

# millennia...

*50 years young!*



## The 21<sup>st</sup> Century Mainframe



# Agenda

- Introducing the 21st Century Mainframe
  - Mainframe 101
  - New stuff
  - Cool stuff
- Managing the 21st Century Mainframe
  - Scheduling
  - Automation
  - Storage



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# Introducing the 21<sup>st</sup> Century Mainframe

- Mainframe 101
- New stuff
- Cool stuff



NASA used  
mainframes



Jets use IMS



Desert Storm  
used a 4381



ATMs use CICS



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# Mainframe 101

- Not **JUST** used in Finance!



All use mainframes every single day!



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# Mainframe 101

- z/Auditing Essentials Volume 1

IBM first announced MVS as the operating system to run its “big iron” way back in April 1964. In the 49 years since, it has morphed into z/OS running in increasingly complex configurations on System z with the very latest zEnterprise hardware. The platform has bucked the “Technological Discontinuity” trend identified in the Stages Theory of Computer Growth, described in an early Harvard Review article. It has done this by continually evolving to serve Business better.

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The System z environment is becoming increasingly complex (with five different GA operating systems available currently and more in the pipeline) and critical to Business (some 80% of the world’s business data lives behind a mainframe). But there are some damaging myths that surround it at the moment.



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# Mainframe 101

- Myth 1
  - They are old technology and nobody uses them anymore
- Truth 1
  - Sure the mainframe will be celebrating its 50<sup>th</sup> birthday this year
  - The car is even older technology but no one believes that a Model T Ford is the same beast as a Subaru Imprezza!
  - Today's mainframe is exponentially faster, bigger and better than the 1964 version
  - 96 of the world's top 100 banks, 23 of the 25 top US retailers, and 9 out of 10 of the world's largest insurance companies run System z
  - 71% of global Fortune 500 companies are System z clients
  - 9 of the top 10 global life and health insurance providers use System z
  - Mainframes process roughly 30 billion business transactions per day
    - including most major credit card transactions and stock trades, money transfers, manufacturing processes, and ERP systems



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# Mainframe 101

- Myth 2
  - They only run legacy applications
- Truth 2
  - TCP/IP was rewritten in 1997 to allow out of the box communication
  - Unix Systems Services (OMVS) around the same time
    - CICS Transaction Gateway
    - WebSphere Application Server
    - Domino
    - Java
  - Linux on z since 2000
  - Email
  - Web enablement

leg-a-cy  
/'legəsē/

**Noun**

An amount of money or property left to someone in a will.

**Adjective**

Denoting software or hardware that has been superseded but is difficult to replace because of its wide use.

**Synonyms**

Heritage, bequest, inheritance, patrimony

# Mainframe 101

- Myth 3
  - They are really expensive
- Truth 3
  - Initial outlay \*IS\* more than a Windows server
  - Total Cost of Ownership is another matter
    - The mainframe delivers:
      - higher utilization
      - lower overheads
      - lowest total cost-per-user of any platform





# Mainframe 101

- Myth 4
  - All the people who know how to run them are dead!
- Truth 4
  - Erm, do I really have to address that one?
  - OK, I will!
    - Yes, classic mainframe personnel **ARE** getting older but...
    - IBM Academic Initiative
    - University of Canberra
    - GSE UK Conference
      - 101 Sessions in all streams
      - Students invited
  - Our real legacy must be to make sure System z runs for another 50 years



# New Stuff

- Linux on z
  - Scalability
  - reduce license fees
    - Oracle... cough!
    - and even reduced support cost from SUSE and RedHat (per IFL)
    - reliability of the z platform



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# New Stuff

- Oracle

Model	Size of Config	Number of IFL's	Enterprise Linux Servers	With Service Management setup	x86 Cores non virtualised	X86 Cores Virtualised	Oracle Non-virtualised	Oracle virtualised	Oracle on Linux for z
z114	small	2	£143,037	£166,893	80	16	£2,000,000	£400,000	£50,000
	medium	6	£260,177	£328,167	240	48	£6,000,000	£1,200,000	£150,000
	large	10	£358,731	£463,697	400	80	£10,000,000	£2,000,000	£250,000
z196	expandable	6	£448,000	£515,990	300	72	£7,500,000	£1,800,000	£150,000
	supersized	32	£1,600,000	£1,823,054	1600	384	£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



# New Stuff

- Ziips & Zaaps
  - ever increasing eligible workloads
    - not just supporting tradition z applications
    - but also XML and Java
    - allowing the customer to offer Java Web apps with the level of reliability required when running business applications using mission critical data



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# New Stuff

- WebSphere
  - 3rd party middleware
  - MS Biztalk can speak with:
    - COBOL apps
    - WebSphere MQ
    - z/OS hosted files and DB2



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# Cool Stuff

- Airlines
  - Ticketing systems
  - Flight statistics etc
- Direct Line
  - Rates tables stored in CSA
  - All quotes access mainframe even those initiated on the internet
- JD Williams
  - Marisota
  - Jacamo
- Mark and Spencer
  - Warehouse controls



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# Managing the 21<sup>st</sup> Century Mainframe

- Scheduling
- Automation
- Security
- Storage
- Web Enablement



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# Scheduling

- 3<sup>rd</sup> Most Important piece of enterprise software
- Responsible for ensuring critical business processes are carried out on time and in the correct order
- Everything from customer billing to employee payroll via daily to yearly reporting jobs
- For a large enterprise this can amount to 10,000's of interlinked processes every day



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# Automation

- 2<sup>nd</sup> Most Important piece of enterprise software
- Responsible for maintaining the computer environment and all of the resources used by all the other enterprise software
- Ensures all of the day to day system activities are carried out on time and in the correct order, every time. It doesn't take holidays, get tired or go on strike
- Any process that can be 'check-listed' can be automated
- For large enterprises this can involve monitoring 1,000,000's of events across multiple environments in a single day



# Security

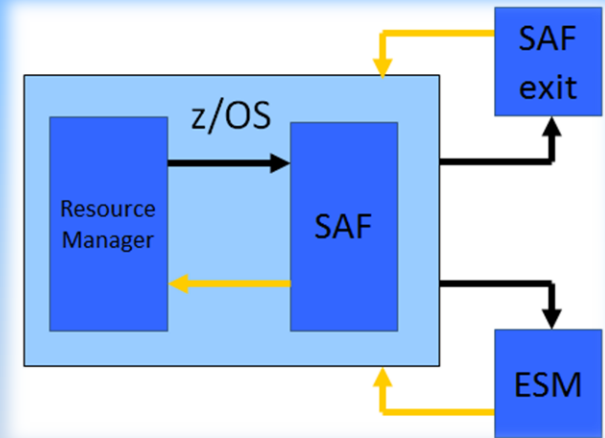
- Most Important piece of enterprise software!

- SAF

- RACF
- CAACF2
- CA Top Secret

- Most Securable Platform

- Over reliance on defaults and lack of applied knowledge can leave the platform as open to “Hacker Attacks” as any other



# Storage

- Space Management
- Backup and Recovery
- Efficiency



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# Web Enablement

- FedEx Parcel Tracking
- Online banking
- zBX



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# The Future

- Bigger, Better, Brighter!
- Cloud
- Virtualisation
- The mainframe is here to stay!
- Get involved or get left behind!



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# A Cheeky Bit of Marketing...

- Purchase the next 5 “Bite Sized Education” sessions for £100
  - z/OS Security (RACF, ACF2 & Top Secret) – 1 hour
  - Automation & Scheduling – 1 hour
  - Transaction Management Systems (CICS, IMS, WAS) – 1 hour
  - Databases (DB2, IMS, Adabas, IDMS) - 1 hour
  - REXX – 1 hour
- Go to [www.sysprog.co.uk](http://www.sysprog.co.uk) to find out more



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# A Cheeky Bit of Marketing...

- z/OS Security (RACF, ACF2 & Top Secret) – 1 hour
  - A little bit of history
  - Users
  - Stuff
  - Auditing



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# A Cheeky Bit of Marketing...

- Automation & Scheduling – 1 hour
  - Automation basics
    - To automate or not to automate?
    - IBM's approach
    - ISV differences
  - Scheduling basics
    - What's all the fuss about scheduling?
    - IBM's approach
    - ISV differences



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# A Cheeky Bit of Marketing...

- Transaction Management Systems (CICS, IMS, WAS) – 1 hour
  - A little bit of history
  - A look at today's transaction management systems
    - Why pick one over the others?
  - Advanced functions
    - Web enablement?
    - Security/Audit trails



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# A Cheeky Bit of Marketing...

- Databases (DB2, IMS, Adabas, IDMS) - 1 hour
  - A little bit of history
  - Tables
  - Views
  - Product specifics



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# A Cheeky Bit of Marketing...

- REXX – 1 hour
  - A little bit of history
  - Coding principals
  - Introducing variables
  - How to use the PARSE command



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