

Linux on the mainframe . . .

Why some get it and others don't

. . .

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Some History

- This presentation is based on a combination of nearly 40 years of experience with VM, data from several sources including our own Velocity customers, IBM, IBM's Eagle Team, CA, Gartner Group, and others now realizing the mainframe is a much better strategy than other platforms . . . Yes, history does indeed repeat itself.

First: What is a “Legacy System”?

➤ *“A legacy system is an old computer system or application program that continues to be used because the user (typically an organization) does not want to replace or redesign it.”*

en.wikipedia.org/wiki/

SOUND FAMILIAR???

What the “forward thinking” now realize:

The “legacy event” of the 90s is creating more issues for IT than the mainframes of the 70s and 80s.

- A nightmare to manage, administer, and maintain.
- Inefficient (often prime time only) server utilization.

Today's legacy systems are the byproduct of the “add another rack” generation of the 90's, DR, and Service Levels.

- Limitations: horizontal (sprawl) v. vertical growth.

What the “rack strategy” achieved . .

- More than 70% of IT's budget is spent on Ops. & Maint.
- 32.6M Servers Worldwide / 85% of capacity is idle.
- 1.2 T-GB of Data Worldwide / only 25% is unique.
- Most x86 virtualization projects fail before 25% completed

The IT “Infrastruggle”

- Environmentals –
 - ✓ Space, Heat, Power, “Green” Efforts
- Administrative
 - ✓ Maintenance, Upgrades, Chargeback, Capacity Planning, Performance, DR, Data Growth & Security
- Internal IT Pressures
 - ✓ Migrations, Consolidations, Compliance Issues, Regulations, Maximizing Resources, Flexible Capacity
- Industry Strategies & Directions
 - ✓ Cloud / Storm / SUN-down / Sky-BLUE/ Cloud-burst
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 - ✓ Cloud / Storm / SUN-down / Sky-BLUE/ Cloud-burst

Result: Platform silos and the great IT divide .



POWER *Intel* *System z*
other

Don't you wish you could be this honest

!!

I CAN'T SIGN OFF ON THIS TECHNOLOGY PLAN BECAUSE I DON'T UNDERSTAND IT.



Dilbert.com DilbertCartoonist@gmail.com

TO BE FAIR, YOU WOULDN'T UNDERSTAND ANY TECHNOLOGY PLAN, INCLUDING THE "DO NOTHING" SCENARIO.



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IS THIS ONE OF THOSE CASES WHERE CONTEXT ISN'T HELPFUL?



What IT Execs are saying:

Response from 100 IT executives at companies using Linux operating system on IBM mainframes.

93% of respondents projected that their use of IBM's IFL (Integrated Facility for Linux) would increase or remain steady.

The two main reasons:

1. Advantage of computing capacity available on their mainframe's and IFLs.

2. Linux on the mainframe is more cost-effective than other platforms.

* <http://finance.yahoo.com/news/Survey-Predicts-Continued-prnews-15547427.html?.v=1>

IBM's Global CEO Study

- Over 1500 CEOs across all geos. Most intensive study conducted in this space.
- **More than 80% see an increase in complexity as their number one IT issue. Fewer than 50% say they are ready.**
- Challenges differ from region to region:
 - US / Government Regulations
 - Japan / Power shift to emerging markets
 - China / “Thinking Global” as opposed to closed society.
- Conclusion: “No matter what the industry, those that can manage and react to complexity will have the advantage over those that can't.”

CA Study Reveals System z Critical for Cloud

- 80% View Mainframe as Important part of IT Strategy.
- 73% View the Mainframe as part of Cloud Strategy.
- More than 80% will Increase Mainframe Staff this year.
- Over half feel the industry isn't doing enough.
- Almost half (46%) are seeking assistance from vendors.

The need for skilled mainframe workers

CA Study November 2010 – 200 Mainframe Executives

becomes even more critical as companies try to leverage the mainframe.

IT “Execu-lingo”

Mission: Improve Utilization of IT Resources and Capital over a sustained period of time.

Goals: Focus on effectiveness and efficiency by leveraging all of the available options, including all platforms, cloud, etc.



Beware: Don't listen to what they say, watch what they do . . .

Why the resistance to change?

1. Mixed messages from IBM and BPs.

- Reps understand power solutions better than the mainframe so that's what they sell.
- Sell the customer what he wants, especially when you can't articulate value. (x, p, z? Jelly, glazed, cream..? Just donuts.)

2. IT management often has an x86 background and would rather discuss x86 or Power because they know it.

- If it isn't broken, why change it?
- Migrations cost money and require skills. (TCA)

3. Complacency by mainframe "old timers".

- I retire in 2 years. Why fight it?

Mainframe Migration Inhibitors

- Skills
 - Mainframe skills are not easy to find.
- Management - IT Director of the Month
 - What is the IT exec's background?
 - What do they understand about the mainframe?
 - With whom do they discuss solutions? IBM? BP?
- IT Staff
 - Often near retirement age
 - Usually feel the mainframe debate is hopeless with the current management team.... So why bother...

It's often easier to just throw on the blinders”



When does management usually accept a change in platform strategy?



Crisis Realization !!

- *We're out of space (need a new building?)*
- *We're out of power (can't get it now... or ever..)*
- *Disaster recovery is an impossibility . . (Audits?)*
- *Can't meet SLAs or security protocols . . (More Audits)*
- *Change at the IT Exec level . .(where did the other one go)*

*So, what
differentiates the
mainframe “bigot”
from the other guy?*



Mainframe folks don't mind:

1. Measuring resource capacity and usage. (Because we can and it's something we encourage.)
2. Sharing those numbers with management and the user community. (and we do)
3. TCO / TCA Comparisons: z vs. x86 & Power (we win)
4. Processor and Storage that Scale both V. & H. (we win)
5. Administrative comparisons. (we win)
6. DR and Security Requirements (we win)
7. Tough Service Level Agreements (we achieve)

We question and debate the rationale of

1. Server “Sprawl”
2. Unused / Idle / Forgotten Servers (racks of them)
3. Inaccurate Measurement of Server Utilization
4. Replicated/Propagated – Software (\$\$ \$s)
5. Disaster Recovery plans that can’t be executed.
6. Service Level Agreements that can’t be met.

Real Customer Situations

Discussions from a recent conference

- State IT Operation in Northwest – “rep was pushing p”
- Insurance Co. – “those going to z couldn’t manage x86”
- Heavy Equipment – “we just keep adding boxes”
- Financial – Management Change = Change in Direction

Large Insurance Company

- Pain Points (history) –
 - Too many servers
 - Space, Power, Cooling
 - Inability to Allocate Resources Where Needed
 - New Apps - Time/Expense of Basic Trials and Testing
- Today – (strategy deployed in less than 4 months)
 - + 900 Servers on 2 Boxes / Dynamic Capacity Options
 - 100,000 Active Users
 - Zero Production Outages Since 2005

Financial User Saves 96% on Power & Cooling

	From	To
	SUN and HP	z10 EC
Footprints	61	1
Cores / Memory	442 / 1440 GB	16 IFLs/ 82 GB
Avg Utilization	13.3%	40%
Peak Utilization	28.7%	92%
# DBs	61	61
Application	Oracle	Oracle
OS	SUN Solaris	Linux on z/VM
Energy (Power and Heat)	345KWhr / 737K BTUhr	14.7KWhr. / 39.6K BTW

Benefits: Savings on Software, energy & better utilization.

Legal and Financial Company Saves Energy and Floor Space – Improves DR Capability

	From	To
	HP Proliant / SUN Fire	z10 EC
Footprints	45 HP / 106 SUN	4 (needed separate sites)
Cores/Memory	854	51 IFLs
Peak Utilization	6% to 54% (SURF data)	90%
Application	Oracle and mix	Oracle and mix
OS	HP-UX, Windows	Linux on z/VM

Other Benefits: Avoid HP and SUN refresh and gain disaster recovery in addition to energy savings.

Several Real TCO Comparisons

Scenarios	Cost – Dist	Cost - z	Cost Ratio	Migration \$
Bank	43.3M	18.2M	2.4x	None
Migrations				
Asian Finance	119M	53M	2.2x	6M
Asian Ins.	25.1M	16.3M	1.5x	2.1M
NA Finance	58.9M	34M	1.4x	5M
County Govt	8.1M	4.7M	1.7x	2.9M
Case Studies				
			<i>IBM 2011</i>	
US Utility	13.4M	6.2M	2.2x	1.9M
European Govt	5.1M	2.6M	2.0x	1.2M



IBM TCO Distributed vs. Linux on z

Item	Distributed	System z & Linux	% Reduction
Software License	26,700	1800	93%
Ports	31,300	960	97%
Cables	19,500	700	96%
Physical Network Connections	15,700	7,000	55%

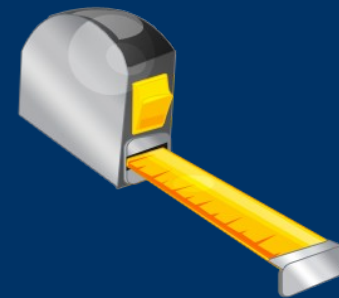
IBM 2011

Don't get yourself in a "hole" . .



*Some applications
run better on z
than others. It's a
good idea to
understand how
things are running
when migrating to
Linux on z.*

*Why bother to Measure,
Track, and Report ?*



Not All Linux Platforms are Created Equal



*\$90 on
ebay*

*Does anyone really care how fast and
how far... ?*

*BUT, would you buy a \$100K BMW-z4 without a
Gas Gauge ?*



Maximize Utilization

Or buy a \$100K BMW-z4 without GPS ?



Capacity Planning

Responsible IT professionals should always consider:

- Performance Management to ensure service levels are met.
- Capacity Planning to ensure future needs are met.
- Operational Alerts that detect issues such as looping server, exceeding disk capacity, etc., and doing so for hundreds/thousands of servers concurrently.
- Charge back and accounting information to allow your business to

Why Agent Overhead is a Consideration

- Cost of a loaded IFL is approximately \$100K
 - Includes: VM, Linux, VM stack, Maintenance, etc.
- 100 Servers with 2% agent overhead = 2 IFLs or \$200K.
- 1000 Servers with 2% agent overhead = 20 IFLs or \$2M
- Nothing is “free”.
- Velocity’s SNMP Agent requires less than .03% of a server or 30% of one (1) IFL to measure the performance of 1000 Servers. And, we provide 100% data capture.

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VM Workshop 2012

Learn z/VM and Linux on System z from the Experts

When: June 28, 29, 30th

Where: University of Kentucky - Student Union Building

City/State: Lexington, Kentucky

Workshop Fee: \$100.00 per person

www.vmworkshop.org