements (SLAs) difficult
  - Failure to meet SLAs could result in unhappy clients as well as financial penalties
- The Solution
  - Use a recovery solution that provides point-in-time, roll-forward and full recovery
- The Results
  - With rapid recovery from data errors, the services provider consistently meets customer expectations
  - Resulting in higher customer satisfaction
  - Lower risk of incurring financial penalties that affect profitability
  - In one incident, they completely restored missing data in just 20 minutes, saving days of manual recovery efforts

NA – Financial Institution

- The Challenge
  - Increase application availability by reducing impact of doing IMS backups
  - Increase performance of backup/recovery process
- The Solution
  - Replaced standard image copy utility with integrated backup and recovery solution
- The Results
  - 70% CPU time reduction
  - 70% execution processing reduction
  - 50% elapsed time reduction
  - Simplified object handling
  - Highly recoverable data with 100% data integrity

NA – Manufacturing Company

- The Challenge
  - Increase plant production
  - Weekly IMS maintenance window was 10 hours if no abends occurred
  - Plant production was shut down for a minimum of 520 hours annually
- The Solution
  - Acquired product to eliminate out of space related ABENDS
  - Implemented online reorg
  - Used disk snapshot capabilities to speed up processing
- The Results
  - Weekly maintenance window reduced to 25 minutes

NA – Financial Institution

- The Challenge
  - Reduce time to recover following a major outage
  - Took nearly 30 hours to recover their data and resume online services
  - Lack of Point In Time (PIT) recovery capability resulted in a large amount of manual activity prior to restoration of services
- The Solution
  - Implemented coordinated PIT recovery between DB2, IMS, and VSAM datasets
  - Employed forward recovery, change accumulation and back-out capabilities
  - Confirmed accuracy of recovery
- The Results
  - Were able to recover from any data outage within two hours

NA – Data Center Services Provider

- The Challenge
  - Needed to be able to reset test environments back to base line
  - Were using an application process to reverse updates
  - Was taking longer to reset the test environment than the testing took leading to long wait times for testers
- The Solution
  - Set a recovery point prior to test run
  - Use recovery product to do a point in time recovery to recovery point
- The Results
  - Test environment reset at utility speed
  - More testing could be accomplished to verify business results
  - Happier testers

NA – Telecommunications Company

- The Challenge
  - Was going to get rid of IMS so froze the environment at old maintenance levels
  - Decided IMS was not going away
  - Wanted to provide high availability for their batch DLI IMS environment
    - Needed to convert to DBRC
    - Needed to add checkpoint/restart logic to applications
- The Solution
  - Used restart product to dynamically add checkpoint logic to applications
  - Used sequential intercept capability to manage flat files as if they were GSAM
  - Used log exchange capability to override existing batch logging
- The Results
  - Converted to DBRC without needing to find and change all the existing logging logic in the applications
  - Alleviated locking issues by having applications take regular checkpoints

APJ – Financial Institution

- The Challenge
  - Have a number of different connections into IMS Connect, some go through z/OS Connect and others go direct into IMS Connect
  - z/OS Connect is defined to IMS Connect as a “Trusted Client” and therefore IMS Connect does not have to authenticate the traffic that comes through that connection, but all other traffic coming into IMS Connect is NOT “trusted”
  - IMS Connect cannot handle the issue of some traffic is “trusted” and some traffic is “not trusted” without coding assembler exits
- The Solution
  - Implemented a vendor product to dynamically manage the security of multiple third party transactions using TCP/IP
- The Results
  - Significant simplification of digital security
  - Uplift in customer trust
  - Opened up more third party channels into their services

EMEA – Financial Institution

- The Challenge
  - Save IBM MLC costs
- The Solution
  - Replace MLC charged terminal support products with non-MLC products
- The Results
  - Customized terminal systems more quickly
  - Eliminated IMS restarts for system customization changes
  - Gained a central repository for customization information
  - MLC savings greater than US $1M over a period of 5-6 years

NA – Manufacturing Company

- The Challenge
  - Reduce number of IMS SYSGENs
  - Did 13 SYSGENs per year
  - Prep time was 2 weeks per SYSGEN (1040 hours per year)
- The Solution
  - Implemented online IMS resource change capabilities
- The Results
  - Reduced number of IMS SYSGENs to 5 per year
  - Reduced down time by eliminating 8 SYSGEN outages per year
  - Prep time reduced to 3 hours per SYSGEN (15 hours per year)

Summary

- IMS customers can be very inventive in how they solve problems
- Vendor products often get used in ways the vendor never envisioned
- Every so often:
  - Review what is new with your IMS tools
  - Take another look at your product manuals – you may find a capability you forgot about that applies to a challenge you have today
  - Just because you have always done it that way, does not mean that it still the best way for today's environment

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