

Ever felt like this?



The z/VM Platform

Fit-for-Purpose - Proven for Linux

CAVMEN 2/24/2013

Len Diegel

Velocity Software Inc.

Len@velocitysoftware.com



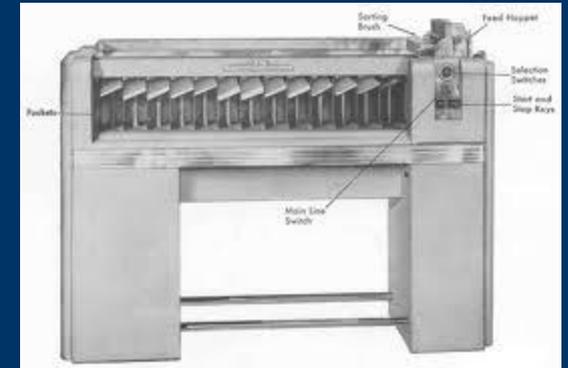
Session History

- 2011
 - Linux on z – When Does It Make ~~Se~~nse Cents ?
- 2012
 - Linux on z – Why Some Get It While Others Don't ?
- 2013
 - z/VM – ‘Fit-for-Purpose’ - Proven for Linux

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 Software customers, IBM, IBM's Eagle Team, CA, Gartner Group, and others now realizing the mainframe is a much better strategy than other platforms . . . History does repeat itself.

Remember ?



Remember the 7094 ?



Remember the S/360 ?



Remember the PC/XT



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???

Distributed: The New “Legacy”



Ft. Collins Lab (HP)

Distributed: The New “Legacy”



Distributed: The New “Legacy”



What the “forward thinking” now realize:

1.) The mainframe has been reinvented.



Mainframe or Bat-Frame ??

What the “forward thinking” now realize:

- 1.) The mainframe has been reinvented.
- 2.) 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.
 - Increasingly expensive hardware and software.
 - Issues with Security, DR, and Service Levels.
 - Limitations: horizontal (sprawl) v. vertical growth.

Today's IT issues are the byproduct of the “add another rack” generation of the 90's . . .

What the “rack strategy” achieved . .

- More than 70% of IT’s budget is spent on Operations and Maintenance.
- More than 32.6M Servers Worldwide, but 85% of that capacity is idle.
- 1.2 T-GB of Data Worldwide, but only 25% of it is unique.
- Most x86 virtualization projects fail before they are 25% complete. Reason: unexpected cost

IDC Directions Presentation & IBM’s Market Intelligence 2011

Overall, the report estimates that data centers worldwide use a whopping 30 billion watts of electricity, equivalent to the output of 30 nuclear power plants, with the United States accounting for about one third of that number.

With data centers popping up all over the globe — the number of worldwide facilities grew from 432 in 1998 to 2,094 in 2010 — operators are under increasing pressure by governments and environmental groups to better investigate solutions with an eye towards implementing them in the near future.

By CER News Desk, Guest blogger / September 25, 2012

The IT “Infra-struggle”

- 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
 - ✓ Overall lack of agility

Result: Platform silos and the great IT divide .



Sun

Intel

POWER

System z

The IT Exec and “Mainframe-uglyology”

Mainframe = (shush)

Big Iron = (no comprende)

Enterprise Server = (Oh?)

zEnterprize !! (ok)

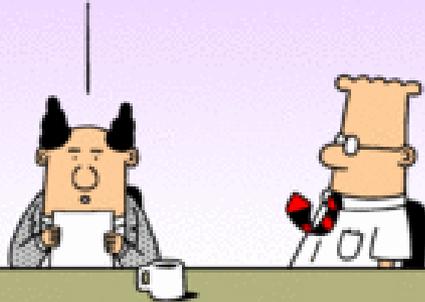
“Cloud-on-a-stick” (Oh yeah!)

Recent Linux Council Meeting - Jersey

- Customer Panel
- ADP, Nationwide, Citi, ISO
- Points:
 - Issues: Silos, Religion, Tech passes from App. to App.
 - Cost isn't always the deciding factor
 - Fit for Purpose – Is the app. critical, longevity, DR, etc
- It's not always about \$s.

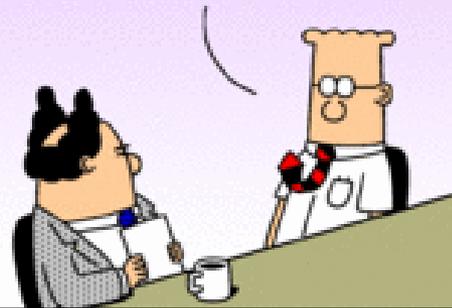
Don't you wish you could be this honest !!

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



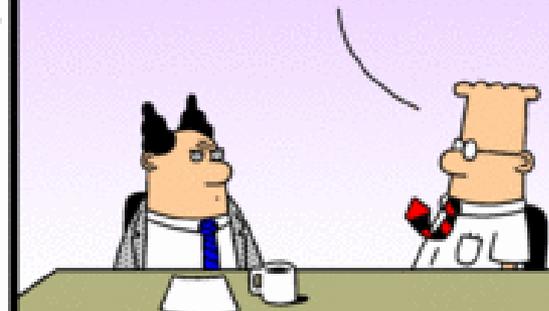
Dilbert.com DilbertCartoonist@gmail.com

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



3-2-1-2 ©2012 Scott Adams, Inc., Dist. by Universal Uclick

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



Platform Selection Considerations:

- Characteristics of the Application?
- Where is the data and what transactions access it?
- How much data?
- Is there a need for integration with other applications?
- Any potential SLA issues
- What are the dynamics – Scale, Security, Performance
- How many users and how many transactions?
- Is Virtualization needed for efficiency?

Fit for Purpose - zEnterprise

- Strategic High Volume I/O
- High throughput rates
- High availability
- Tough SLA requirements
- High Transactions rates
- “Dynamic” workload requirements

Candidates for Linux on z/VM

- Need fast deployment
- Ability to create (clone) servers quickly (100s or 1000s)
- Workloads that require inexpensive virtualization
- Requirement to reduce hardware and software cost and simplify systems management

What we hear from IBM:

- Mainframes handle 70% of Data WW and 75% of MIPS.
- Study (Eagle Team) of almost 100 customers showed cost of distributed (x86) to average 2.2 X more than System z. (more on this later)
- Linux on z amounts to 1/3 of IBM mainframe business.
- 2/3 of Top 100 mainframe accounts use Linux on z.
- 2/3 of MIPS shipped are for Linux on z
- Over 142 new mainframe in 2012 almost 50% from emerging markets.

What we hear from CEOs:

- 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
 - Europe / Economic and Social Issues
 - 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.

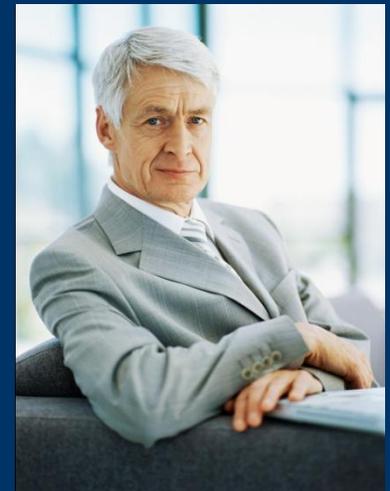
The need for skilled mainframe workers becomes even more critical as companies try to leverage the mainframe.

CA Study November 2010 – 200 Mainframe Executives

IT “Execu-lingo”

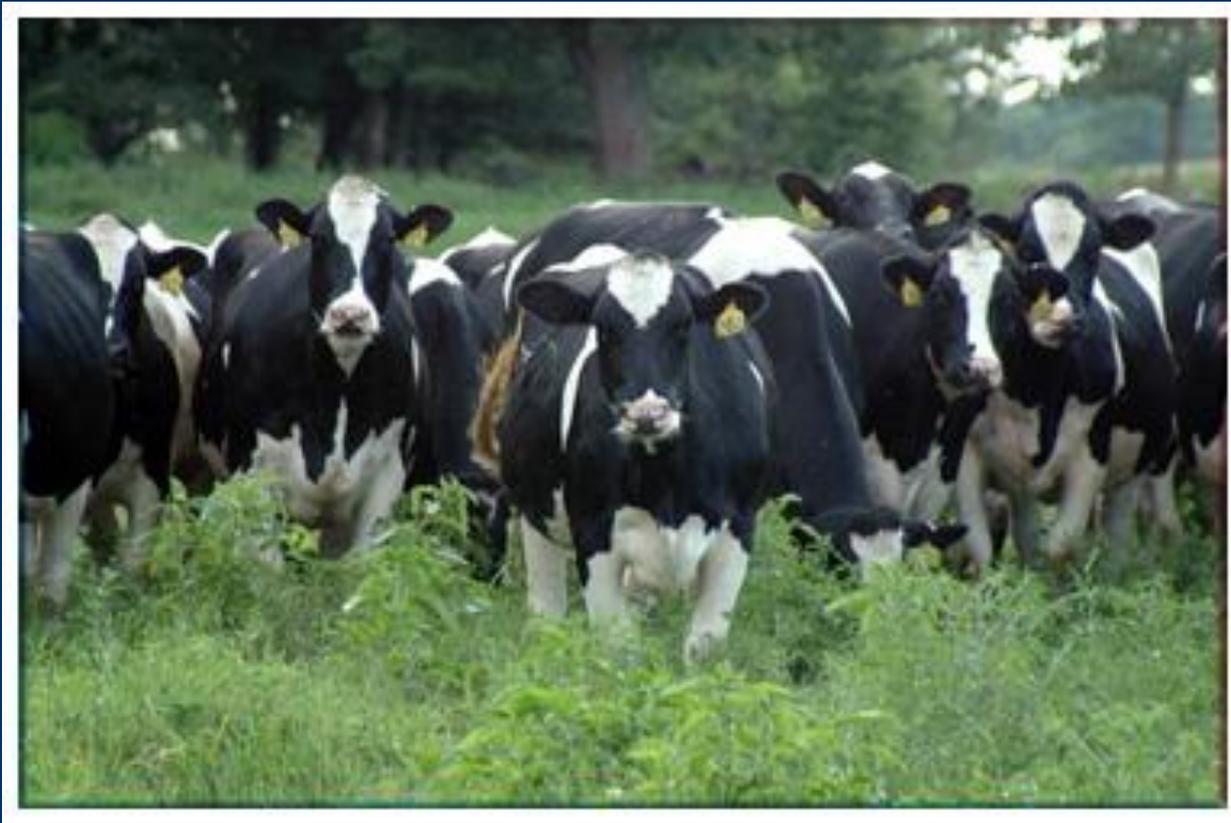
Mission: Improve Utilization of IT Resources and Capital over a sustained period of time.

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 . . .

Caution: When discussing Linux on z with x86 types, the reaction is much like that of cows watching a train pass by.



With about as much understanding / appreciation.

Why 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.)
- For the Rep, it's the "path of least resistance".

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)
- The more people in seats the bigger the "fiefdom"

3. Complacency by mainframe "old timers".

- "They don't listen to me . Why fight it? "

Mainframe Zone recently put it this way:

- Lazy IT Analyses
- IT Cultural Bias (“we like what we have and know “)
- Perceived High Total Cost of Acquisition (TCA)

For the “big iron guy”, it’s often easier to just throw on the blinders and go for the ride.”



When does management usually accept a change in platform strategy?



Crisis Realization ! ! !

- Out of space (need a new building?)
- Out of power (can't get it now... or ever . .)
- DR is an impossibility . . (so are the audits.)
- Fail to meet SLAs or security protocols . . (Rutt Rohh)
- Current IT Exec is fired.
 - (And we want to know where the hell he went ! ! !)

*So, what differentiates the
mainframe , big iron, Enterprise
Server “bigot” (you) from the other
guy?*



*So, what differentiates the
mainframe , big iron, Enterprise
Server “bigot” (you) from the other
guy?*



Mainframe folks:

1. Measure resource capacity and use (Because we can and it's something we encourage.)
2. Share numbers with management and the user community. (and we do)
3. Do TCO / TCA Comparisons: z vs. x86 & Power (we win)
4. Like platforms that Scale both V. & H.
5. Don't mind administrative comparisons.
6. Understand DR and Security Requirements
7. Write code that lasts for decades.

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.
7. Security issues that often go ignored.

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 a real concern for some: David Brown - IT Director Bank of NY - Mellon

- Business purchased 1st Mainframe in 1955 (almost 50 years).
- 112,500 Cobol Programs and 343MLOC
- “We have people that we will be losing who have a lot of business knowledge. That scares me.”
- Cobol programmers are tough to find.
- Survey 357 IT execs: 46% notice shortage of Cobol skills.
- How do they transfer the deep understanding of the business logic... before that understanding walks out?

Trinity Millennium Group

- Established process to migrate Cobol applications
- But, process can be time consuming and costly.
- One client spent \$1M as part of a mainframe migration.
- A Cobol programmer could have handled it for \$200K.
- 99 IT Exec Survey Response to Shortage of Cobol Skills
 - 46% / Yes
 - 23% / No
 - 22% / Not Yet

Mainframe / zEnterprise Initiatives

- Internal Training – CA, Nationwide, others
- IBM's Academic Initiative & Destination z Programs
- VM Workshop – University of Indiana - Purdue / June 23
- WAVV – Covington
- SHARE - SF
- User Groups – Hill Gang, MVMUA, CAVMEN, others.
- Simple things like the VM and Linux listserv . .

Real Customer Comparisons

Discussions at a recent conference:

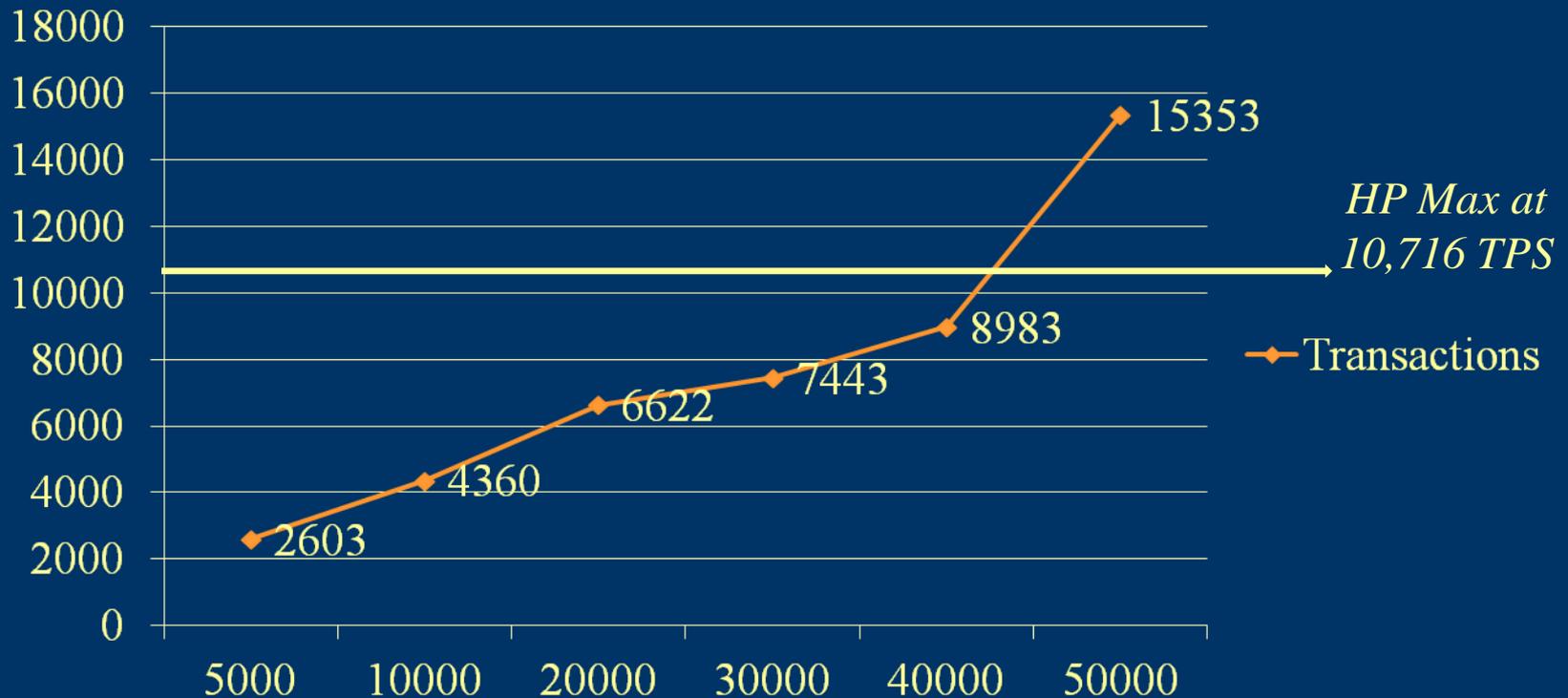
- State IT Operation in Northwest – “rep was pushing p”
- Insurance Co. – “those going to z couldn’t manage x86”
- Heavy Equipment – “we just keep adding boxes”
- Financial – Change of management – change in direction
- BCBS – South Carolina gets it... Why not others..(?)

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
 - \$3M/Year in Savings

System z vs. Superdome

Transactions



Largest HP Banking Benchmark: TCS BaNCS on IBM & HP. State Bank of India (HP) – Kookmin Bank (IBM)

Keeping Core Business on Mainframes Reduces Costs over a Distributed option = Increase 33%

Industry	Measure	Avg IT Cost of			%Improve
		Goods	MF Biased	Server Biased	
Airlines	Per Passenger Mile	\$ 0.007	\$ 0.0061	\$ 0.0076	-20%
Automotive	Per Vehicle	\$ 333	\$ 275	\$ 370	-26%
Chemicals	Per Patent	\$ 57,717	\$ 55,800	\$ 59,552	-6%
Consulting	Per Consultant	\$ 53,060	\$ 48,900	\$ 62,344	-22%
Hospitals	Per Bed per Day	\$ 64.30	\$ 54.4000	\$ 71.7000	-24%
Railroads	Per Ton Mile	\$ 0.0014	\$ 0.0012	\$ 0.0018	-29%
Retail	Per Store (Door)	\$ 494,818	\$ 421,346	\$ 560,300	-25%
Web Sites	Per Search	\$ 0.042	\$ 0.046	\$ 0.041	12%
Trucking	Per Road Mile	\$ 0.177	\$ 0.1550	\$ 0.1940	-20%
Armed Service	Per Person	\$ 8,036.00	\$ 6,871.00	\$ 9,839	-30%
Utilities	Per MegaWatt Hour	\$ 2.63	\$ 2.21	\$ 2.94	-25%
Oil & Gas	Per Barrel of Oil	\$ 2.10	\$ 1.78	\$ 2.32	-23%

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 Btu Hr	14.7KWhr. / 39.6K KBtu

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				
US Utility	13.4M	6.2M	2.2x	1.9M
Rest. Chain	56.3M	23.3M	2.4x	10M

IBM 2011

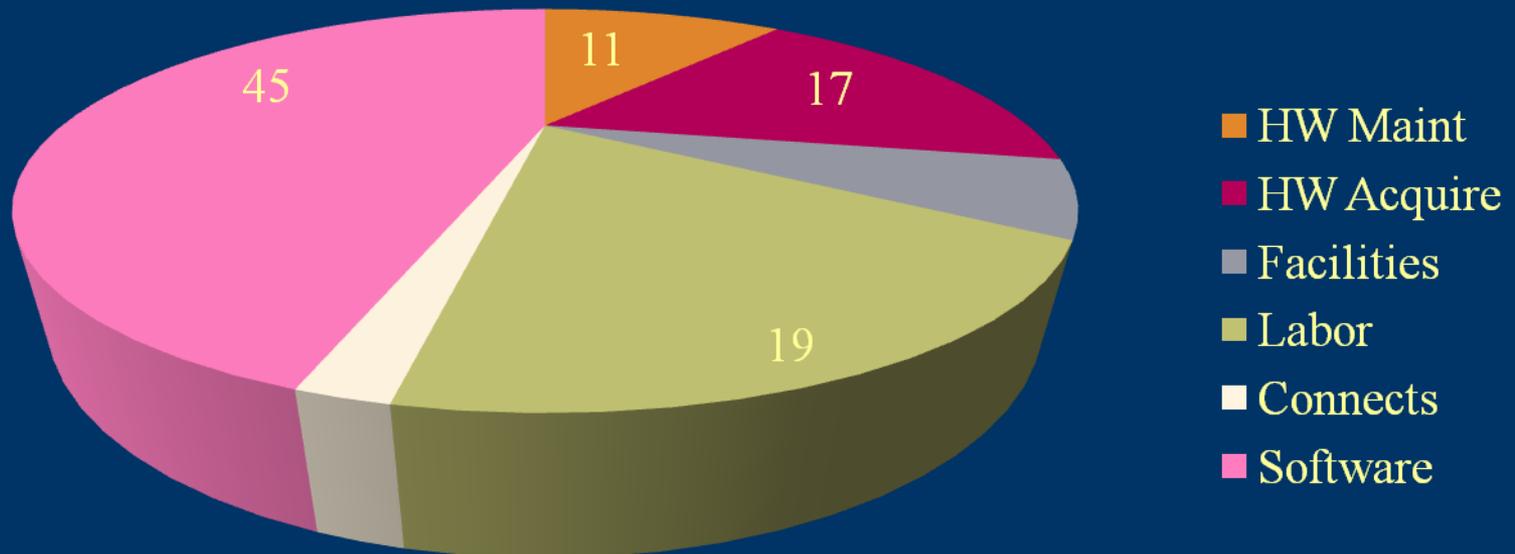
IBM TCO Distributed vs. Linux on z

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

Categories as a % of Gross Savings

Savings



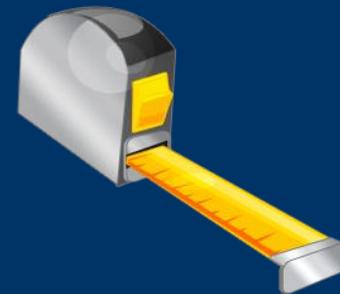
IBM 2012

But don't get yourself in a "hole" . .

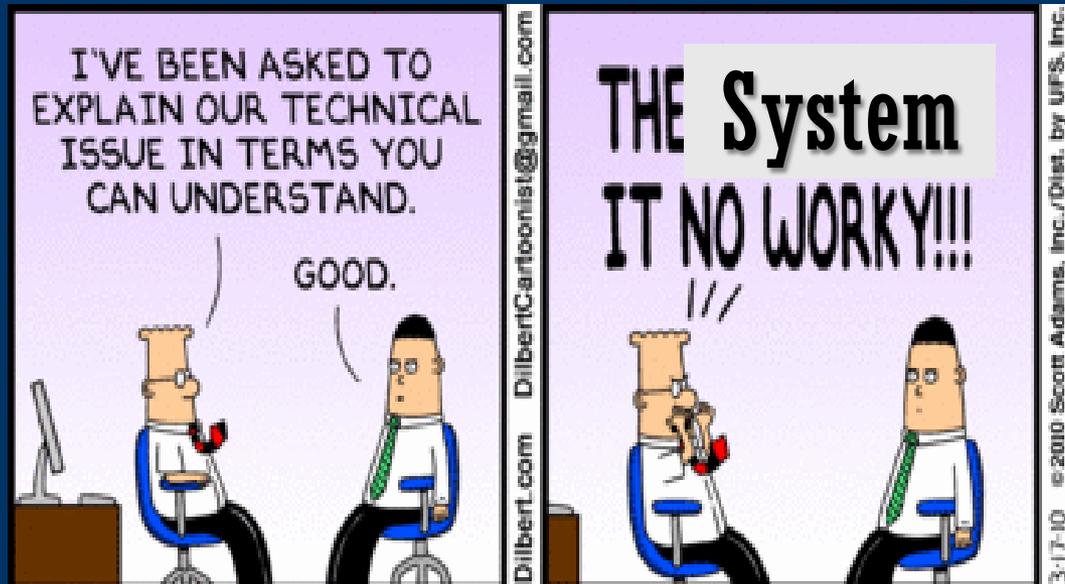


Some applications run better on z than others. It's a good practice to understand how things are running when migrating to Linux on z.

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



*Mainframe Performance :
It's not something you fix with a "reboot".*



Not All Linux Platforms are Created Equal



*\$2500 at
Honda*

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 charge for resources consumed.

Maximizing Mainframe Utilization and Performance = Cost Avoidance (< IFLs)

- Performance Management –
 - You want to run your IFL as close to 100% as possible
 - Incremental savings as you add servers and increase utilization
 - Example: two(2) IFLs running at 30% will cost \$100K more than one(1) IFL running 60%.
- Capacity Planning
 - You have to know where you've been to understand where you are going. This means TOTAL DATA ACCURACY !
- Operational Alerts to address issues before they happen.
- 100% Capture Ratio for Accurate Chargeback Accounting and Low Agent Overhead .

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.

Not All Performance and Systems Management Tools are Created Equal

Only Velocity Software Does it All

z/VM – Linux Requirement	Velocity Performance Suite
Support All Linux	YES
Charge Back Accounting	YES
Capacity Planning Info.	YES
Low Cost Operation	YES
Low Overhead Agents	YES
Performance Serv. (zTUNE)	YES
Performance Education	YES
Included in IBM Redbooks	YES
Agentless - Linux	YES
Network Perf. Monitoring	YES
Accounting – VM Level	YES
Accounting – Linux Process	YES
Accounting – Linux Applic.	YES
MXG and MICS Interfaces	YES

zVPS Version 4.1 is now Available

- New zVIEW
- zPRO for Systems Management
 - Cloning
 - RACF and TCP/IP
 - More
- Keys
- Added support for VMware and VSE

The z/VM Platform

Fit-for-Purpose - Proven for Linux

CAVMEN 2/24/2013

Len Diegel

Velocity Software Inc.

Len@velocitysoftware.com

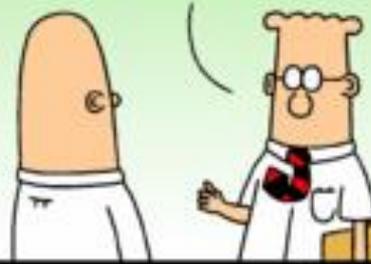


SOMEONE TOLD ME
YOUR PRESENTATION
WAS CONFUSING AND
UNPERSUASIVE.



Dilbert.com DilbertCartoonist@gmail.com

SOMETIMES ONE
PERSON'S INABILITY
TO UNDERSTAND
LOOKS LIKE ANOTHER
PERSON'S INABILITY
TO EXPLAIN.



5-17-12 ©2012 Scott Adams, Inc. Dist. by Universal Uclick

I DON'T
UNDERSTAND
WHAT YOU
JUST SAID.



SEE?

