



# Significant Mainframe Cost Savings with IAM and CICS Code Modernization



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# Significant Mainframe Cost Savings with IAM and CICS Code Modernization

Modernizing a Medical Claims Application by using CICS Threadsafe Programming and IAM with 64 Bit Buffering

## Key Benefits

- Eliminated the need for expensive processor upgrades, allowing us to “grow into” our current 75,000 MIPS (9300 MSUs)
- Significantly reduced MSUs, File I/O's, Transaction Residency, Wait and Response Time across all shifts
- Batch MSUs were reduced by an average of almost 20% across all shifts
- Eliminated costly outage situations such as CICS engine saturation, memory shortages and transaction throughput-related issues

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Modernizing a Medical Claims Application by using CICS  
Threadsafe Programming and IAM with 64 Bit Buffering

## Key Benefits

- Moved daily peak MSU consumption from prime shift to third shift
- IAM used 64-bit storage to exploit additional z13/14 memory and kept very large amounts of each file in storage (**following IBM's z13/14 Large Memory Strategy**)

A second application has now begun the IAM conversion process and preliminary tests have determined that the system resource savings will be significant.

The following charts are a small extract of a comprehensive study on the z/OS resource savings from the conversion to IAM.

# Summary and Analysis

In the early part of 2015, Performance and Capacity (PCD) recommended Innovation Data Processing's IAM. IAM replaces the VSAM access method. Medical Claims (MDC), as well as other applications, is a big user of VSAM (type of file on the mainframe) in medical claims processing. Additionally, PCD recommended significant code changes that were implemented by MDC on January 21. This change decreased system resource consumption of MDC CICS regions.

## Benefits

- The code changes in January as well as the 2017 deployment, substantially improved the performance and scalability of MDC which decreased MDC computing costs. The lesson learned is that code changes are worth the investment to maintain customer service.
- CICS engine saturation was previously an issue due to MDC architecture. IAM and Code changes decreased engine saturation.
- Processor upgrades previously driven by MDC architecture requirements of larger engine sizes are no longer an issue at this time.
- Decreased requirements for frequent VSAM REORGs due to IAM architecture.
- CPU (processors) and the I/O subsystem had significantly decreased usage across all shifts.
- IAM exploits IBM's Large Memory Strategy (up to 700 Meg per file) using 64 bit buffering. This significantly reduces waits and MSUs thus resulting in increased transaction throughput.
- MDC CICS transactions are now scheduled earlier. We are now completing more of this 'Batch' CICS work earlier so as not to impact the online day.
- ***Estimated cost savings for the last 12 months on this one application is about \$500,000 (estimating Nov/Dec). This is a 24 hour average.***

## Actions Completed

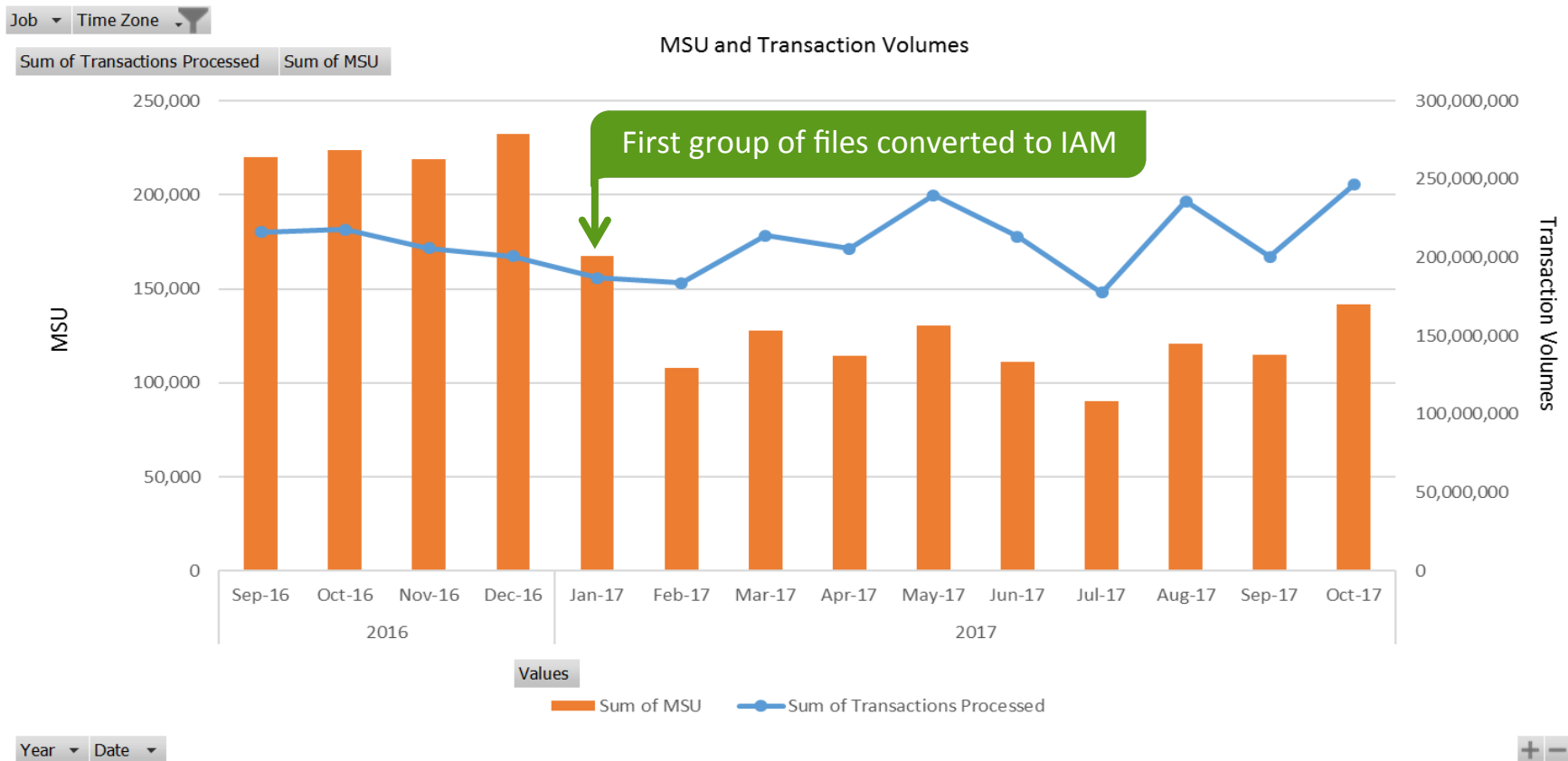
- Analysis is from extracted performance data from September 2016 to October 2017.
- The MDC Prepay Code was changed in January 2017.
- MDC VSAM files were converted to IAM.

## Next Steps

- There are additional changes that are needed to further enhance and stabilize MDC :
- Transaction Data Integrity issues in multiple CICS regions using IAM RLS.
  - IAM RLS will support batch updates with MDC onlines active!!
  - Performance issues created by multiple DD definitions of single file solved by IAM RLS at no cost.
  - Consider purchase of FDRREORG to Optimize IAM REORGs.
  - Convert additional applications to IAM when needed.
  - Make CICS transactions threadsafe when appropriate.

This document subject to Review/Correction as Needed

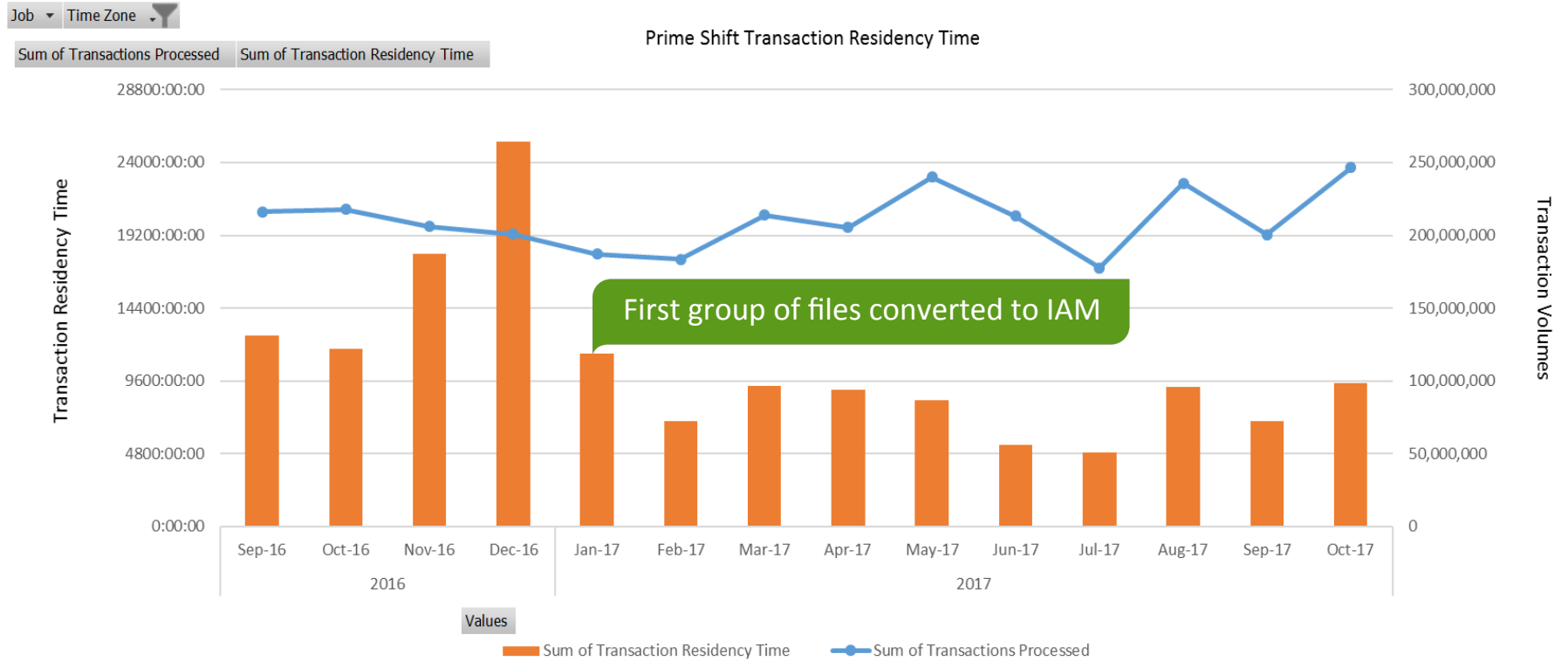
# CICS Online – Prime Shift MSU (CPU)



- MSUs decreased 49% with the January code changes and use of IAM
- IAM changes alone decreased MSU consumption by 20%
- Transaction volume remained constant

Data Source- Type 110 Records (CICS)

# CICS Online – Prime Shift Transaction Residency



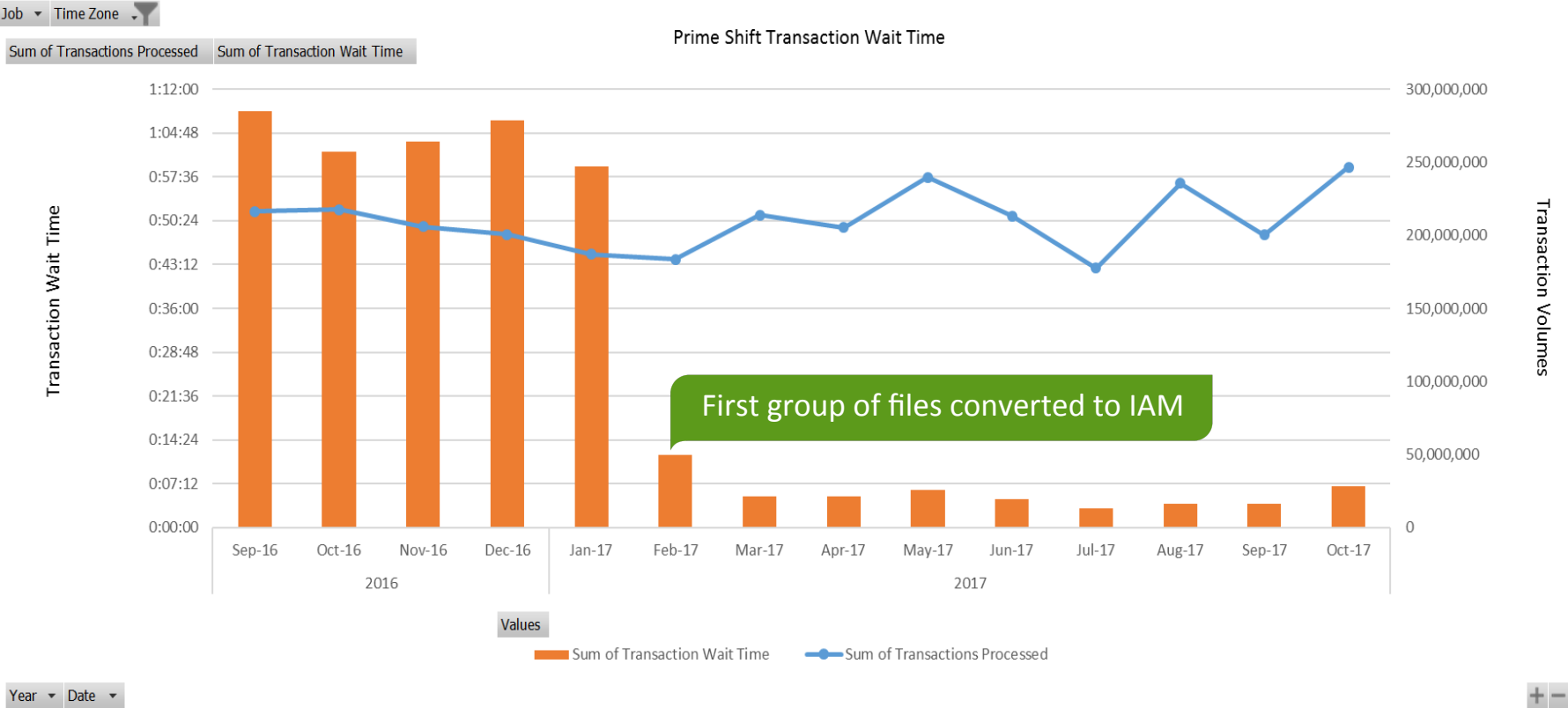
Year Date

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- Residency decreased 55% with the January code changes and use of IAM
- IAM changes alone decreased Residency by 30%
- Transaction volume remained constant

Data Source- Type 110 Records (CICS)

# CICS Online – Prime Shift Wait

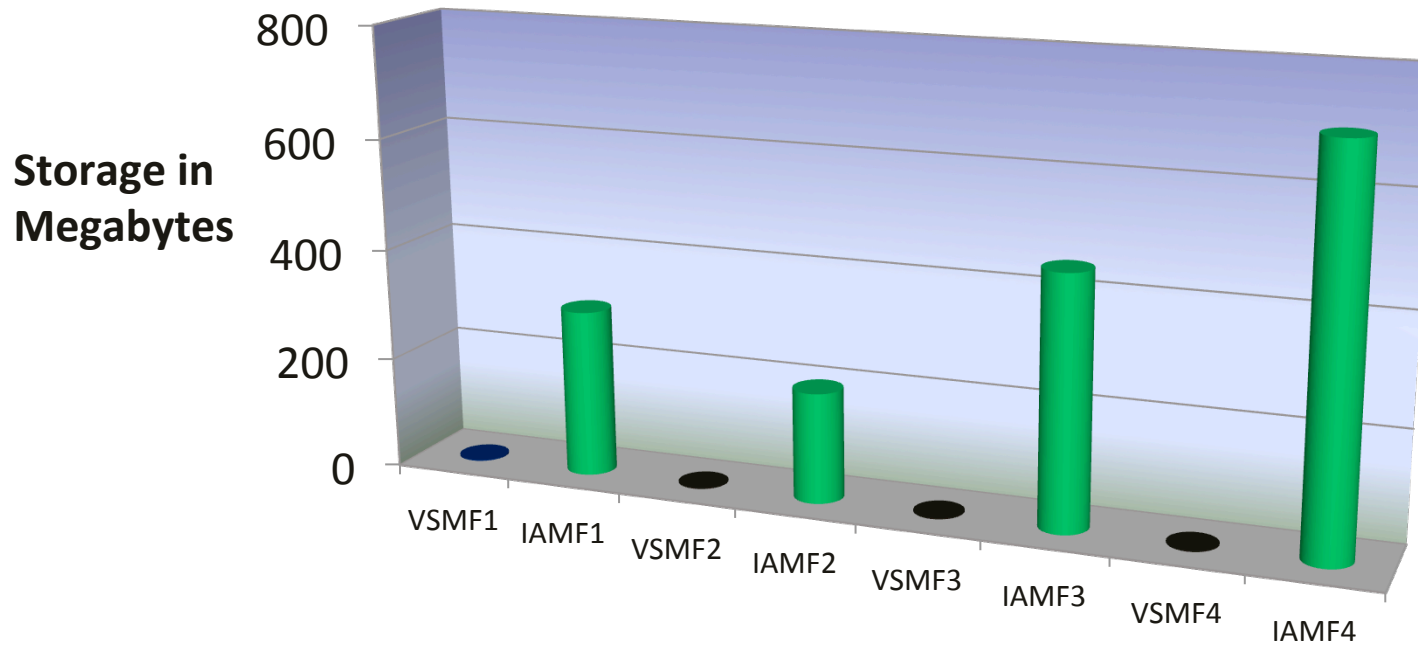


- Transaction Wait decreased 91% with the use of IAM

Data Source - Type 110 Records

# IAM – Using IBM’s z13/14 Large Memory Strategy 64 Bit Buffering in CICS

Very Active IAM Files Using From 30 to 700 Meg  
Per File



**VSAM vs. IAM Files - 13:00**

Storage used for each file is constantly adjusted to the current volume of I/O activity