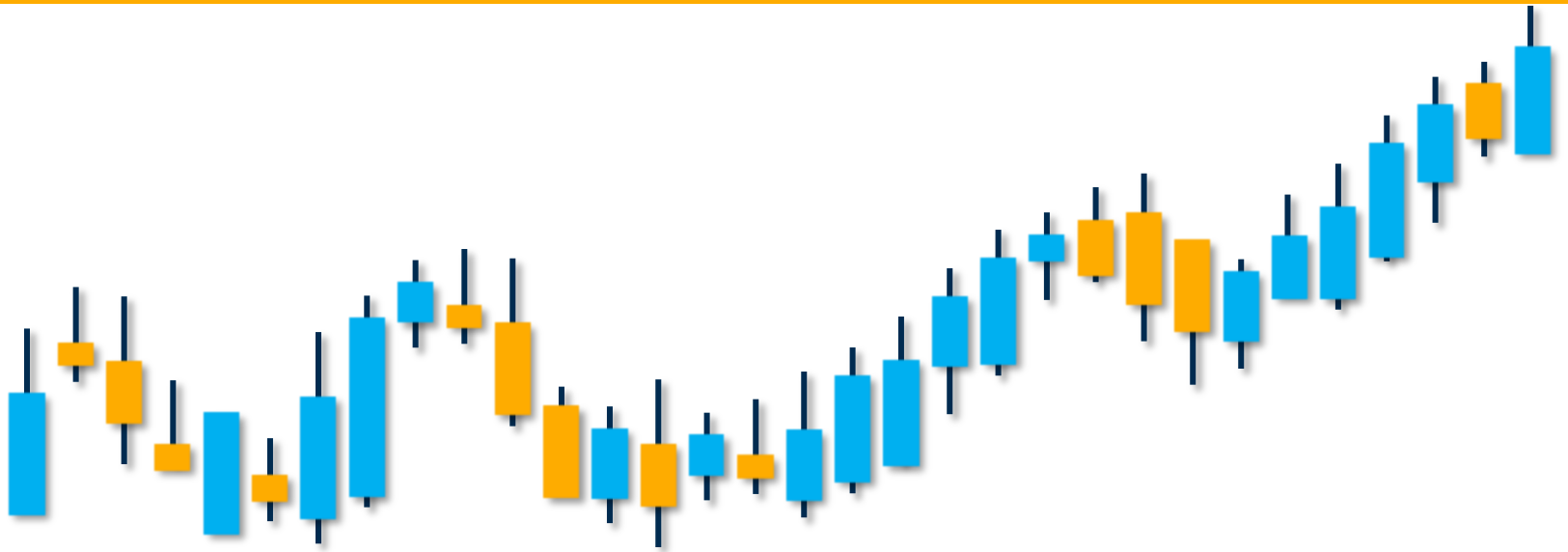
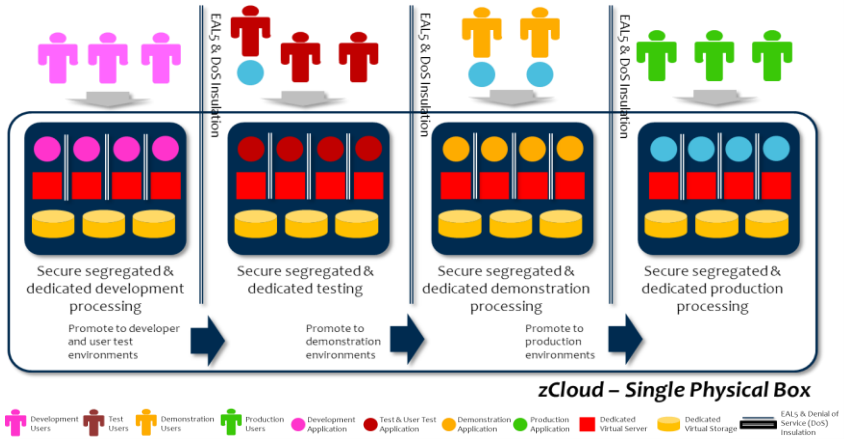
HALF THE PRICE. HALF THE WATTS. HALF THE SPACE.



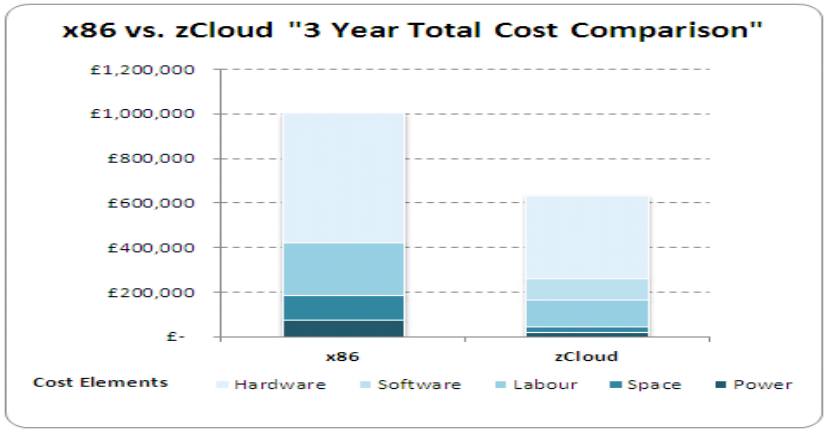
Smarter Education with zEnterprise Linux Server

Executive Summary

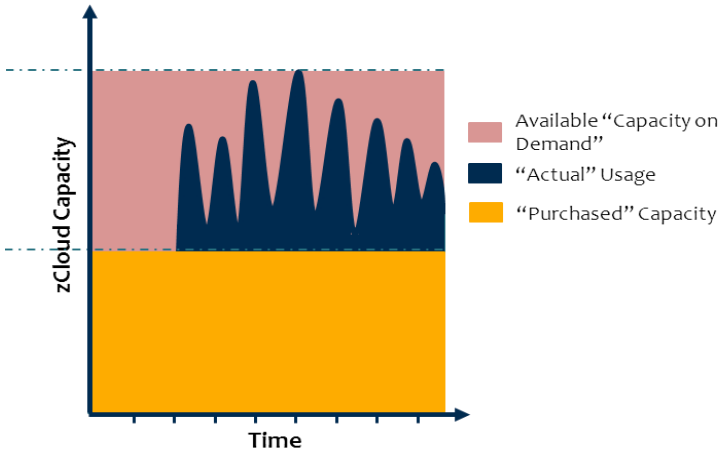
One Box to Manage ***NOT*** Many



Control on costs with ***Increased Margins***



Flexible capacity on demand ***enabling PAYG***



Proven technology used by the best

BARCLAYS

Bank of America

Xchanging
Inspiring Innovation

RBS
The Royal Bank of Scotland

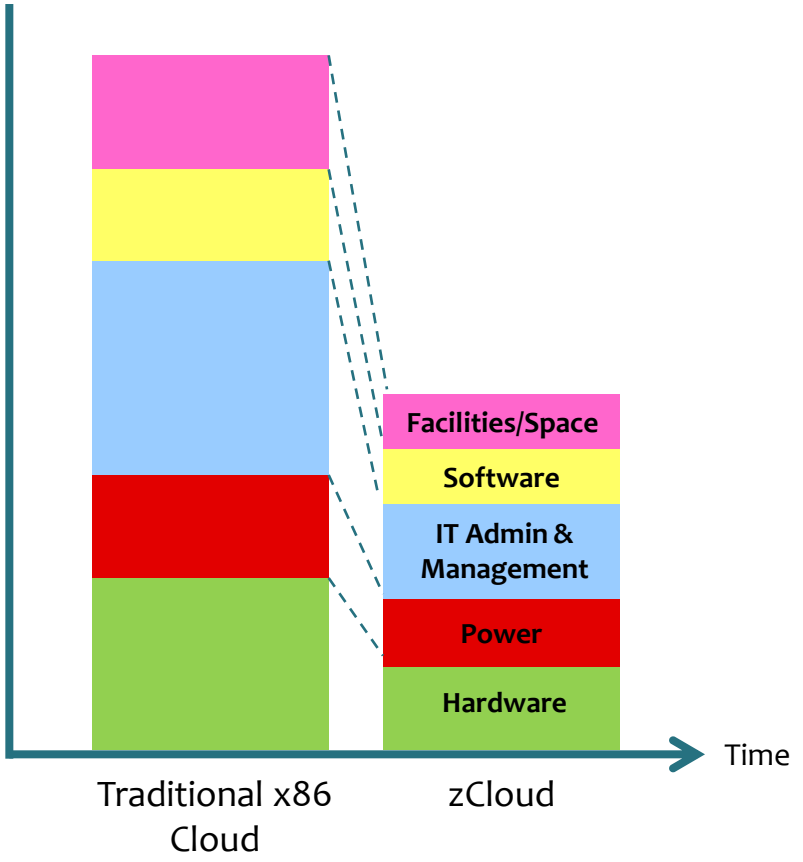
BT

Santander

zCloud… Deliver more VMs for less cost!

HALF

THE PRICE



Note: Assumes 4,350 VMs

Potential Savings in cost, Power and floor space per VM per month for zCloud is …

		zCloud				x86		
		Cost	Cost Savings	Power	Space	Cost	Power	Space
z114	100 VMs	£136.51	4.2%	49	0.42u	£142.25	36	0.42u
	250 VMs	£72.94	22.6%	20	0.17u	£ 94.21	28.8	0.16u
	450 VMs	£48.98	39.8%	11	0.09u	£ 68.36	24	0.18u
z196	450 VMs	£53.93	26.8%	34	0.18u	£ 68.36	24	0.18u
	1600 VMs	£38.28	62%	9.6	0.05u	£ 62.03	18	0.10u
	3200 VMs	£37.32	61.2%	4.8		£ 60.15	18	

- **x86 is ***NOT*** the only way to deliver Public and Private Clouds**
- **zCloud can deliver the same services in a more effective way**
- Note: All figures per VM per Month

* Published WWW pricing 2012-05-28

Sample Oracle consolidation & cost reduction

Model	Size of Config	ELS	With Service Management setup	x86 Cores non virtualised	X86 Cores Virtualised	No. of z Cores	Oracle Non-virtualised	Oracle virtualised	Oracle on zLinux
z114	small	**£143,037**	**£166,893**	80	16	2	£2,000,000	£400,000	£50,000
	medium	**£260,177**	**£328,167**	240	48	6	£6,000,000	£1,200,000	£150,000
	large	**£358,731**	**£463,697**	400	80	10	£10,000,000	£2,000,000	£250,000
z196	expandable	**£448,000**	**£515,990**	300	72	6	£7,500,000	£1,800,000	£150,000
	supersized	**£1,600,000**	**£1,823,054**	1600	384	32	£40,000,000	£9,600,000	£800,000

N.B – All IBM Pricing is subject to Special Bid and is purely for indicative purposes

N.B – Oracle cost are assumed to be £25K per core

Case Study: Marist College

And IBM System z solutions for Higher Education at Marist

Managed with Cloud

Learning Management Software
- Management
- Collaboration
- Content
- Mobility

Sakai

Collaborative Development Software
- Rational Quality Mgr.
- ClearCase
- ClearQuest

Rational. software

Linux Images
Virtualize servers for:
- Research
- Students
- Linux Foundation

THE LINUX FOUNDATION

Ellucian Banner ERP
- Cognos
- Oracle 11G R2

Tuned to the Task: Optimized Systems

Big Data: BI & Analytics

z/OS Environment
- DB2
- WAS
- CICS
- IMS
- ISPF
- z/OS Test Drive Images
- RDZ

Virtual Desktops
- Cognos Framework Mgr.
- TM1
- SQL Server
- More…

VCL VIRTUAL COMPUTING LAB

Business Intelligence
Business Analytics software

SPSS

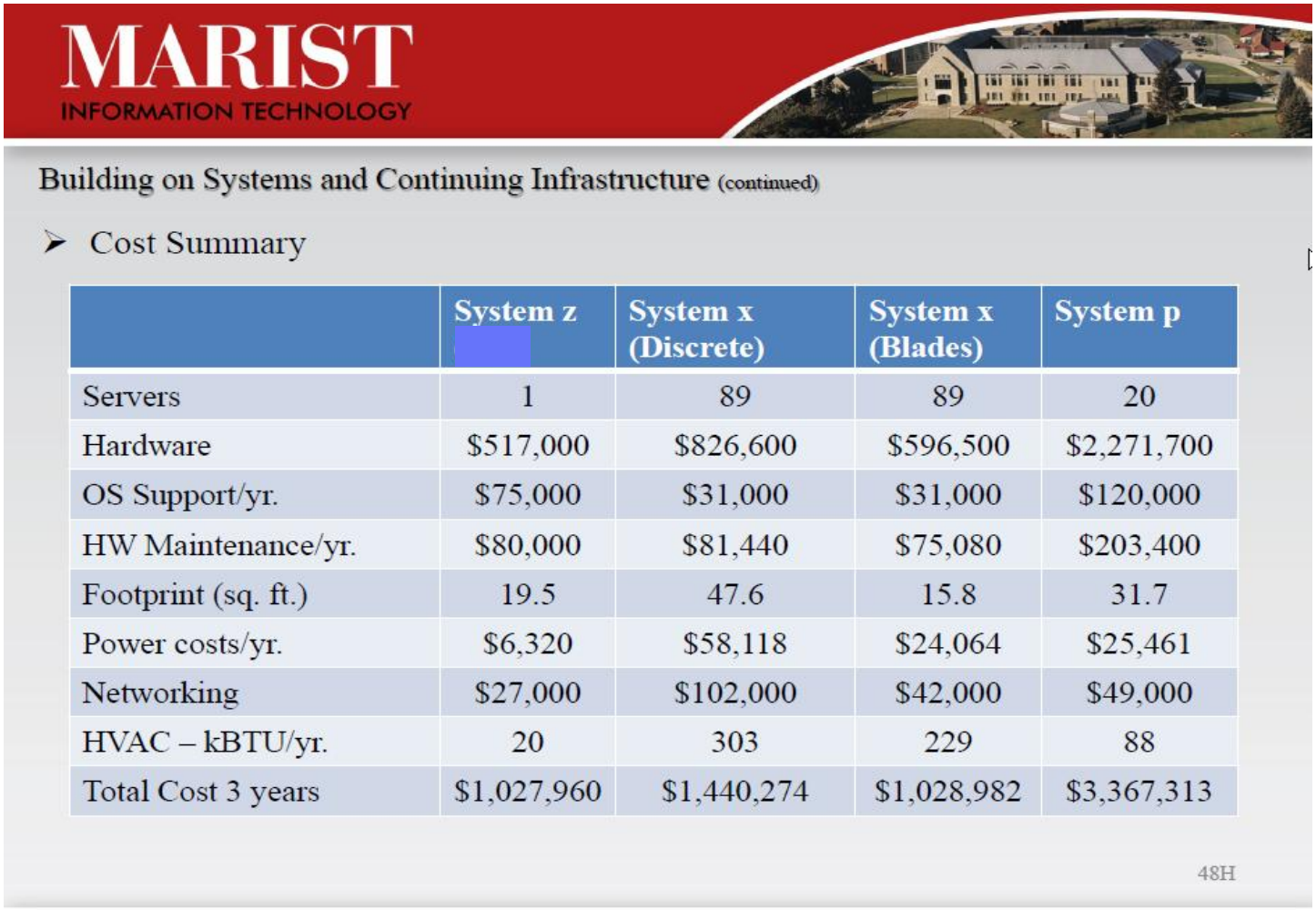
- Cognos
- SPSS

COGNOS

Success on System z

- Currently virtualized on z/VM
- Webmail Interface to IMAP Using Horde
- Banner Application Servers – ERP for Education
- General Web Server for all Faculty, Staff and Students
- A Wiki's
- IceCast – audio streaming server (encoding on Intel server)
- Test servers for all server admin staff
- Various projects for The Linux Foundation supporting Open Source development on System z (formerly Open Source Development Labs – OSDL)
- Oracle Database Servers (at least 8)
  - LAMP Web Servers
  - Over 20 Different Servers in Production
  - Over 600 Servers for Students
  - Supports Student Government to Functions and Clubs
- Analytics Cloud on System z and Virtual Computing Lab (VCL)
- Sakai hosting for Woodstock Day School
- General Linux Server for Student Computer Society
- Test Servers for our Sakai Environment and Development
- Firewall for the other Linux Servers
- Subversion Server for all Marist Development
- NTP Server for Campus
- Central Authentication Server (CAS)
- Email Gateway Hub
- Main College Web Servers including Production and Test
- College Library Web Servers
- File Dropbox
- Web content management systems (OmniUpdate, WordPress)
- Xymon (Hobbit) monitor for servers and network devices
- Cognos Business Intelligence Infrastructure
- SPSS
- Jobs.Marist.Edu (Job Applicant Tracking)

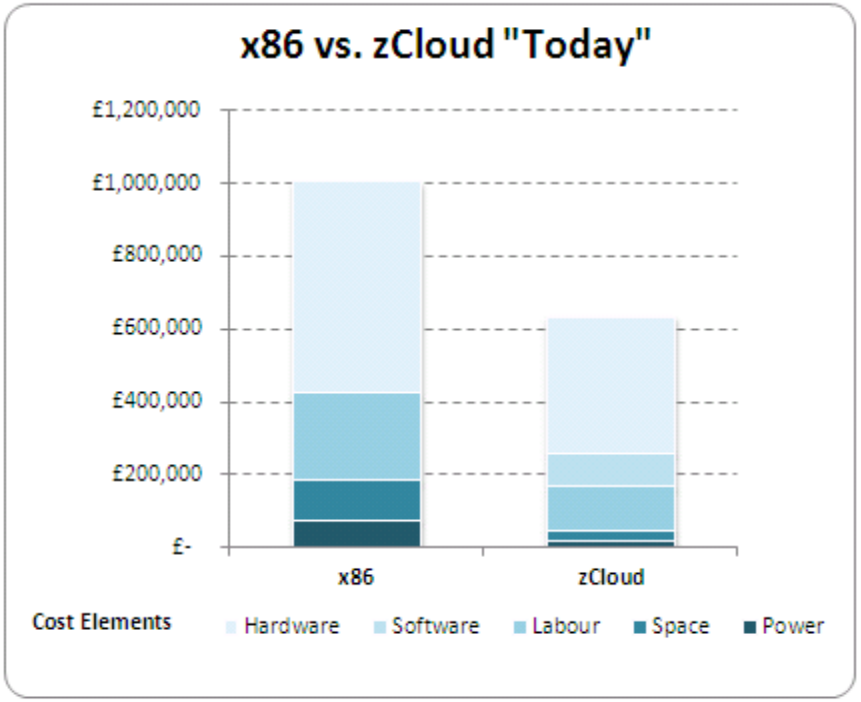
Cost Comparison

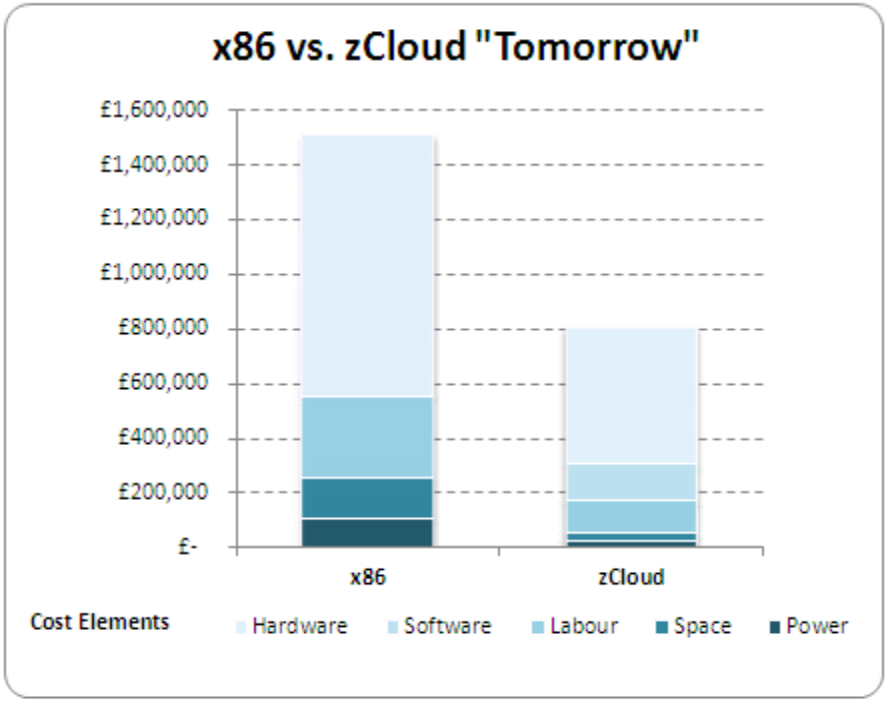


	System z	System x (Discrete)	System x (Blades)	System p
Servers	1	89	89	20
Hardware	$517,000	$826,600	$596,500	$2,271,700
OS Support/yr.	$75,000	$31,000	$31,000	$120,000
HW Maintenance/yr.	$80,000	$81,440	$75,080	$203,400
Footprint (sq. ft.)	19.5	47.6	15.8	31.7
Power costs/yr.	$6,320	$58,118	$24,064	$25,461
Networking	$27,000	$102,000	$42,000	$49,000
HVAC – kBTU/yr.	20	303	229	88
Total Cost 3 years	$1,027,960	$1,440,274	$1,028,982	$3,367,313

System z TCO Studies (Eagle Study) - Sample

Comparing the old and the new – 3 Year Total Costs





	x86	zCloud
Power	£ 76,650	£ 21,024
Space	£ 108,000	£ 27,000
Labour	£ 240,000	£ 120,000
Software	£ ?	£ 93,912
Hardware	£ 581,000	£ 373,929
Total	**£ 1,005,650**	**£ 635,865**

	x86	zCloud
Power	£ 107,310	£ 26,280
Space	£ 148,500	£ 27,000
Labour	£ 300,000	£ 120,000
Software	£ ?	£ 133,712
Hardware	£ 957,250	£ 500,177
Total	**£ 1,513,060**	**£ 807,169**

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