**Value-4IT**

GSE UK Conference 2010: Session GC z/OS Software Cost Optimization - Several Options for TCO Reduction

Introduction - Agenda

➢Typical IBM Mainframe Expenditure Profile

➢Software Asset Management Evolution

➢IT & Software Asset Management Interaction

➢Do You Know Your z/OS Software Portfolio?

➢Software Cost Reduction: Why Bother?

➢Market Comparisons: What Information Is Out There?

➢New Mainframe Workloads & Others

➢TCO Reduction Options:

    1)   Sub-Capacity Pricing: VWLC

    2)   Software Contract Negotiations

    3)   MIPS/MSU Reduction Techniques

    4)   Simple Product Replacement

    5)   CPU Reduction: Application Tuning
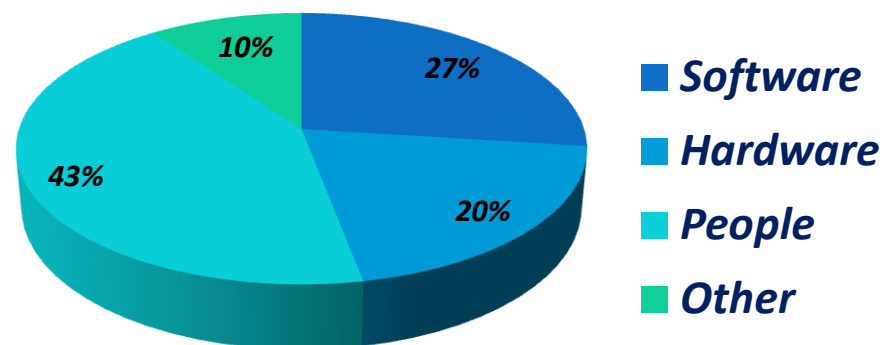
    6)   Considered Product Migration

Typical IBM Mainframe Expenditure Profile

zSeries TCO Analysis - 2008

- Software — 40%
- Hardware — 25%
- People — 25%
- Other — 10%
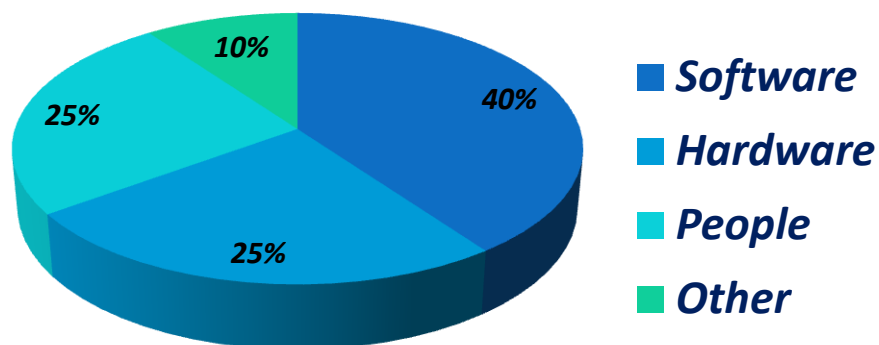
Source: zJournal January 2009

zSeries TCO Analysis - 2004

- Software — 27%
- Hardware — 20%
- People — 43%
- Other — 10%

Source: IBM May 2006

➢Software expenditure increases over time and by ~50% in 4 years

➢zSeries servers might be a commodity, sourced only from IBM…

➢Year-on-year, Mainframe personnel manage more resources!

Software expenditure is significant, so why not optimize usage?
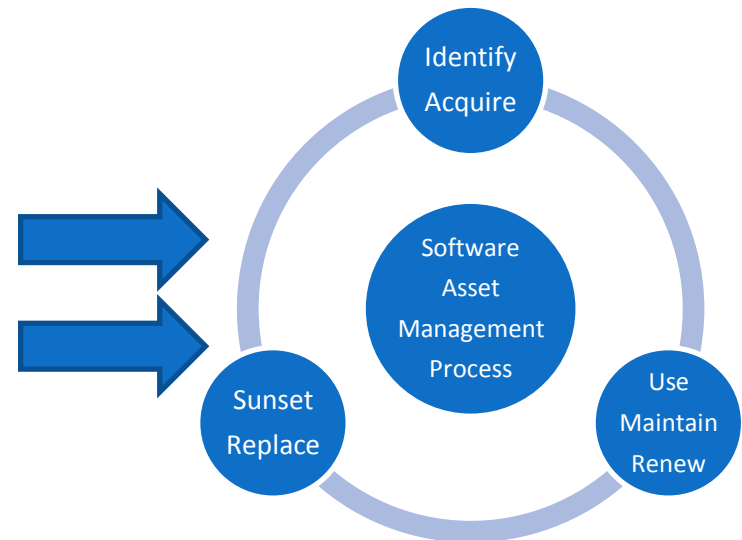
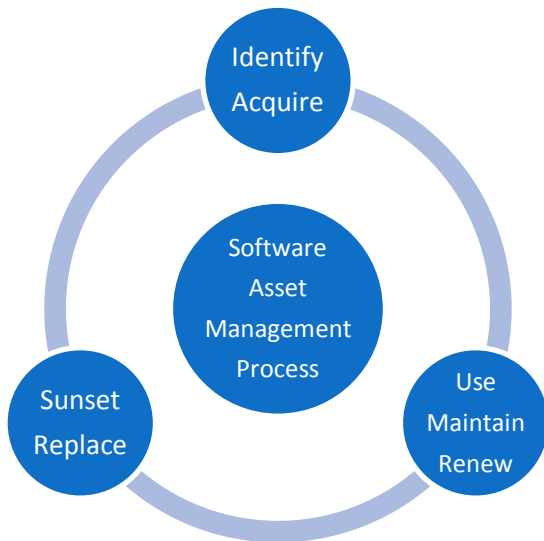# *Software Asset Management (SAM) Evolution #1*

The Traditional/Typical Model

IT Department   **Procurement Department**

Identify Acquire

Software Asset Management Process

Use Maintain Renew

Sunset Replace

➢Historically, which business group handled software negotiations?
➢Historically, were all software purchases business case justified?
➢Today, TCO, ROI and compliance justify the need for a SAM process…

Why is compliance mandatory, but cost reduction optional?

Software Asset Management (SAM) Evolution #2

Process circle diagram:
- Identify Acquire
- Software Asset Management Process
- Use Maintain Renew
- Sunset Replace

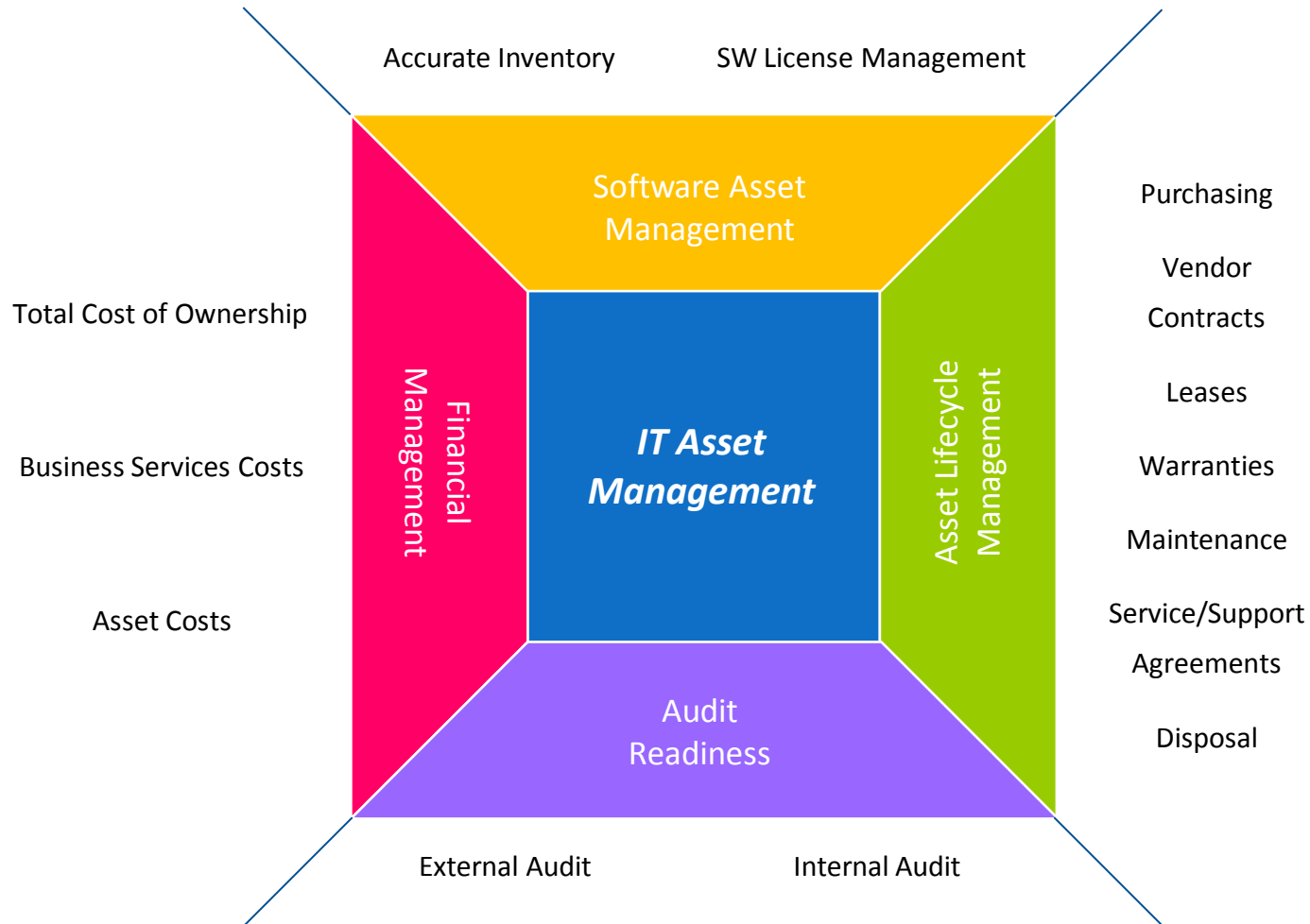**Software Asset Management Benefits**
- ✓ Auto-Discovery Tool: Who, What, When, Why…
- ✓ Usage Monitoring: Vendor negotiations
- ✓ Compliance: Licensing is legal and cost optimized
- ✓ Cost: Software invoice validation
- ✓ Chargeback: If applicable, usage based metrics
- ✓ DR/BC: Safeguard software usage for such scenarios!
- ✓ Product Testing: Who is the best group to test software?

➢ SAM can tell you more about your own business than you think…
➢ SAM puts you on an even footing for equitable vendor negotiations
➢ A successful SAM process will be self-funding, not another overhead

Many companies have delivered good cost savings with SAM!

IT & Software Asset Management Interaction

Accurate Inventory   SW License Management

Software Asset Management

Purchasing

Total Cost of Ownership

Vendor

Contracts

Financial Management

IT Asset Management

Asset Lifecycle Management

Leases

Business Services Costs

Warranties

Maintenance

Asset Costs

Service/Support

Agreements

Audit Readiness

Disposal

External Audit   Internal Audit

Don't lose sight of the big picture, IT Asset Management...

Do You Know Your z/OS Software Portfolio?

Ubiquity
DORANA

ISOGON
SoftAudit

eSolutions
maximo®
MRO

Tivoli. software
TADz - Tivoli Asset Discovery for z/OS

Tivoli. software
TAMIT - Tivoli Asset Management for IT

IBM acquires Ubiquity & ISOGON, reducing to 1 Tivoli product
IBM acquires Maximo for MRO Asset Management function

z/OS Software Auto-Discovery Tool
➢What software is installed; Who uses it; Why is it used; When is it executed, Where is it installed; How…
➢With this inventory information, you're empowered to make the best software decisions, because it's your business!
➢Software Asset Management should be evolutionary as opposed to a radical revolution. Inventory your environment, and then ISV negotiation becomes a whole lot easier…

➢Software usage compliance is just as good for you as it is for the ISV!
➢Duplicated or redundant software is typical after nn years MVS use…
➢Information is not power, it's empowering; empower your business!

Software usage via Auto-Discovery is the best starting place for SAM

Software Cost Reduction: Why Should We Bother?

Sample IBM zSeries Server Pricing Configurations Using Industry Standard Pricing

75 MSU - ~500 MIPS			150 MSU - ~1000 MIPS		
Program #	**Software Description**	**MLC**	**Program #**	**Software Description**	**MLC**
5635DB2	DB2 for z/OS	~£15,000	5635DB2	DB2 for z/OS	~£22,500
5655M15	CICS TS for z/OS	~£16,000	5655M15	CICS TS for z/OS	~£23,500
5694A01	z/OS V1 Base	~£22,000	5694A01	z/OS V1 Base	~£40,000
IBM WLC Total Monthly Cost		**~£53,000**	**IBM WLC Total Monthly Cost**		**~£86,000**
IBM WLC Annual Saving @ 10%		**~£63,000**	**IBM WLC Annual Saving @ 10%**		**~£103,000**
But, Industry Averages State ~$2,000-$5,000 (~£1,500-£3,500) Cost per Year for Software MIPS					
Total z/OS Software Annual Cost		**~£750,000**	**Total z/OS Software Annual Cost**		**~£1,500,000**
Total z/OS Annual Saving @ 10%		**~£75,000**	**Total z/OS Annual Saving @ 10%**		**~£150,000**

➢ Core z/OS products are a significant component of overall cost…
➢ Reducing MIPS/MSU consumption is of course the biggest saving!
➢ MIPS/MSU prices reduce year-on-year, but software stays the same

Even for a small user, 10% savings are conservative & worthwhile!

Market Comparisons: What Information Is Out There?

There is no "compare-the-market" web site, but:

➢If you know what software you use, contract negotiations with the ISV will be much easier & you can have major influence in discussions

➢If you're using legacy products with stabilized function, search the market for alternatives, they do exist, maybe from smaller ISV's with flexible pricing (E.g. Subscription based)

➢When was the last time an ISV called you proactively and offered a no cost education session to safeguard you're getting value from their and thus your software solution?

➢You pay ~15-25% support costs per year, get "bang-for-your-buck"!
➢ISV's wait for "compelling events", keep them "on their toes"…
➢Collaboration is the key, a value based customer & ISV relationship!

It's good to talk, so talk with the incumbent & perhaps other ISV's…

New Mainframe Workloads & Others

zEnterprise 196 (z196)

Could zBX bring a meeting of IT Management minds? Mainframe, UNIX, Linux & Windows…

System z Solution Editions:

Cost efficient integrated offerings combining servers, Middleware, maintenance and storage:

- ACI (Electronic Payments)
- Application Development
- Chordiant (Customer Experience)
- Cloud Computing
- Data Warehousing (DB2)
- Enterprise Linux (Virtualization)
- GDPS (DR/Availability)
- SAP Applications (DB2)
- WebSphere (SOA)

The IBM System z Solution Edition Series offers special package pricing for their most popular solutions that is competitive with other ISV/IHV alternatives, delivering outstanding ongoing cost of ownership (TCO) with a low acquisition cost (TCA), but of course, there's zNALC also….

Saints or Sinners - Radar Screen Observations:

- TurboHercules: Mainframe emulation for small users or DR solutions, building on Hercules foundations.
- NEON zPrime: Offloads CPU resources to speciality engines.
- Mantissa Corporation z86VM (z/Vos): Utilizes z/VM to potentially host Windows images.
- TmaxSoft OpenFrame: Rehost traditional Mainframe workloads on IFL engines.

Only you can decide, but please perform comprehensive due diligence, and as always, all that glisters is not necessarily gold!

Choose the best TCO option from day #1 and research the market!

Sub-Capacity Pricing: VWLC #1

Sub-Capacity Pricing Checklist:
- Obtain internal organizational support
- Engage your IBM account team, talk with them about your plans to investigate WLC scenarios
- Create a software inventory
- Consider Capacity Planning forecasts
- Define a "current" baseline CPC usage report
- Perform a Sub-capacity Analysis, either IBM SCPT/SCRT and/or LCS from Al Sherkow
- Determine WLC benefits for 1, 2 & 3 year terms, from planning and forecast data
- Decide whether WLC is right for you
- Engage your IBM account team, talk with them about WLC T's & C's

Sub-Capacity Pricing Planning Observations
- ✓ Always refer to the IBM Planning for Subcapacity Pricing manual (SA22-7999-nn)
- ✓ Planning costs nothing other than time, the IBM SCPT and SCRT tools are zero cost
- ✓ Consider the low cost LCS tool from Al Sherkow to simplify planning and to deliver added-value
- ✓ Be objective and dispassionate, do you really need to execute Development tools on Production LPARs?
- ✓ Don't forget about the other ISV's, ask them whether they accept SCRT reports, and draw your own conclusions…

- The worst question is the question not asked; start asking questions!
- Communicate with your suppliers, start as you mean to go on…
- Even if WLC is not for you; learn even more about your environment

Software savings: Sub-capacity planning is the best place to start!
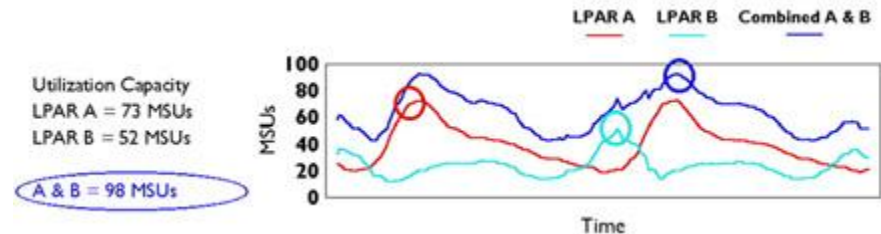
Sub-Capacity Pricing: VWLC #2

Workload Charges Summary:
- Grow hardware capacity without necessarily increasing software charges
- Support for most zSeries server configurations
- Once WLC is chosen, PSLC or ULC pricing structures no longer apply
- Lower cost for incremental growth
- Usage based "pay for what you use" pricing
- Full Capacity (CPC) WLC structure or
- Sub Capacity (LPAR) pricing for eligible products, z/OS, CICS, DB2, IMS, MQ, Debug Tool, COBOL, PL/I, SA, Netview, OPC/TWS, Domino, QMF, Encryption Facility…

Utilization Capacity
LPAR A = 73 MSUs
LPAR B = 52 MSUs

A & B = 98 MSUs

This example is for a 2 LPAR 119 MSU CPC. LPARA has an R4HA of 73 MSUs, LPARB 52 MSUs and an aggregate of 98 MSUs. Thus the customer would be charged for 98 MSUs usage. The LPAR utilization capacity is the highest sum of measured four-hour rolling MSU averages for the LPARs in the CPC in which a sub-capacity eligible product runs concurrently during a given month. The peak interval is the highest utilization determined from the sum of the utilization for all LPARs in which a particular product ran in a given hour.

- Pay for capacity on a R4HA, not on the maximum capacity reached!
- If MSU usage decreases or is seasonal, billing is proportional…
- Most customers benefit from VWLC pricing, by ~5-10% per annum

Usage based pricing should apply to all ISV software, not just IBM…

Sub-Capacity Pricing: VWLC Soft-Capping Evolution

VWLC Price vs. Performance Observations:

➢Some customers require "billing certainty", the Defined Capacity (DC) metric introduces "soft-capping" for LPARs, which can impact performance!

➢Aggregated granularity can be applied to multiple LPARs with the Group Capacity Limit (GCL) function, optimizing costs, but does not address the price vs. performance challenge…

➢An IBM recognized VWLC optimization solution, AutoSoftCapping (ASC) monitors R4HA activity, allowing a customer to define an MSU resource usage policy, dynamically managing DC metrics, transferring MSU resource between LPARs!

▸ **IMSU** : Instantaneous consumption of MSU for the LPAR

▸ **R4H** : Average of IMSU in 4 consecutive hours.

▸ **DC** : Defined Capacity, billing limit that you don't want to exceed
  ... and that you can fix at any level you want

▸ But performance can be affected (capping → IMSU is brought back to the DC) !!!
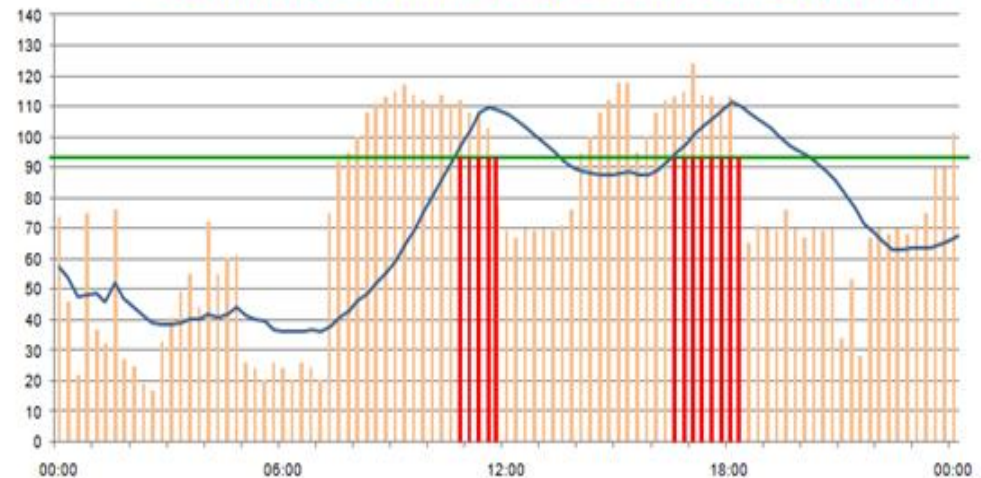
➢Only you can decide, what is most important, price or performance?

➢Many customers find a good balance using standard VWLC & GCL…

➢Cost optimization without performance impact is possible via ASC!

By definition R4HA includes unused MSU resource, which can be used!

Software Contract Negotiations: The "Enterprise" Word!

A hardware MIPS cost has reduced to ~$1,000 from $20,000 in the last 10 years, but software cost is fairly static @ ~$2,000-$5,000!

ISV consolidation, several major players, ASG, BMC, CA, Compuware, IBM, SAS, plus others; many similar products…

> IBM ESSO/ELA
> CA FlexSelect
> BMC Advantage
> Compuware Cost Savings Programme…

Software is an asset and delivers business value. We know what we use, what we need, so we must evolve a flexible usage based agreement

Enterprise Software Contracts

Beware of the compelling event; contract expiry; upgrade; M&A; change of use; balance risk with cost savings, avoid punitive penalty fees!

Carefully consider contract duration, 1, 2, 3 or n years. Maybe a shorter contract is better for our business, balancing risk & reward?

Maybe we should consider an external consultant to optimize negotiations:
> Barry J . Graham
> Prof. Bryan Foss
> David Wilson

What can the supplier do for my business; what are they offering other than pure and simple pricing? Are they focussed on us?

Good savings are possible, but balance risk with reward and beware of the compelling event; maybe consider deploying an external consultant

MIPS/MSU Reduction Techniques

IBM Speciality Engines; zIIP & zAAP Introduction
- Requires z9, z10 or z196 hardware architecture
- zAAP was originally targeted for Java workloads, now includes XML parsing ability
- zIIP offers more MSU offload capability largely based on SRB enclave type applications
- IBM software that is zIIP eligible includes DB2 Connect, DB2 Data Serving, DRDA, Parallel Queries, DB2 Utilities LOAD, REORG, and REBUILD INDEX functions; Communication Server IPSec; XML System Services; Global Mirror (zGM); HiperSockets; Common Information Module (CIM)
- ISV software that is zIIP eligible include utility tools, SOA solutions, XML processing (E.g. SQL)
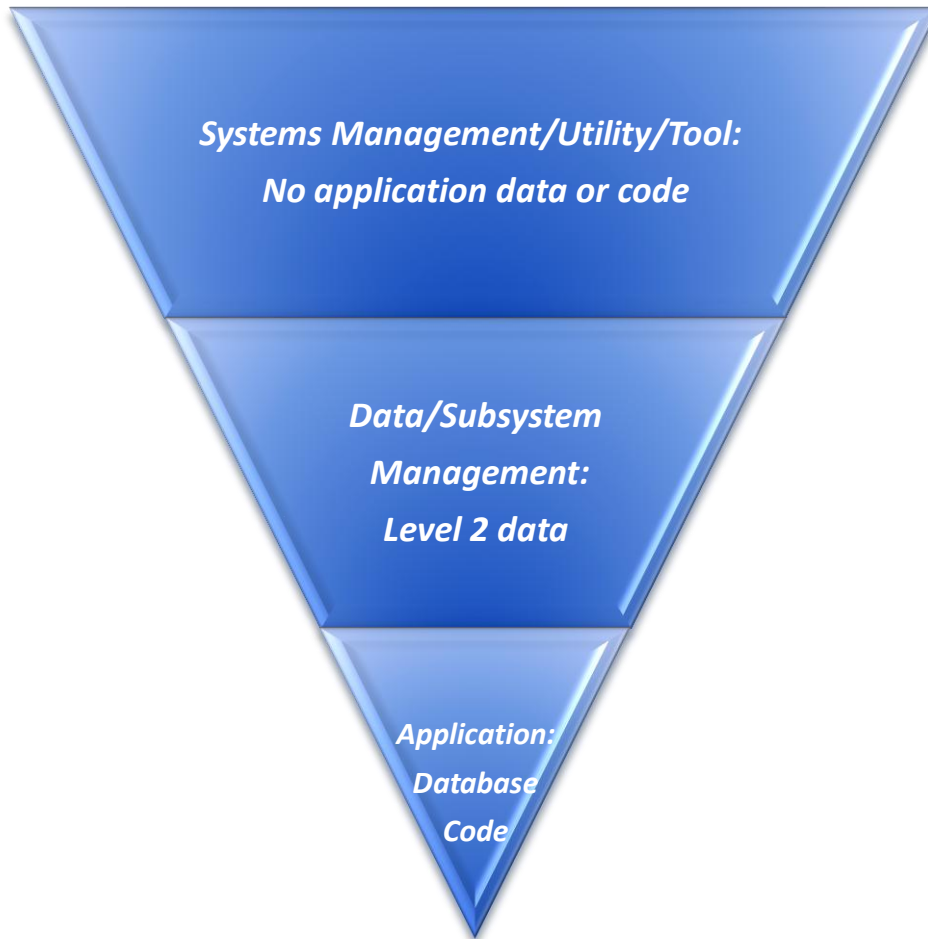
zIIP & zAAP Planning/Expectations:
- *Run IBM zIIP/zAAP analysis tools (E.g. IEAOPT PROJECTCPU) from 1+ Months RMF/CMF data*
- *Well-coded systems Management/Utility software products should offload 90%+ CPU to zIIP*
- *Typically zIIP/zAAP engines provide good ROI, reducing software charges, and releasing general purpose CPU cycles for current/future workloads*
- *Some consideration might be required for IPLA type products, as value units have already been acquired, but these can be reused as the workload grows*

- zIIP/zAAP analysis is uncomplicated and based on your CPU usage
- A speculate to accumulate implementation, but ROI is short-term
- Delivers system-wide benefit, releasing General Purpose CPU cycles!

Arguably a workload runs for free on a zIIP or zAAP speciality engine...

Simple Product Replacement

Systems Management/Utility/Tool:

No application data or code

Data/Subsystem

Management:

Level 2 data

Application:

Database

Code

Systems Management/Utility/Tool Observations:

➢Typically each and every product can be replaced by several competitive products

➢An incumbent product will have been purchased, OTC, IPLA, et al, or is on a monthly rental/lease; but most "smart" ISV's will replace a product with subscription based licensing

➢An incumbent product might be decades old, not benefitting from enhancement, whereas another competitive product might have higher function, use less resources and be lower cost…

➢From the larger ISV's you might have nn software products installed; maybe converting just 1 or a few products might keep them on their toes and improve the relationship…

➢Conversions are typically straightforward and are transparent to the business, with no risk

➢Sub-Capacity pricing should apply, so if you submit SCRT reports to IBM, the ISV should accept these also, for the relevant major IBM product; z/OS, DB2, CICS, MQ, et al…

A better product for less cost, improved ISV relationships, why wouldn't you?

CPU Reduction: Application Tuning
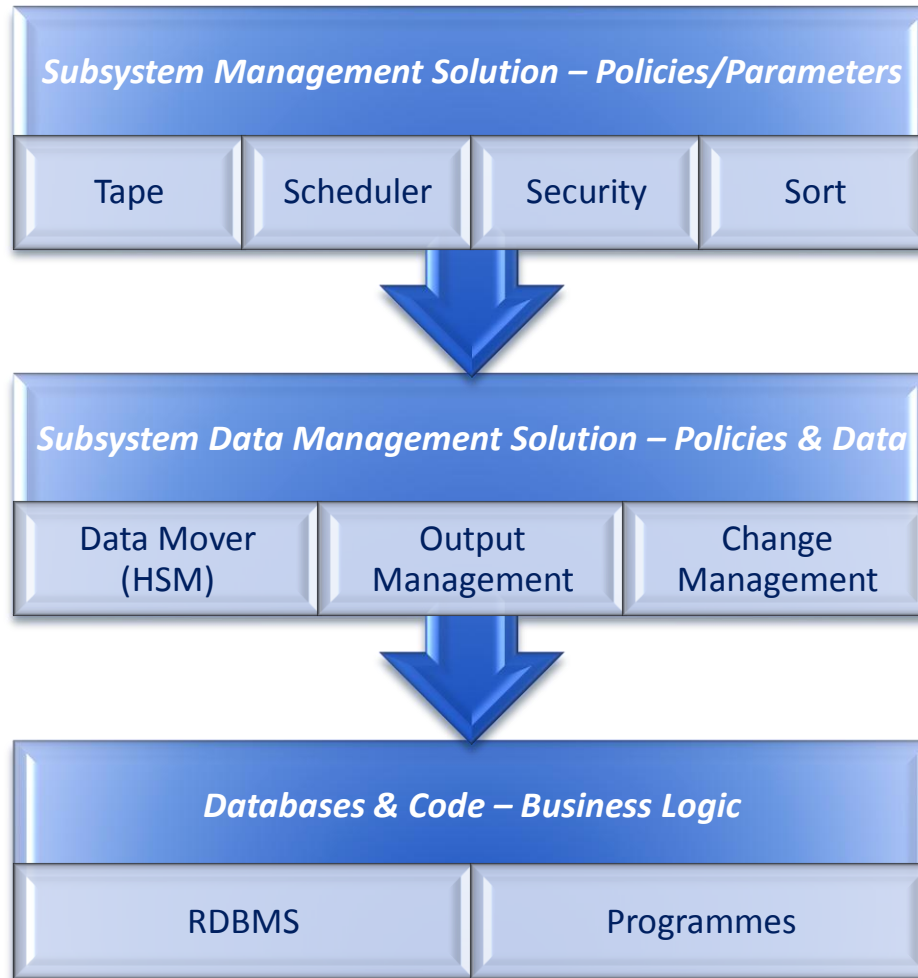
Application Tuning Observations:
- Many major ISV's have announced a "MIPS Usage Assessment", which inevitably uses one of their own software tools, that you might have installed
- Over time, business applications evolve, are modified and have interoperability with major subsystems and software (E.g. RDBMS, OLTP, Disk), and so although their logic might be OK, overall performance could be improved (E.g. Batch, Query, Search, Etc.)
- Do you have these "tuning" tools installed; Strobe, ExpeTune, APPTUNE, SQL Explorer, SmartTune, TRILOGexpert TriTune, Application Performance Analyzer Automation Assistant? Then, maybe find the time to use them…

Application Tuning Considerations:
- *If you're not proficient in using these ISV tools that you pay for, ask the ISV for some expert assistance, ideally from the Support contract, or as a T&M activity*
- *There are consultancy companies that offer this service, for example, CPT Global, Hexaware, but they will use the tuning tools you have installed, or have an alliance with their "favourite" tool*
- *You might need to change application code, so Change Management is a consideration…*
- *Proactive Application Tuning is a good habit!*

- Significant cost savings possible, releasing General Purpose CPU…
- Cost saving is a by-product of a faster and optimized application!
- You should take credit and pride in optimizing your LOB application

Let Application Tuning become part of your evolving SAM discipline

Considered Product Replacement

Subsystem Management Solution – Policies/Parameters			
Tape	Scheduler	Security	Sort

⬇

Subsystem Data Management Solution – Policies & Data		
Data Mover (HSM)	Output Management	Change Management

⬇

Databases & Code – Business Logic	
RDBMS	Programmes

Considered Product Replacement Observations:
- Typically each and every product can be replaced by several competitive products
- An incumbent product will have been purchased, OTC, IPLA, et al, or is on a monthly rental/lease; but most "smart" ISV's will replace a product with subscription based licensing
- The further down this list we progress, the more complex, time consuming & thus risky is the conversion. They have been performed before, by ISV's, the internal customer or consultancy companies such as RSM Partners, SystemWerx, Ithaca, but such migrations should only be considered as a last resort, for compelling business reasons.
- When policies & data require conversion, the GIGO (Garbage-In and Garbage-Out) principle applies. Clean-Up the current environment first; consider, if data requires conversion, it must be restored/recalled/recovered to its original non-proprietary "vanilla" status before displacing the incumbent product!

Anything is possible, but there are easier and less risky cost reduction options!

z/OS Software Cost Optimization: Summary

Ground Zero: z/OS Software Inventory
Lease TADz for 1-3 Months (low cost)

Step 5: Application CPU Usage
Pragmatic performance tuning

Step 1: Sub-Capacity Pricing
Determine VWLC benefits

Step 4: Product Replacement
Pragmatic product swap-outs

Step 2: Vendor Communication
Negotiate better/flexible costs

Step 3: MIPS/MSU Reduction
Investigate zIIP/zAAP/IFL et al

The longest and most difficult journey always starts with a simple first step...

The IBM z/OS Software Cost Reduction Offerings

Portfolio Review & Analysis (PRA): An IBM service with a ~4 week duration that leverages from TADz (ITLCMz) software to project current z/OS software portfolio costs for 60 Months (5 Years). Outputs will also review software portfolio from a Replacement, Renegotiate, Removal and Rehosting viewpoint, perhaps suggesting IBM software products…

Financial Management & Accounting Workshop (FMA): An onsite workshop to analyse the existing customer environment (E.g. Hardware, Software, Manpower, Facilities, Processes, et al), while delivering a best practices recommendations summary for applying FMA methodology.

Total Cost of Ownership Studies (zTCO/Eagle): A "gratis" IBM service with a ~30 day duration that is specifically targeted to highlight which platform is best suited for the customers business applications. Typically zTCO (AKA Eagle) is initiated when there is pressure to decommission or commission the zSeries platform for cost saving reasons.

Not surprisingly, IBM are well versed in this area, being zSeries innovators…