IBM System z

IBM

Doing a (Dis)Honest Linux TCO Analysis or better Cost and Value

Share Orlando 2008 Session 9261

Erich Amrehn
Romney White

IBM System z

IBM

Agenda

- TCO Factors
- IT Cost Trends
- TCO Case Studies
- Mainframe Advantages
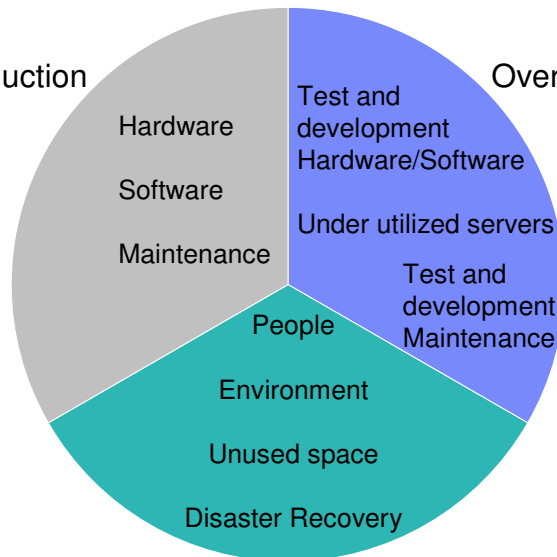- Univar Example
- References

Attention / Achtung!

- Not all charts are in the handout due to customer confidentiality requirements
- We felt it would be better to show you the information than not

- As of February 20, 2008, one € ≈ $1.38385

Major TCO Factors

- Hardware
- Software
- Other (e.g., Environmentals)
- People

TCO

Production

Hardware

Software

Maintenance

Overlooked Costs

Test and development Hardware/Software

Under utilized servers

Test and development Maintenance

People

Environment

Unused space

Disaster Recovery

Hidden costs

Other TCO Factors

- Availability
  - High availability
  - Hours of operation
- Backup/Restore/Site Recovery
  - Backup
  - Disaster Scenario
  - Restore
  - Effort for Complete Site Recovery
  - SAN effort
- Infrastructure Cost
  - Space
  - Power
  - Network Infrastructure
  - Storage Infrastructure

- Additional development and implementation
  - Investment for one platform – reproduction for others
- Controlling and Accounting
  - Analyzing the systems
  - Cost
- Operations Effort
  - Monitoring, Operating
  - Problem Determination
  - Server Management Tools
  - Integrated Server Management – Enterprise Wide

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Other TCO Factors …

- Security
  - Authentication / Authorization
  - User Administration
  - Data Security
  - Server and OS Security
  - RACF vs. other solutions
- Deployment and Support
  - System Programming
    - Keeping consistent OS and SW Level
  - Middleware
    - SW Maintenance
    - SW Distribution (across firewall)
  - Application
    - Database Effort
    - Technology Upgrade
    - Non-disruptive System Release change

- Operating Concept
  - Development of an operating procedure
  - Feasibility of the developed procedure
  - Automation
- Resource Utilization and Performance
  - Mixed Workload / Batch
  - Resource Sharing
    - Shared nothing vs. shared everything
  - Parallel Sysplex vs. Other Concepts
  - Response Time
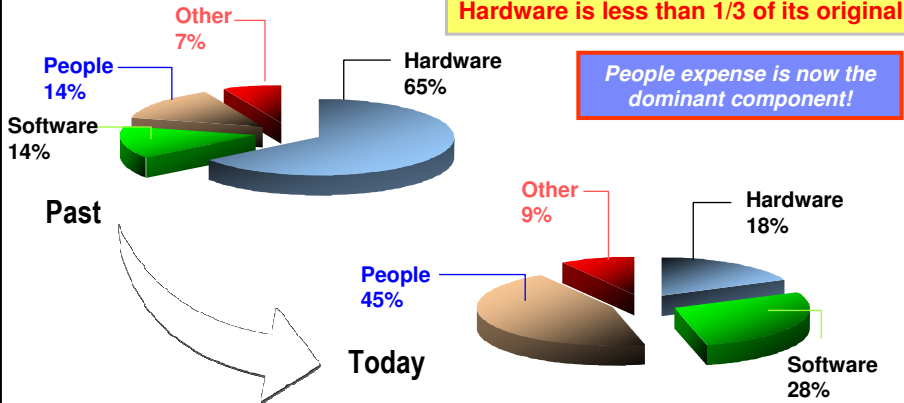 - Performance Management
  - Peak handling / scalability

Other TCO Factors …

- Integration
  - Integrated Functionality vs. Functionality to be implemented (possibly with third-party tools)
  - Balanced System
  - Integration of / into Standards
- Skills and Resources
  - Personnel Education
  - Availability of Resources

- Further Availability Aspects
  - Planned outages
  - Unplanned outages
  - Automated Take Over
  - Uninterrupted Take Over (especially for DB)
  - Workload Management across physical borders
  - Business continuity
  - Availability effects for other applications / projects
  - End User Service
  - End User Productivity
  - Virtualization

Cost dynamics of supporting corporate IT infrastructures has changed significantly
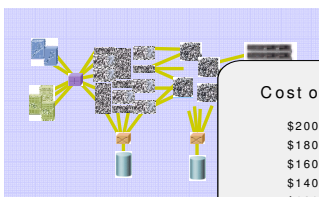
We typically see . . .

People expense has tripled as a %
Software expense has doubled as a %
Hardware is less than 1/3 of its original %

People expense is now the dominant component!

Other 7%

People 14%

Software 14%

Hardware 65%

Past

Other 9%

People 45%

Hardware 18%

Software 28%

Today

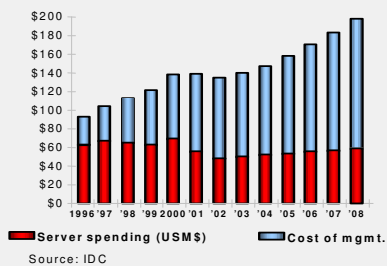*Source: IBM Scorpion studies – analysis of typical CIO budget for Mainframe plus UNIX/Windows servers*

The IT Infrastructure as a Complexity Item

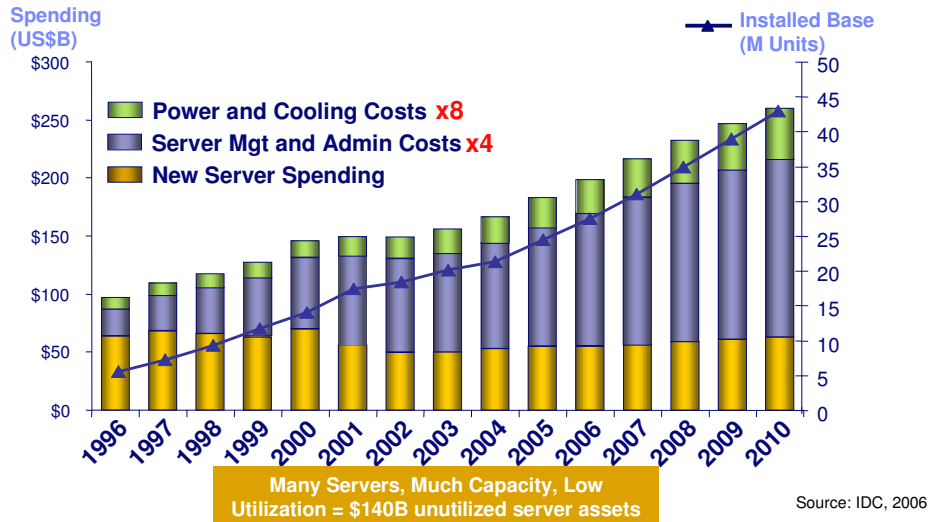Cost of People vs. Spending on New Systems

$200
$180
$160
$140
$120
$100
$80
$60
$40
$20
$0

1996 '97 '98 '99 2000 '01 '02 '03 '04 '05 '06 '07 '08

■ Server spending (USM$)   ■ Cost of mgmt.

Source: IDC

❑ Size & Volumes

❑ Control

❑ Management costs

5
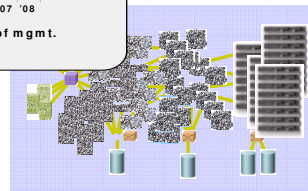
Worldwide IT Spending on Servers, Power and Cooling, and Management/Administration

Spending (US$B)

Installed Base (M Units)

- **Power and Cooling Costs x8**
- **Server Mgt and Admin Costs x4**
- **New Server Spending**

Many Servers, Much Capacity, Low Utilization = $140B unutilized server assets

Source: IDC, 2006

Categories Of Costly System Management Tasks

Server Management and Administration Costs (2004 - 95B$)

- Other **15%**
- System maintenance **7%**
- System monitoring **8%**
- Upgrades, patches, etc. **11%**
- Planning for upgrades, expansion, and capacity **12%**
- Migration **13%**
- Maintenance and tuning **15%**
- Initial system and software deployment **19%**

IDC Survey Data, 2002-2004
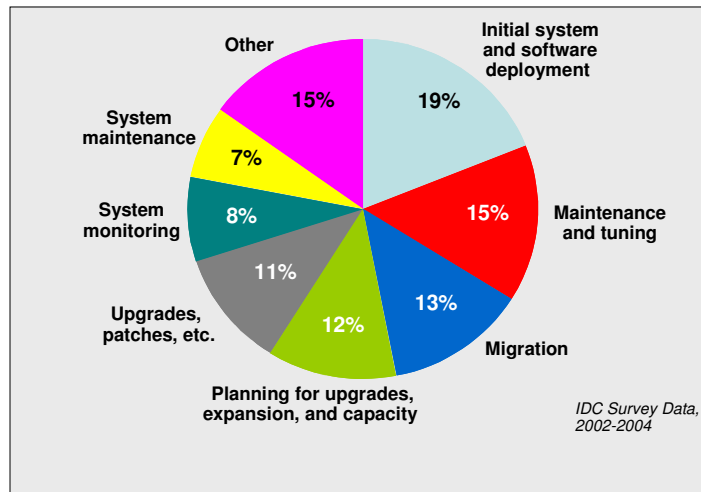
Many common management tasks must be simplified or eliminated to achieve significant improvements in IT productivity

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Business Issue of Availability

Financial Impact of Downtime Per Hour
(by various Industries)

| Brokerage Retail	$6.5 Million
Credit Card Sales Authorization	$2.6 Million
Airline Reservation Centers	$90,000
Package Shipping Services	$28,250
Manufacturing Industry	$26,761
Banking Industry	$17,093
Transportation Industry	$9,435

Source: ©Eagle Rock Alliance, LTD. All Rights Reserved 2003

Unplanned Outage Causes

Hardware Failures 30%
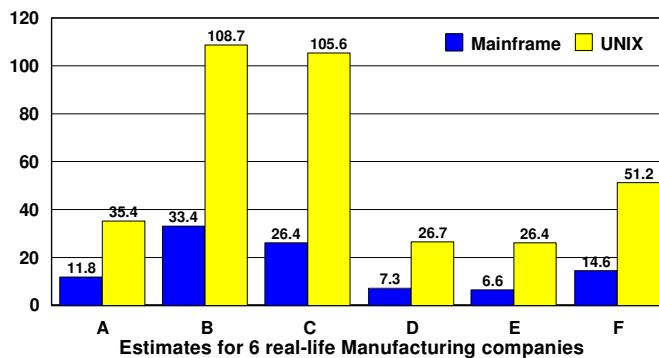Operator Errors 25%
Application Failures 45%
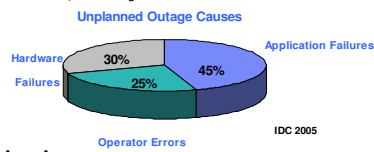
IDC 2005

- **Loss** of business
- **Loss** of customers – the competition is just a mouse click away
- **Loss** of credibility, brand image and stock value

- On demand challenges
  - Downtime unaffordable
  - Heterogeneous by nature
  - Complex to manage
- Customer pressures
  - Application availability
  - Operations complexity and costs
  - Automation implementation and maintenance costs
  - Rapid change of I/T infrastructure
  - Adding new workloads

Downtime Costs

5 year cost of downtime - millions of dollars

Legend: Mainframe, UNIX

Values:
- A: Mainframe 11.8, UNIX 35.4
- B: Mainframe 33.4, UNIX 108.7
- C: Mainframe 26.4, UNIX 105.6
- D: Mainframe 7.3, UNIX 26.7
- E: Mainframe 6.6, UNIX 26.4
- F: Mainframe 14.6, UNIX 51.2

Estimates for 6 real-life Manufacturing companies

Source: Business Value of Availability, Bottom Line Impact of SAP R/3 Platform Choices, ITG, November 2003

TCO / TCA / TVO / RCO / ROI ? MORE ??
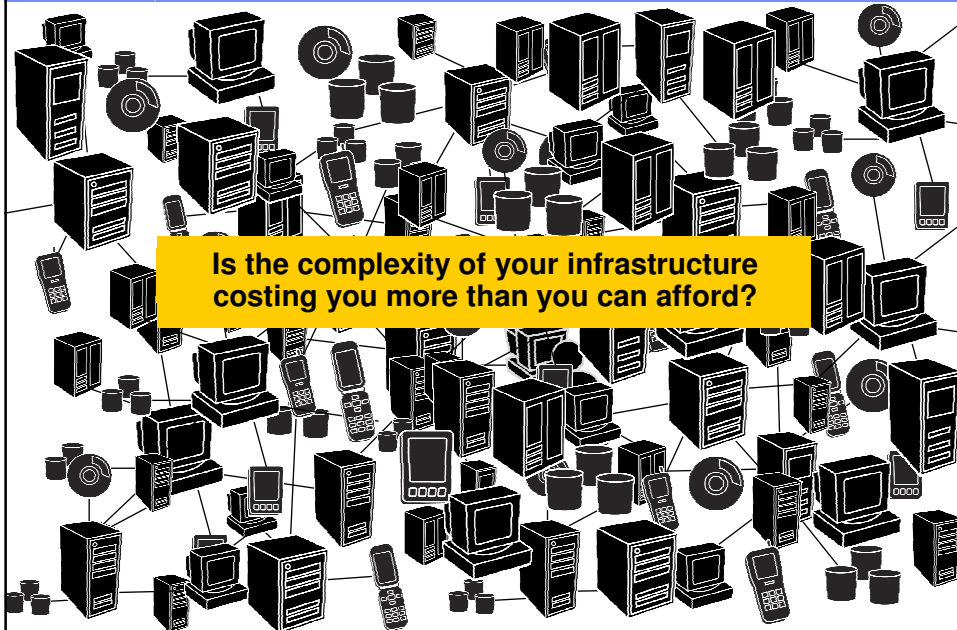
Is the complexity of your infrastructure costing you more than you can afford?

A power / cooling crisis is upon us…

"Sometimes we run out of power, sometimes we run out of cooling, usually we run out of both"

Anonymous

Much of the crisis is due to unrestricted server sprawl without regard to power/cooling and space

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Because IT Complexity Drives Many Hidden Costs TCO

- Do you recognize this description?
  - ▸ Thousands of lightly loaded servers
  - ▸ Hundreds of application instances
  - ▸ IT everywhere across the business
    - Physically
    - Logically
  - ▸ Thousands of distributed control points
- The Result:
  - ▸ Massive complexity
  - ▸ Spiraling people, power, cooling and server costs
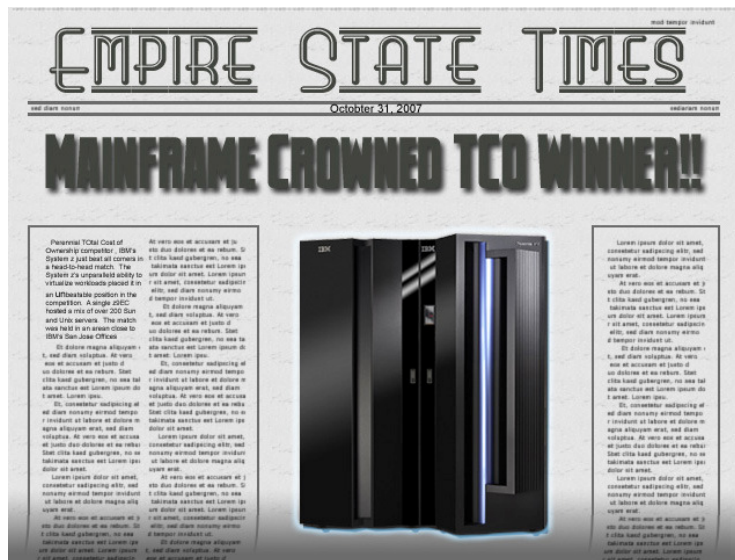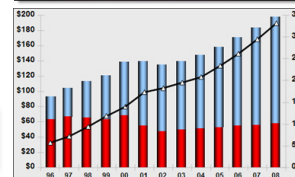- Compounded by the inability to allocate IT costs to the business
  - ▸ Lack of internal costing methodologies
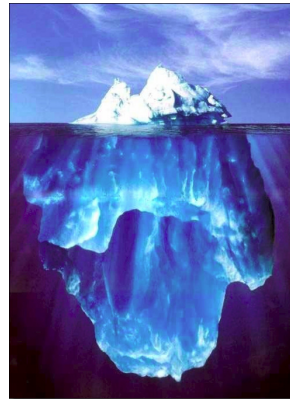
Virtualization and infrastructure mgt standards are the only hope to intercept these trends !

Cost of Complexity

- Operational efficiency **(1)**

- Pinpointing and managing issues

- Flexibility

Cost of People vs. Spending on New Systems (2)

(2) IDC Directions, April 7, 2004. The Adoption of On Demand Enterprises and Utility Computing

Cost of management

Server spending (USM$)

1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008

Predicted average cost per end user by 2010 (1)	
Mainframes	$6,250
UNIX® Minis	$19,000
PC Servers	$24,000
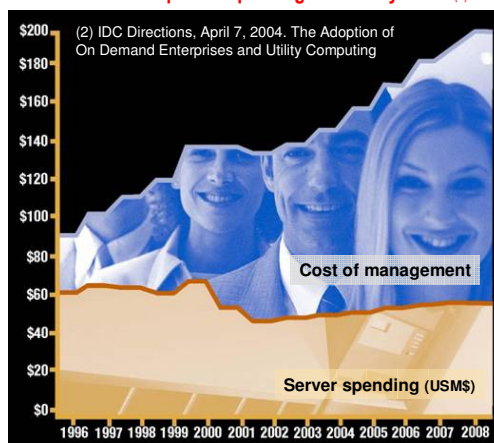
(1) 2010 prediction: Dinosaur myth, 2004 Update. Arcati Research Limited, Strategic Analysis for Enterprise IT. Based on current and projected end user costs for hardware, software, maintenance, and labor in mainframe environments

Energy Efficiency

"Mainframe is the coolest place in the datacenter"

Case study: Retailer consolidated 600 x86 servers onto a single mainframe

eliminated an **entire floor** of servers

reduced the administrative staff by 10

cut power and cooling costs by 80%

ROBERT FRANCES GROUP

Source: RFG analyst report, "The Mainframe: It's Baaack!" July 2006

THE WALL STREET JOURNAL.
November 14, 2005

Power-Hungry Computers Put Data Centers in Bind

- *Today's distributed servers draw too much electricity and generate too much heat*
- If planners miscalculate, servers overheat, damaging circuitry or causing shutdowns
  - The Uptime Institute, an organization that represents data-center managers, predicts that power-related problems this year will cause four of the 20 major failures typically experienced by members annually, up from two of 20 last year."The people who buy computers often aren't the people who have to manage them"
- Outcomes:
  - Rackspace Ltd., a San Antonio service that manages servers for clients, has seen its power needs swell to eight megawatts from three megawatts in the past three years -- sending its monthly utility bill up roughly fivefold to nearly $300,000.
  - The University of Buffalo was surprised that their new system used 50% more power than planned, causing $20K in electrical upgrades and $150K in cooling upgrades.

Energy Surge
Electricity required for low-end servers, in watts per square foot

4000

3000

2000

1000

92   94   96   98   '00   '02   '04
Source: American Society of Heating, Refrigerating, and Air Conditioning Engineers
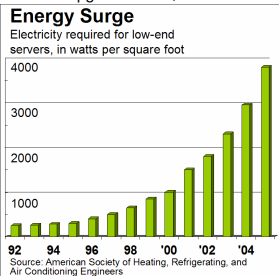
Alternative Techniques for Removing Paint

Customer example

1

Consolidation z/VM & Linux on system z

- Customer is a distribution company
- Some core applications run on two System z9 (model 705) but …
- Most of new applications run on hundreds of x86 Linux or Windows servers distributed in 3 locations
- Main issues:
  - Disaster recovery for distributed environment is not efficient at all
  - Data centers may become full if the number of physical servers continues to grow
- Server consolidation using virtualization is key to support new business growth
- Initial scope of analysis: focus on 103 Linux x86 servers (171 cores)
  - AMD Opteron and Intel Xeon processors (2.6 & 2.8 GHz) – mainly dual cores and some quad cores
- Scope reduced to a set of 75 servers excluding:
  - Servers already consolidated using VMware,
  - Sysbase and PeopleSoft AS applications not available on Linux for System z platform

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Application analysis

Linux x86 Software	Type	Linux z Software
Apache HTTP	Web application	Apache HTTP
WAS	Web application	WAS
VPSX	Pdf convertor	VPSX
Oracle DB	DB	Oracle DB
PeopleSoft DB (Oracle)	CRM application	PeopleSoft DB (Oracle)
RYO mail appl.	Mail servers	RYO mail appl.
RYO applications	Core applications	RYO applications
RYO SW distribution	Software distribution	RYO SW distribution
RYO XXX application	Core application	RYO XXX application
RYO EDI package	EDI application	RYO EDI package
RYO Network scripts	Network management	RYO Network scripts
CA Access Control	Security	CA Access Control
Veritas Netbackup	Backup management	Tivoli Storage Manager (TSM)

Check application availability on the target environment

Number of CPU cores per application group

Ratio Non Prod/Prod = 1.14 (no dedicated DR servers)

Environmental:
212.0 KBTU
62.1 KW
158 Rack U
values

Chart categories: Backup Mgmt, http, Mail, Oracle DB, Other, Peoplesoft DB, RYO, Scheduler, WAS

Legend: TEST, SYSI, PROD
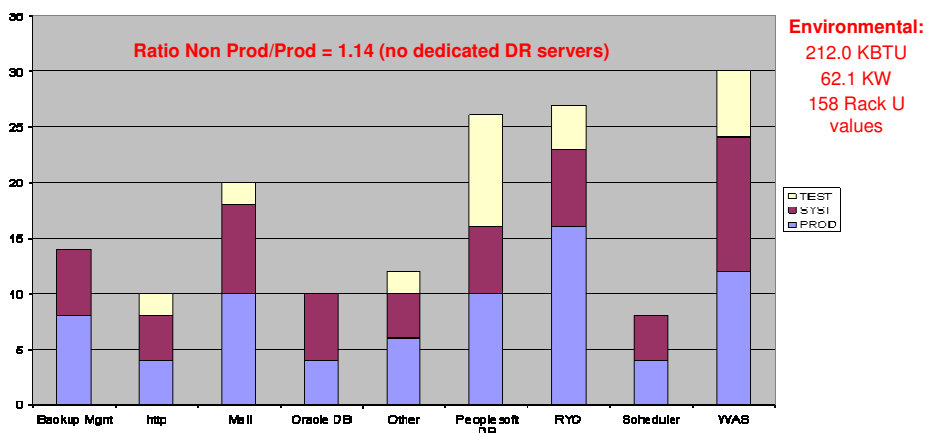
**75 servers / 149 processors / 157 cores / 334 GB of memory installed
459,524 RPEs installed**

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Server activity during period of analysis

2 days of Server activity

Server Utilization during Consolidated peak time (14h10)

% processor utilization

Legend:
- □ % Max Util
- ■ % Avg Util

Categories: Backup Mgnt, Http, Mail, Oracle DB, Other, Peoplesoft DB, RYO, Scheduler, WAS
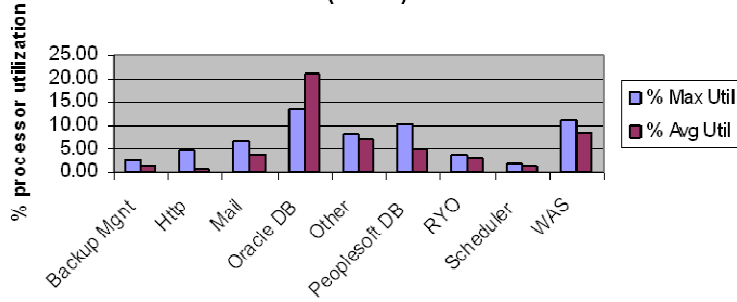
Average % Utilization = 5.82%
Maximum % Utilization during consolidated peak time = 7.70%

Consolidation effect on System z9

Total MIPS Consumed for All Servers
for 48 hours on 07/01/08 in 5 minute intervals

Peak activity @14h10

MIPS

Time Of Day
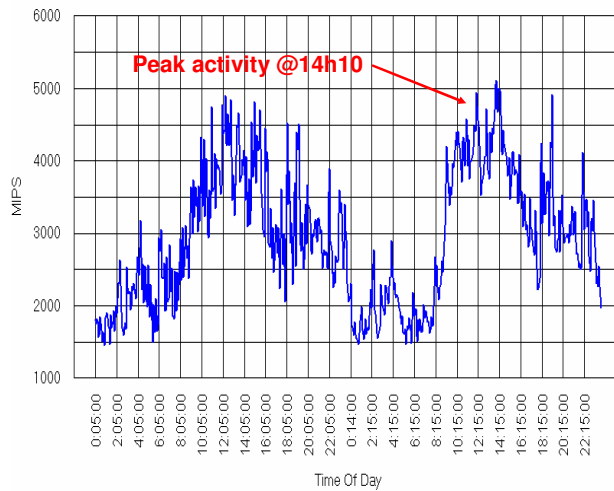
Total MIPS

157 x86 cores

11 System z9 IFLs (14 : 1 ratio)

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5-year Comparison and Cost structures

5 year Cumulative Costs

Legend:
- Sysadmin
- Enterprise Network
- Software Support
- Software License
- Disk Storage Maint.
- Connectivity Maint.
- Server Maint.
- Disk Acquisition
- Connectivity Acquisition
- Server Acquisition
- Floor Space
- Power

Savings $4175K (45.2%)

Savings $4559K (49.3%)

Thousands (K$): 10000.00, 9000.00, 8000.00, 7000.00, 6000.00, 5000.00, 4000.00, 3000.00, 2000.00, 1000.00, 0.00

Admin — Software

Current — Vm ware — z9 z/VM

Customer benefits not included in TCO : Quality of service improvement, setup of an efficient Disaster Recovery plan, fast ROI, no need for a new Data Center

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➜ **Customer example**

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Deployment of new Java applications

- Large European banking customer
  - ▸ The bank wants to perform a platform technology selection for the deployment of new Web applications
  - ▸ Large System z9 environment running core banking applications, based on IMS and DB2
  - ▸ Part of customer's centralization strategy, new databases will be implemented on the current System z9 platforms based on DB2 for z/OS
  - ▸ Technical and cost assessment study to compare WebSphere applications running on AIX vs. z/OS, accessing a DB2 database located in a z/OS System z9 LPARs in a Parallel Sysplex environment.
  - ▸ Application utilization estimated to be at 100 transactions/second during peak time.

System z solution architecture (100 TPS)

z9 EC – 1 CP / 1 zAAP / 1 ICF

WAS Admin

HTTP   WAS

DB2

z/OS

CFCC
ICF

Sysplex distributor

CF   CF

DB2

HTTP   WAS

z/OS

CFCC
ICF

z9 EC – 1 CP / 2 zAAPs / 1 ICF

WAS in a Parallel Sysplex environment
DB2 Data Sharing
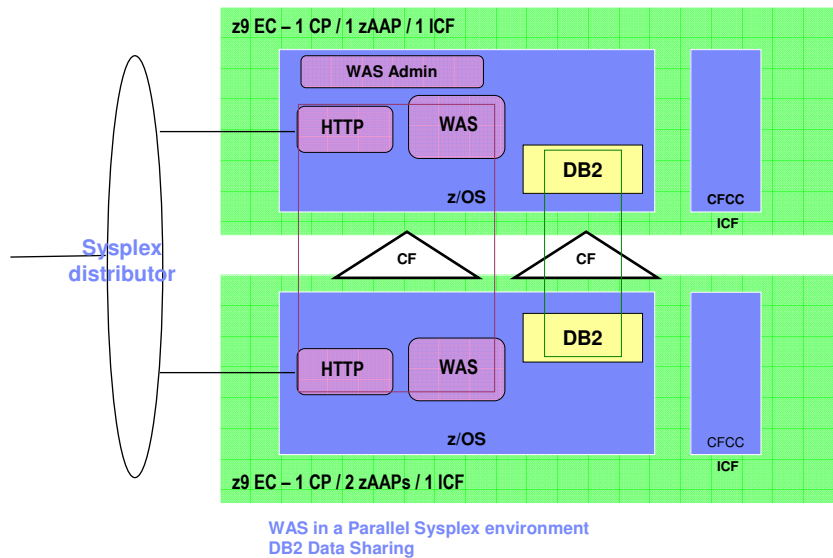
System p+z solution architecture (100 TPS)
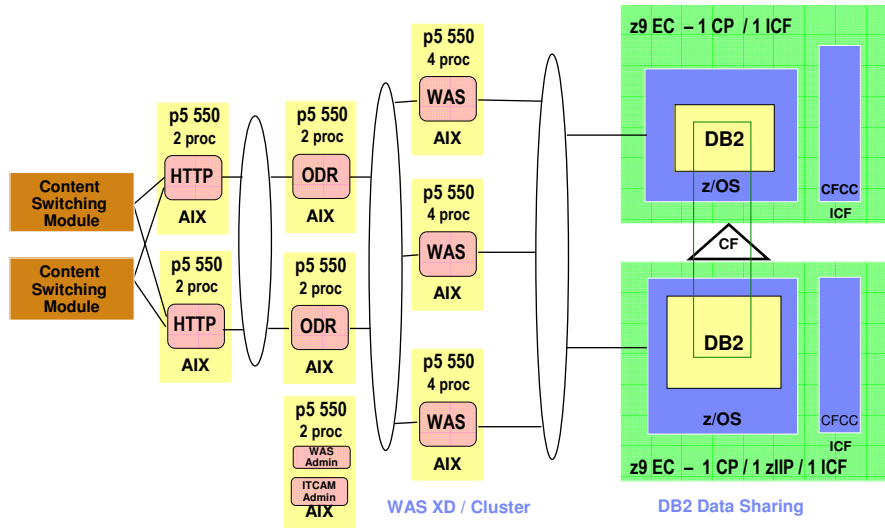
3-year Cost Comparison @ 100 TPS
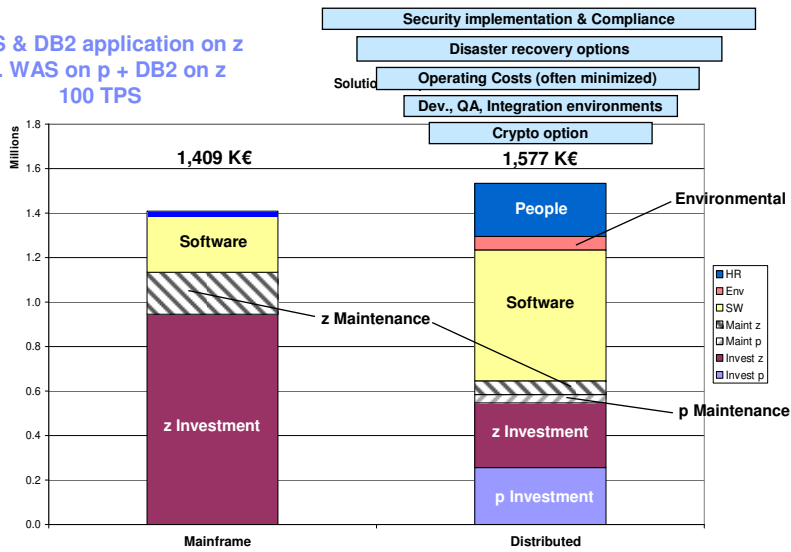
→ **Customer example**

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Telco Industry Benchmarks Allow Direct Comparison of HP Superdome to IBM z9

HP Superdome – 64 x 1.5GHz Itanium2

z9 24-way Benchmark

64 Unix processors

24 processors

Call initiation rate: 1,000/second
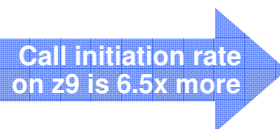
Call initiation rate on z9 is 6.5x more

Call initiation rate: 6,568/second

Sources: CommuniGate-Superdome-VoIP-Benchmark.pdf & IBM-CommuniGate-z9.pdf from http://www.communigate.com/Papers

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Telco Industry Benchmarks Allow Direct Comparison of HP Superdome to IBM z9

HP Superdome – 64 x 1.5GHz Itanium2

z9 24-way Benchmark

Add systems assuming linear scaling

(64 x 6,568/1,000)

Processor
Processor
Processor
Processor
Processor
Processor
Processor
Processor
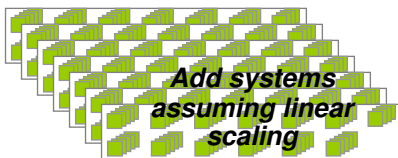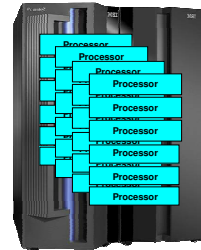
420 Unix processors (719,590 RPE's)

96 RPE's/MIP

24 processors (7,509 MIPS)

Call initiation rate: 6,568/second
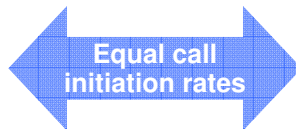
Equal call initiation rates

Call initiation rate: 6,568/second

Sources: CommuniGate-Superdome-VoIP-Benchmark.pdf & IBM-CommuniGate-z9.pdf from http://www.communigate.com/Papers

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Telco Industry Benchmarks Allow Direct Comparison of HP Superdome to IBM z9

- Energy consumtion compariosn (without the energy for cooling)
  - Superdomes: 1401600 kw/y
  - Z9 EC: 95484 kw/y

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Telco Industry Benchmarks Allow Direct Comparison of HP Superdome to IBM z9
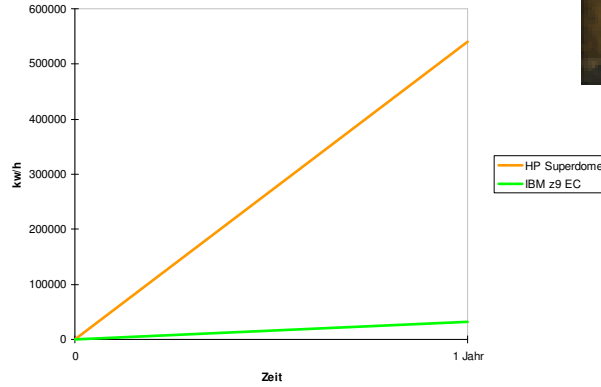
- Heat production/waste of the solutions
  - Superdomes: 541000 BTU/h   ca. 180 PKW Aircooling unit
  - Z9 EC: 32000 BTU/h   ca. 11 PKW Aircooling unit

Telco Industry Benchmarks Allow Direct Comparison of HP Superdome to IBM z9

HP Superdome – 64 x 1.5GHz Itanium2

z9 24-way Benchmark

$23.8M
(HW, SW for 3 years)

$10.3M
(HW, SW for 3 years)

Processor
Processor
Processor

k€ 1220 *
(Energy for 3 years)

k€ 83 *
(Energy for 3 years)

Total: about US$ 25,5 M

Total: about US$ 10,5 M

- *) Energy costs in Germany 2007 – 14.5 €cent / kw/h.
- UPS and availability/recovery features are not evaluated

Customer Studies

Representative customer
- Websphere

Hardware
- **5000+ MIPS**
- **1000+ servers (25% Unix)**

Software
- **Websphere currently on Solaris**
- **Oracle and DB2**

Customer perception:
Solaris environment is 1/5 the cost of the mainframe

A Real Client Example of finding "All the Costs"
Current Production WebSphere Environment

Firewall(s)

HTTP Server Layer

External HTTP serversv-- prod1-6   Internal HTTP servers -- prod1 - 4

Firewall(s)

Web App Server Layer

| WAS | WAS | WAS | WAS | WAS | WAS | PROD1 - 6 |

DB2 Universal Database™ Session DB

PROD3
Oracle Data Mart

PROD2
Oracle

PROD1
Oracle

S/390® production databases and transactions

LOB production systems and transaction

Source: Scorpion Study 1999 - 2004

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A Real Client Example of finding "All the Costs"
Production SUN Server Architecture

- Customer perception was that the mainframe would be 5x the cost of the existing Sun implementation

WebSphere 4.0

E3500	V880	280R	280R	4800	U2
UDB wudbprod2	WebSphere prod 1	External HTTP prod1	Internal HTTP prod1	Oracle Prod prod2	
UDB wudbprod1	WebSphere prod 2	External HTTP rod2	Internal HTTP prod2	Oracle Prod prod1	
	WebSphere prod 3	External HTTP prod3	Internal HTTP prod3		
	WebSphere prod 4	External HTTP prod4	Internal HTTP prod4		
	WebSphere prod 5	External HTTP prod5			
	WebSphere prod 6	External HTTP prod6			
	Database prod 1	?? webev1			
	DW prod 1				

Source: Scorpion Study 1999 - 2004

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Customer Example:
Distributed SUN Server Solution – perception… isn't always reality!

- Customer thought they only had 24 UNIX servers
  - But these were just the PRODUCTION servers
  - In addition they had 49 servers for Development, Test and Disaster Recovery

WebSphere

E3500	V880	V880	280R	280R	4800		U2
UDB wudbprod2	D/R	Websphere prod 1	External HTTP prod1	Internal HTTP prod1	Oracle Prod prod2	Test	Development
UDB wudbprod1	D/R	Websphere prod 2	External HTTP rod2	Internal HTTP prod2	Oracle Prod prod1	Test	Development
Test	D/R	Websphere prod 3	External HTTP prod3	Internal HTTP prod3			Development
Test	D/R	Websphere prod 4	External HTTP prod4	Internal HTTP prod4			Development
	D/R	Websphere prod 5	External HTTP prod5	Test			Development
	D/R	Websphere prod 6	External HTTP prod6	Test			Development
	D/R	Database prod 1	?? webev1	D/R			Development
		DW prod 1	Test	D/R			Development
		Test	Test	D/R			Development
		Test	D/R	D/R			
		Test	D/R	D/R			
		Test					
		Test					
		Test					

E250					E10000 Domains		
Development					Development	Development	Development
					Development	Development	Development
					Development	Development	Development
						Development	

Source: Scorpion Study 1999 - 2006

The
Total Cost of Acquisition
may be a
Misleading Indicator
for
Large Enterprise Deployments

Source: Gartner; ID Number: IGG-03102004-01 - CIO Update: The March of Linux in the Enterprise

George J. Weiss

Vice President and Distinguished Analyst in Gartner Inc.

Only the Holistic View will give you the Entire Picture!

Server Analysis

By Function

Total: 273

Large servers
22
8%

Smaller servers
44
16%

Firewalls
82
30%

Tivoli, ADSM servers
125
46%

76% of servers are infrastructure
16% are smaller servers
8% are very large appl/db servers

By Estimated Costs

Total: 23,9

Large servers
14,3
60%

Firewalls
1,7
7%

Smaller servers
1,6
7%

Tivoli, ADSM servers
6,3
26%

Server costs dominated by large
application/database servers

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Server Analysis

By People Efficiency
(52 People (int + ext)

2.1 servers/person

6 large applications; 34 servers
22 large, 12 small.med servers
7.3 (large) servers per application

Firewalls
5
10%

Large Apps.
16
31%

16.4 firewalls/person
82 Firewalls

Tivoli, ADSM servers
21
40%

3.2 servers/person

10 small applications; 32 servers
26 small, 6 med servers
3.2 (small) servers per application

Small Apps.
10
19%

6.0 sys man /person

125 Sys.man. servers

**Big productivity differences between cloned
infrastructure and application/database servers**

Slide 68

Server Demographics – Avg Unix and Intel CPU Utilization

This graph represents the portfolio of customer studies performed from 2000
thru 2004 categorized by average CPU utilization

Legend: Avg Intel CPU%   Avg Unix CPU%

Y-axis: **CPU Utilization** (0% to 100%)

Peak Unix 41%
Peak Intel 28%
Avg Unix 15%
Avg Intel 7%

X-axis: 2000, 2001, 2002, 2003, 2004

Customer Engagement (In Chronological Order)

Slide 1

What is a zRACE Rapid Assessment?

- zRACE:

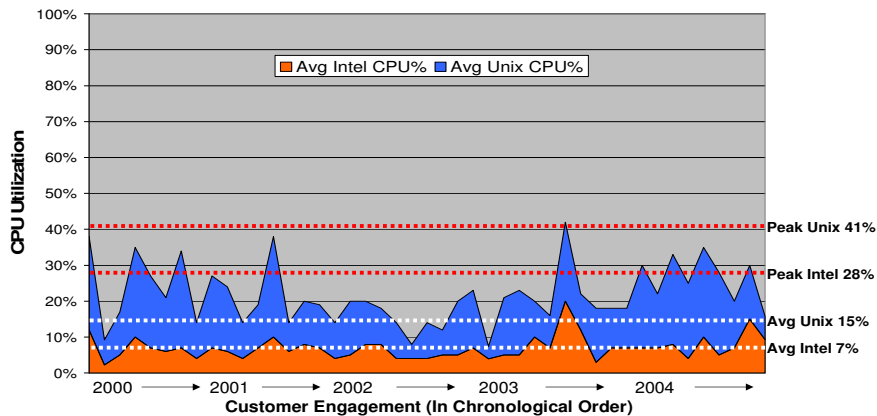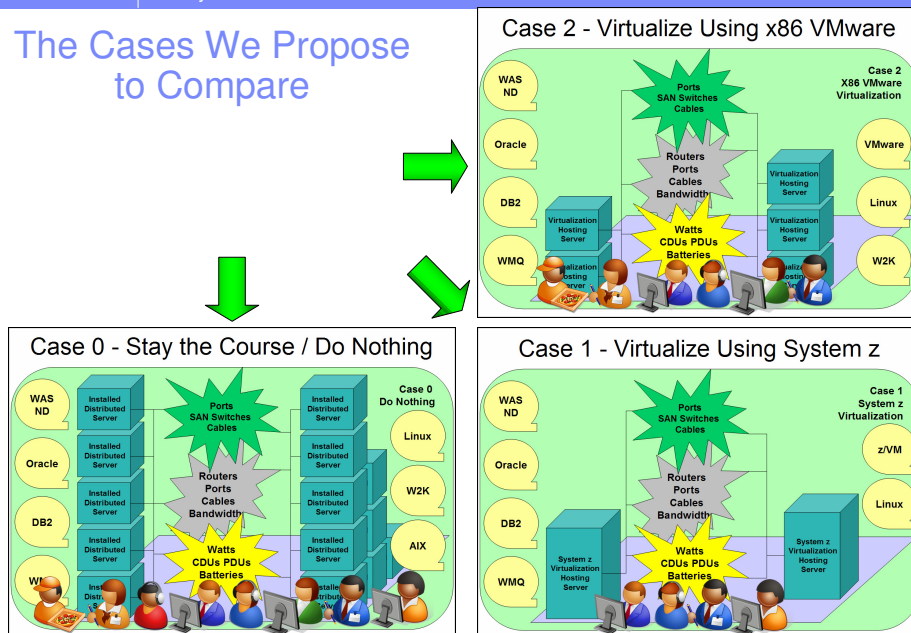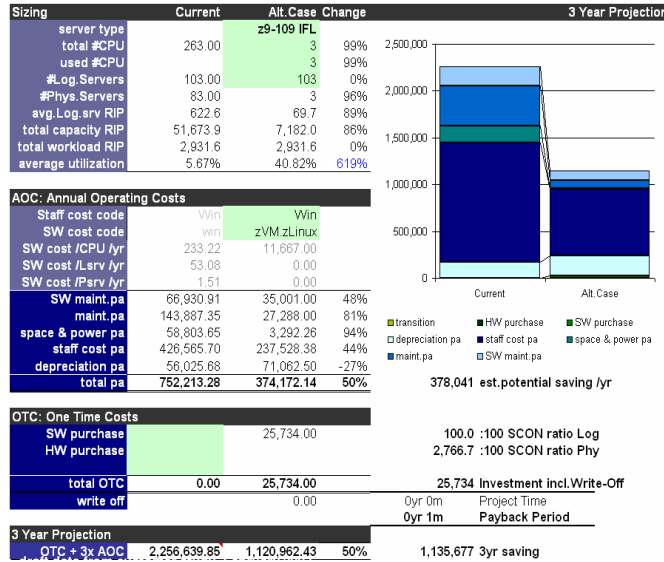 ▶ Is an assessment methodology used to develop a Total Cost of Ownership scenario comparison for our clients …

  ▶ Is used to evaluate potential benefits of consolidating workloads from Intel and/or UNIX platforms onto System z IFLs (specialty engines running Linux) or WebSphere Applications on zAAP engines

  ▶ A 5 year TCO analysis comparing current case versus and a distributed alternative …

  ▶ Takes advantage of new or existing System z footprints) as the target environment …

  ▶ Uses a combination of assumptions, estimates, industry numbers and actual client data to develop cost models

Slide 2

The Cases We Propose to Compare

Case 2 - Virtualize Using x86 VMware

WAS ND, Oracle, DB2, WMQ

Ports SAN Switches Cables
Routers Ports Cables Bandwidth
Watts CDUs PDUs Batteries
Virtualization Hosting Server

Case 2 X86 VMware Virtualization
VMware, Linux, W2K

Case 0 - Stay the Course / Do Nothing

WAS ND, Oracle, DB2, WMQ

Installed Distributed Server

Ports SAN Switches Cables
Routers Ports Cables Bandwidth
Watts CDUs PDUs Batteries

Case 0 Do Nothing
Linux, W2K, AIX

Case 1 - Virtualize Using System z

WAS ND, Oracle, DB2, WMQ

Ports SAN Switches Cables
Routers Ports Cables Bandwidth
Watts CDUs PDUs Batteries
System z Virtualization Hosting Server

Case 1 System z Virtualization
z/VM, Linux

Slide 1

Zodiac helps build solution-by-solution business cases

Sizing	Current	Alt.Case	Change
server type		z9-109 IFL	
total #CPU	263.00	3	99%
used #CPU		3	99%
#Log.Servers	103.00	103	0%
#Phys.Servers	83.00	3	96%
avg.Log.srv RIP	622.6	69.7	89%
total capacity RIP	51,673.9	7,182.0	86%
total workload RIP	2,931.6	2,931.6	0%
average utilization	5.67%	40.82%	619%

AOC: Annual Operating Costs	Current	Alt.Case	Change
Staff cost code	Win	Win	
SW cost code	win	zVM.zLinux	
SW cost /CPU /yr	233.22	11,667.00	
SW cost /Lsrv /yr	53.08	0.00	
SW cost /Psrv /yr	1.51	0.00	
SW maint.pa	66,930.91	35,001.00	48%
maint.pa	143,887.35	27,288.00	81%
space & power pa	58,803.65	3,292.26	94%
staff cost pa	426,565.70	237,528.38	44%
depreciation pa	56,025.68	71,062.50	-27%
total pa	752,213.28	374,172.14	50%

OTC: One Time Costs	Current	Alt.Case	Change
SW purchase		25,734.00	
HW purchase			
total OTC	0.00	25,734.00	
write off		0.00	

3 Year Projection	Current	Alt.Case	Change
OTC + 3x AOC	2,256,639.85	1,120,962.43	50%

3 Year Projection

378,041 est.potential saving /yr

100.0 :100 SCON ratio Log
2,766.7 :100 SCON ratio Phy

25,734 Investment incl.Write-Off
0yr 0m   Project Time
0yr 1m   Payback Period

1,135,677 3yr saving

Legend: transition, depreciation pa, maint.pa, HW purchase, staff cost pa, SW maint.pa, SW purchase, space & power pa

Slide 2

… and business cases that show a Greener Environment!

Environmentals	Current	Alt.Case	Change	Difference
avg RackU / Server	6.4	3.0	53%	3.4
Total RackU	533	9	98%	523.5
30U Racks	18	0	98%	17.5
Total kW	109	1	99%	109
Adjusted kWh/yr	961,428	5,282	99%	956,146
Heat BTU/hr	249,715	1,372	99%	248,343
CO2 tonnes /yr	411	2	99%	409
Carbon tonnes /yr	112	1	99%	112
RIPs /kW	473	11,970	2430%	11,497
RIPS / tonne CO2	126	3,162	2417%	3,036
W /m2	12,305	4,000	67%	8,305

3yr CO2 Needs 4,059 Trees

Mainframe Cost Trends

Mainframe hardware, software, and labor costs have decreased 17.3% per year

Labor cost per transaction

Software cost per transaction

Hardware cost per transaction

$0.00035
$0.00030
$0.00025
$0.00020
$0.00015
$0.00010
$0.00005
$0.00000

2000　2001　2002　2003　2004
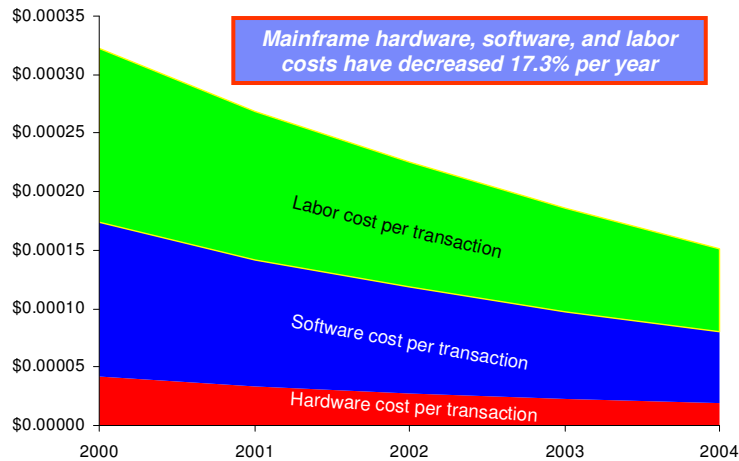
Kevin Campbell Video UNIVAR

"For Univar, the ROI model that we have used for this consolidation takes into account all of the hard costs that we're comfortable with predicting;

> **the elimination of hardware leases,**
> **the elimination of software maintenance**
> **suggests that we should see a return on our migration investment within three to four years.**

What that doesn't try to quantify are the soft benefits such as simplifying the process we currently have to move data from platform to platform. It doesn't attempt to quantify the costs inherent in maintaining all of that. Also - eliminating racks of equipment - we have drastically reduced the cooling and power supply demands on our datacenter. All of these are what we regard as soft benefits that are well worth having, but which we didn't attempt to quantify".

IBM

Driving Down Costs Requires Knowing What You Have
If there aren't accurate measures . . . how do you know it's effective?

. . . on average, approximately 15% of Global IT budgets are attributable to mainframe-related purchases, contracts, and activities, but, at the same time, 25-30% of the IT budget is recovered via billing for mainframe-resident services . . .

. . . in the past, chargeback systems focused on isolating IT system events that could be relatively easily tracked and could be shown to generate sufficient 'revenues' to cover the IT budget. Now, however . . . , the focus is on building systems that reflect the real underlying relationship between IT resource consumption and cost accrual. Despite this change in focus, mainframe platforms remain the keystone for chargeback architectures, particularly in the financial services industry . . .
                                                      Will Cappelli, Vice President, META Group

IBM Mainframes provide technology and tools to accurately track and report resources consumption in mixed workload environments to help better manage cost and improve investment decisions

Meta Consulting has developed a chargeback methodology to enable enterprises to allocate costs more equitably and accurately across all platforms in the entire IT infrastructure.

Solutions from newly acquired Isogon provide customers the tools they need to manage their software costs.

IBM

Logical Steps

1. 'Full' Inventory of IT infrastructure servers
2. Group the Servers into 'homogeneous' ISLANDs
   - A manageable ISLAND should contain not more than 500 servers (300 is the best number)
   - Group the servers by Location/Application/Function, not by platform
   - A typical Island should contain less than TEN different applications
   - The application grouping is very important for understanding the consolidation potential
3. Rank the servers by consolidation potential (A,B,C,D….)
   - Easy to consolidate on any platform (Infrastructural Servers)
   - Easy to consolidate on a similar platform (Data Base or Middleware)
   - Not so easy to consolidate (Need for Porting process)
   - Cannot consolidate
   - Out of Scope
4. Run the Zodiac or zRace Business Cases by using:
   - The Application/The Consolidation Potential
5. Run Zodiac or zRace
   - Obtain a cost picture
   - Obtain a savings picture
   - Obtain a target model (no more than one)

Mainframe Advantages

- Least expensive except for smallest multi-user systems
- Biggest factors in wide Total-Cost-per-User differences
  - Much lower operating/support staff level/costs on mainframe compared to UNIX and Windows
  - Mainframe software costs very visible; distributed costs hidden and duplicated
- UNIX or Windows distributed platforms
  - Require 2.5X to 3X more staff than today's mainframe to support similar workloads
  - Profusion of server/storage hardware and software needed in enterprise configurations, often 10-fold more "iron" than zSeries
- Dramatic reductions in mainframe staffing levels
  - 10-fold reduction in mainframe staffing (operators and systems programmers) per MIPS over last 7 years
    - From IBM's major advances in self-healing, self-managing, self-protecting, autonomic technologies for the mainframe
  - Scalability – doubling users adds 90% for mainframe but 125% for distributed
  - Expect continuing mainframe advances will halve this again over next five years

Source: Arcati

How Could This TCO Scenario Be True?

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