L72

Linux for System z at Nationwide - From Woe to Whoa!

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Overview and Disclaimer

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First, a word from our announcer:

With a few exceptions, this is an overview! Where possible there are technical details you may be able to use. As you frequently hear when anyone asks for recommendations, "**IT DEPENDS"** is the answer and it applies here too. The information in this session is based on *our* experiences as long-time VM-ers building virtual Linux farms.

Interaction is good! Please ask questions whenever you want. We'll all get the most out of this session that way.

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Topics

- Our Linux Decision History
- Our Environment
- What do we expect Linux to do for us
- Direction – What drives our project
- A learning process
- Conclusions

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Our Linux History

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Our Linux Decision History
The story of Woe

- 2000 – Marist Distribution (based on Red Hat)
  - First offering of install lab at SHARE
  - Built one in-house to play with
  - Wrote up recommendation to management; Little interest or direction
- 2002 – SUSE 7
  - Basic demo of Apache and Samba
  - Wrote up recommendation to management; Little interest or direction
- 2004 – Red Hat
  - Intel, pSeries and zSeries pilots planned and started
  - zSeries waned quickly and work ceased

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Our Linux Decision History
The story of Whoa!!

- 2005 – The fun begins!
  - New Emphasis on virtualization
    - Fasten your seat-belts!
- Proof of concept system originally had three small business applications
  - Then we had at least seven with more wanting on ASAP
- *Our* initial thought was to tackle File/Print sharing
  - Naaaw! That's too easy – we started with J2EE servers!
  - WAS, WAS Portal, IHS, DB/2, etc.
    - The Hoover's of the zLinux workload
- Anticipated having about 120 total servers by year-end 2005
  - It is growing faster than anyone thought it would

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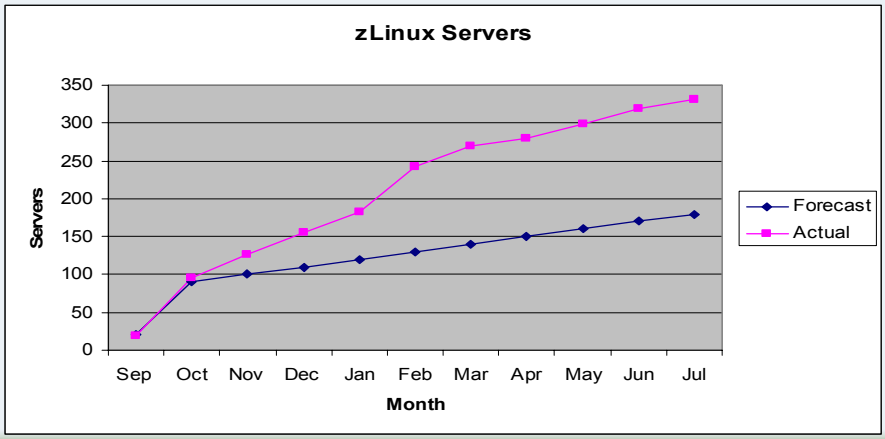
Be careful what you ask for! ☺ Things grew fast!

*And I thought we were busy **before** we got Linux!*
Rick Barlow, Aug 1, 2006



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Our Environment

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Environment – then…

- **Before we got serious about Linux**
  - **3 z900 processors; mostly z/OS; models 104, 107, 1C8**
  - **The 104 had 24GB of storage and ran:**
    - **4 z/OS LPARs**
    - **1 Coupling Facility LPAR (ICF)**
    - **2 relatively small z/VM LPARs which used about 200+ MIPs**
- **For Linux** pilot
  There was capacity to create another small z/VM LPAR on the 104.
  - **Started with 1 and ended up with 3 dedicated IFL engines**
  - **8 GB memory**
    - **6 GB Central; 2 GB Expanded**

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Environment – now…

- Today **– 2 new z9s dedicated to Linux**
  - 13 **IFL engines for test/dev and** 13 **IFL engines for production**
  - **224GB memory for test, 208GB for production**
  - **4 z/VM 5.2 LPARs on each**
    - **1 additional test LPAR on development box for sandbox running z/VM 5.3**
    - **9 total LPARs**
  - Growing FAST!
    - **Total of 463 zLinux servers today (as of July 31)**
      - **141 production and 322 test/dev**
    - **Growing UP instead of OUT**

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IBM z9 Platform (test/dev)

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What Do We Expect Linux to Do For Us?

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Problems to solve

- **Server Proliferation**
  - **Space that previously was required to house a few mainframes is now mostly consumed by multitudes of all type of servers, network hardware, other support hardware**
    - **Sun, HP, multiple brands of Intel**
    - **Routers and switches**
    - **SAN, NAS, data warehouse, etc**

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Problems to solve

- **Provisioning**
  - **Many requirements for stand-alone server**
    - **Order and obtain hardware – several weeks**
    - **Physical install**
    - **Optional external disk subsystem configuration and connection**
    - **Network configuration and connection**
    - **OS load**
    - **Middle-ware load**
    - **Application load**
  - **Many hands and significant time**
    - **Usually would take several weeks (6-8 at least) or more before the customer would get the box**

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Vision and Expectations

- **Physical space and environmental reduction**
  - **One z990 IFL engine can support 10-30 (or more) virtual servers**
  - **A z990 can have up to 32 IFL engines so it *could* replace 300+ servers** Fact: we had 330+ large servers running on 15 IFLs between two z990s
  - **Significant savings in physical space, power, cooling**
- **Reduce network complexity**
  - **A small number of physical network connections (OSAs with VSWITCH) can support all of the virtual servers in contrast to every stand-alone server having 2 or more interfaces it must manage**
- **Quicker provisioning**
  - **Setting up new server can be as fast as your disk copy tool**
    - **Depends on software needed on server and amount of manual effort**

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Direction – What Drives Linux and Virtualization on zSeries

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Direction – getting Linux on z rolling

- Start with technicians then try to influence organization
  - Common with existing zSeries shops; especially those with z/VM already in their shop ("skunk works")
    - Build something and demonstrate function and don't bother to tell anyone what it is and where it is running
    - "We will build it and they will come"
    - Be prepared to have the idea crash and burn when presented to management
  - Challenges
    - Organization barriers – turf wars
    - 'Opinions' used instead of good technical evaluations and decisions
    - Workload – real work vs. "fun" stuff like Linux

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Direction – getting Linux on z rolling

- Start with CIO (upper management) and direct organization
  - More common as industry accepts zSeries virtualization solution
  - Driven by business need (e.g. space restraints, rapid growth, etc)
  - Typically causes more structured implementation and wider acceptance
    - Some will still kick and scream, though not real loud

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A Learning Process

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Learning – everyone has to!

- Mainframe methodology differs from non-mainframe methodology
  - Repeatable automated processes versus hands-on "hacker" install
    - Typical mainframe person accustomed to well-documented, repeatable processes that permit automation for multiple installs
    - Preference for install once and copy rather than repeated installation
    - Expect software to be installed in one location and configuration in a common location
  - Different philosophy for management:
    - Privilege levels differ for installing OS, installing middle-ware, configuring
  - Different maintenance philosophy
    - Expect to regularly upgrade software on all servers

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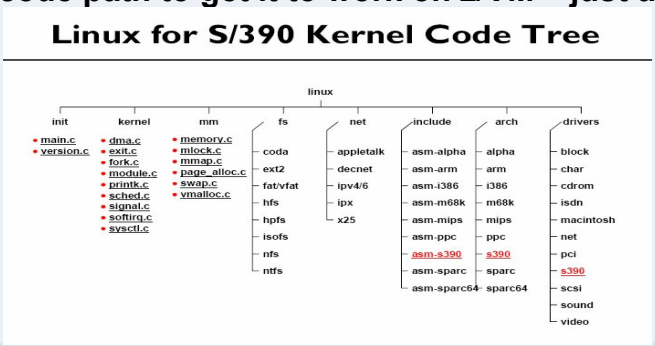
Distributions

- There are a few options to choose from when selecting a distribution for System z (S/390)
- There are only a 'few' parts that are different in the Linux code path to get it to work on z/VM – just a few…



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Distributions

- We picked and started with Red Hat and SUSE because they seemed to offer the best support for a large enterprise implementation
- Documentation differs greatly
  - Red Hat
    - Installation instructions begin at loading the RAM disk into memory
    - It appears to have been an afterthought
  - SUSE
    - Shows how to build the virtual server directory and copy the RAM disks to VM
    - It seems to understand the zSeries and z/VM environment
  - Both
    - Incomplete (inadequate) documentation of install parm information for all environments
      - Some not documented
      - Little more than syntax

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Distributions – our observations

- Default package list
  - Red Hat
    - Large list of packages in minimum load
    - Security template required omitting load, turning off or disabling many packages
    - Runtime compatibility for 31-bit not included in default 64-bit load
  - SUSE
    - Smaller list of packages in minimum load – basic runable Linux
    - Security template required only a handful of changes

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Distributions – our observations

- Red Hat Enterprise Linux AS
  - When installing Red Hat Enterprise Linux AS 3 64-bit, default RAM disk size was too small to build a complex DASD / LVM configuration.
    - Resolving this took several days and knowledgeable Linux ‘experts’ to identify. (Red Hat says this is fixed in AS 4)
  - Working bugs out of kickstart was a time-consuming repetitive process.
    - We started with a working kickstart script from Intel.
    - It was difficult to identify packages that are not on the s390 and s390x CDROMs.
  - Install (using kickstart) formatted DASD one-at-a-time (serially)
    (This may be a restriction of the kickstart process.)

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Distributions – our observations

- SUSE Linux Enterprise Server
  - Install processes formatted multiple DASD in parallel
  - Never completely got AutoYaST to work
    - Realized that cloning / copying servers makes this less important

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Linux Basics for z/VMers

- Even z/VM Sysprogs need to understand what Linux is up to.
  - What we know about running VM applications has an impact on how Linux is built on VM and knowing Linux to some degree helps get the points across to the Linux admins
  - Apply some mainframe disciplines / history / concepts to virtual Linux
- Learn how new devices are added, defined and identified in Linux for the distribution you are using.
  - Learn LVM too
    - Differs depending on distribution (kernel level and/or LVM level)
    - Using CKD DASD for virtual servers is likely to cause you to use it
- Learn the terminology differences
  - Like “Storage” vs “DASD” and “Memory” vs “Storage” !

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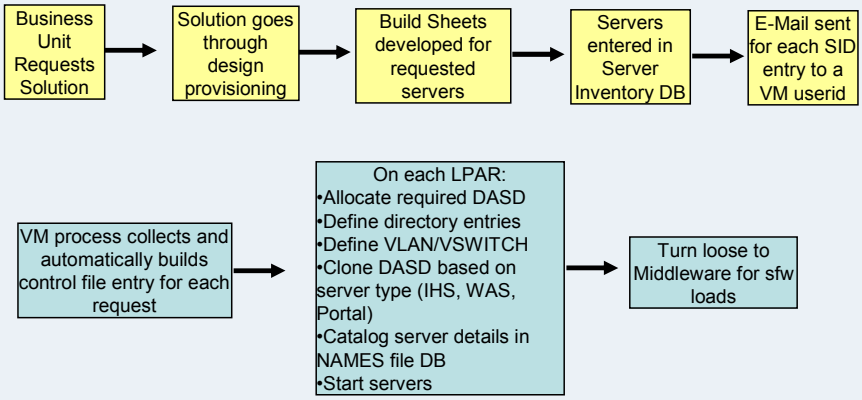
Cloning servers

- Cloning:
  - There are numerous ways to clone Linux images
    - PICK ONE and stick to it – usually not trivial work to set up
    - Once you start using it, switching to a different way will be time consuming
  - If you have hardware disk duplication available (IBM Flashcopy, STK Snapshot), it can be a huge benefit to cloning
    - If not, DDR has to be used (slow) or a third-party copy tool (HiDRO)
  - You may want to create "standby" Linux images for quick deployment
    - If you have standard templates for the Linux servers, build a few extras and deploy them as requested
      - Makes you look like a wizard when someone asks for a server and 2 minutes later they can log on to it!

Cloning servers – my take

- Until a vendor solution is obtained, I rolled my own
  - Dirmaint used for directory maintenance… *sigh*
  - DDR (now HiDRO) for large-volume copy due to storage vendor choice and no tool support for z/VM
  - Multi-stage process so that things can be fixed if they have a glitch
    - *Otherwise known as a "finger check" in the control data*
- A server can be built from scratch in < 30 minutes
  - My personal best is 28 WAS/Portal servers in 1 hr. 15 mins.
- A picture may tell it best…

Cloning / server builds



Our server build SLA is 10 days; goal is 72 hours from initial request to fully loaded.

99% of all provision requests are done in less than 12 hours now.

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Linux workloads

- **Linux on zSeries virtual servers *may* be able to run with small(er) memory (storage) sizes**
  - **"It depends" on what will run and in how much memory**
  - **A basic Linux virtual server can easily run on 64MB of memory**
  - **An IBM HTTP Server can probably run in 128-256MB depending on the number of static pages and CGIs, etc**
  - **An IBM WAS Server probably needs 512MB-1GB**
  - **An IBM WAS Portal or DB server probably needs 2G or more**
  - **There are a lot of simpler application options!**
    - **Firewall**
    - **DNS**
    - **Web server**
    - **File and Print serving**

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Linux workloads / applications

- *Any* virtualization brings out the best and worst of applications
  - Bad things shine like the sun when they are virtualized
    - Memory leaks
    - Spin loops
    - Poor design / configurations
    - Logging and debugging options
    - Intense computations
- Fixing any issues results in a much tighter, better performing application
  - And you can put more than one of them on a single virtual Linux server too

"Experts"? What we learned…

"My definition of an expert in any field is a person who knows enough about what's really going on to be scared." - PJ Plauger

- "Experts" - Do they really exist?
  - There are many people with varying levels of experience in specific areas
  - There are few (if any) who know enough about *everything*
  - Make friends with people who have knowledge in:
    - Mainframe disciplines
    - Linux
    - Network
  - Learn as much as possible about all of these areas
    - Or at least learn how to contact the right person when you need to!

The Tool Belt

- As the zLinux project continued, it was fairly obvious that providing some “basic” tools would help everyone
- Access to details about the servers
- Access to easy-to-read CPU charts & information on resource usage by server
- A one-stop panel to see the big picture at once

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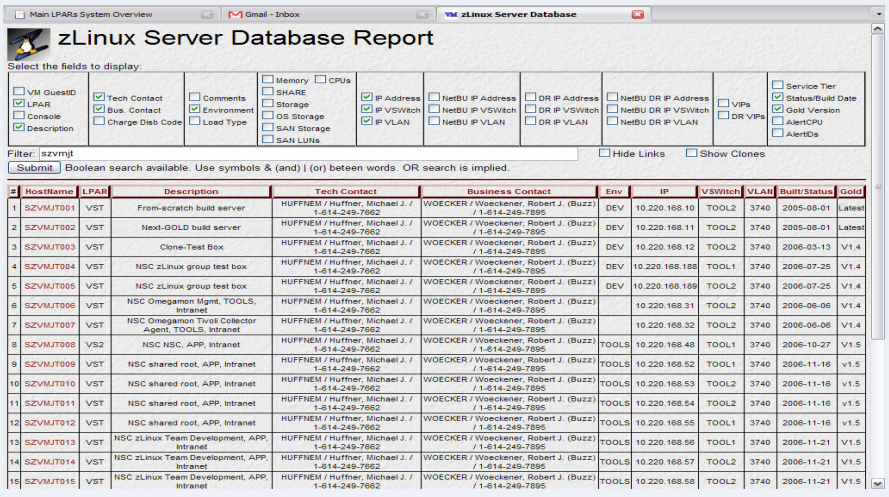
The zLinux Database – all the details



#	HostName	LPAR	Description	Tech Contact	Business Contact	Env	IP	VSWitch	VLAN	Built/Status	Gold
1	SZVMJT001	VST	From-scratch build server	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	DEV	10.220.168.10	TOOL2	3740	2005-08-01	Latest
2	SZVMJT002	VST	Next-GOLD build server	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	DEV	10.220.168.11	TOOL2	3740	2005-08-01	Latest
3	SZVMJT003	VST	Clone-Test Box	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	DEV	10.220.168.12	TOOL2	3740	2006-03-13	V1.4
4	SZVMJT004	VST	NSC zLinux group test box	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	DEV	10.220.168.188	TOOL1	3740	2006-07-25	V1.4
5	SZVMJT005	VST	NSC zLinux group test box	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	DEV	10.220.168.189	TOOL2	3740	2006-07-25	V1.4
6	SZVMJT006	VST	NSC Omegamon Mgmt, TOOLS, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895		10.220.168.31	TOOL2	3740	2006-06-06	V1.4
7	SZVMJT007	VST	NSC Omegamon Tivoli Collector Agent, TOOLS, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895		10.220.168.32	TOOL2	3740	2006-06-06	V1.4
8	SZVMJT008	VS2	NSC NSC, APP, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	TOOLS	10.220.168.48	TOOL1	3740	2006-10-27	V1.5
9	SZVMJT009	VST	NSC shared root, APP, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	TOOLS	10.220.168.52	TOOL1	3740	2006-11-16	v1.5
10	SZVMJT010	VST	NSC shared root, APP, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	TOOLS	10.220.168.53	TOOL2	3740	2006-11-16	v1.5
11	SZVMJT011	VST	NSC shared root, APP, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	TOOLS	10.220.168.54	TOOL2	3740	2006-11-16	v1.5
12	SZVMJT012	VST	NSC shared root, APP, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	TOOLS	10.220.168.55	TOOL1	3740	2006-11-16	v1.5
13	SZVMJT013	VST	NSC zLinux Team Development, APP, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	TOOLS	10.220.168.56	TOOL1	3740	2006-11-21	V1.5
14	SZVMJT014	VST	NSC zLinux Team Development, APP, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	TOOLS	10.220.168.57	TOOL2	3740	2006-11-21	V1.5
15	SZVMJT015	VST	NSC zLinux Team Development, APP, Intranet	HUFFNEM / Huffner, Michael J. / 1-614-249-7662	WOECKER / Woeckener, Robert J. (Buzz) / 1-614-249-7895	TOOLS	10.220.168.58	TOOL2	3740	2006-11-21	V1.5

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CPU overview

Main LPARs System Overview | Gmail - Inbox | JSV Home Page | System z Performance Overview

Local Time: 19:59:21 **CPU% based on Weight Limit%** Dedicated < 85% > 85% > 95% > 100%

Details Summary Only Show PN2 Show PS2 Show P4 Go

PN2 IBM-2094-S38 - zLinux Production - Interval Time: 19:58:00 - Real CPUs: 13 All LPARs

#	LPAR	CPU%	CPs	WT%	WTLim%	%ActWT
4	VN1	6.6	3	5	65.0	10.2
5	VN2	148.8	10	45	585.0	25.4
6	VN3	7.0	3	5	65.0	10.8
7	VN4	206.3	10	45	585.0	35.3
0	Totals:	368.6	13	100	1300	28.4

PS2 IBM-2094-S38 - zLinux Dev/Test - Interval Time: 19:57:00 - Real CPUs: 13 All LPARs

#	LPAR	CPU%	CPs	WT%	WTLim%	%ActWT
1	VS1	2.7	3	2	26.0	10.4
2	VS2	526.3	11	46	598.0	88.0
3	VS3	2.6	3	2	26.0	10.0
4	VS4	218.1	11	46	598.0	36.5
F	VST	6.4	2	4	52.0	12.3
0	Totals:	756.0	13	100	1300	58.2

The big picture – all in one place

Main LPARs System Overview - Local Time 19:58:19

VN2
z/VM CPU 2094 SERIAL 0FBFCD DATE 08/01/07 START 19:58:00 END 19:59:00

AVGPROC-015% 10 MODEL-2094 SERIAL-FBFCD
CPU-148% USER-143% PROB-135% SYST-5% OVHD-8% IDLE-849% PAGING-13/SEC

INQUEUE-00101 Q0-00003 Q1-00023 Q2-00012 Q3-00063
ELIG-00000 LOADING-00000

Host/uid:	CPU%	IO/Sec	Pg/Sec	Description
NZVMAS740	27.6	4.9	0.4	P&C NorthStar, App, PROD
NZVMAS807	10.5	3.2	2.2	NSC Tops, Was/MQ App, PROD
NZVMAS804	6.9	1.9	0.2	NSC Nationwide.Com, WAS App, PROD
NZVMAS738	6.4	1.3	0.6	P&C Horizon Claims, App, PROD
NZVMAS728	6.3	1.3	1.2	P&C Shared, WAS, PROD
NZVMAS734	5.6	1.7	0.5	P&C Northstar, App, PROD
NZVMDS702	4.7	3.7	0.1	P&C Agent Gateway, DB, PROD
NZVMAS702	4.0	2.0	0.1	P&C Vin / Vms Lookup / Nol, WAS App, PROD
NZVMAS718	3.9	1.3	1.0	P&C MarketLink, App, PROD
NZVMAS828	3.6	1.8	3.4	NSC Assoc Resiliency, WAS, PROD
NZVMWS824	3.5	2.3	0	NSC Assoc Resiliency, IHS, PROD

28.0%

VN4
z/VM CPU 2094 SERIAL 04BFCD DATE 08/01/07 START 19:58:01 END 19:59:01

AVGPROC-019% 10 MODEL-2094 SERIAL-4BFCD
CPU-194% USER-185% PROB-172% SYST-9% OVHD-12% IDLE-802% PAGING-29/SEC

INQUEUE-00105 Q0-00003 Q1-00028 Q2-00015 Q3-00058
ELIG-00000 LOADING-00000

Host/uid:	CPU%	IO/Sec	Pg/Sec	Description
NZVMAS741	23.3	46.2	0.2	P&C NorthStar, App MQ, PROD
NZVMAS813	18.4	12.0	0	Gates TOPS, WAS/MQ/Rpt, PROD
NZVMAS739	12.7	2.8	2.0	P&C NorthStar, App, PROD
NZVMAS808	8.5	2.3	0	NSC Tops, Was/MQ App, PROD
NZVMAS733	8.1	4.4	0.7	P&C Northstar, App, PROD
NZVMAS727	8.0	1.3	0.5	P&C Shared, WAS, PROD
NZVMAS833	7.1	0.8	0.4	NSC LMS, App, PROD
NZVMAS805	6.3	1.8	4.4	NSC Nationwide.Com, WAS App, PROD
NZVMAS729	6.1	5.4	0.5	P&C Shared, WAS, PROD
NZVMDS701	5.6	11.1	0.3	P&C Agent Gateway, DB, PROD
NZVMAS737	4.7	1.7	1.3	P&C Horizon Claims, App, PROD

VS2
z/VM CPU 2094 SERIAL 02BFBD DATE 08/01/07 START 19:56:00 END 19:57:00

AVGPROC-047% 11 MODEL-2094 SERIAL-2BFBD
CPU-518% USER-507% PROB-488% SYST-11% OVHD-19% IDLE-538% PAGING-65/SEC

INQUEUE-00232 Q0-00004 Q1-00076 Q2-00020 Q3-00132
ELIG-00000 LOADING-00000

Host/uid:	CPU%	IO/Sec	Pg/Sec	Description
SZVMDS001	101.4	6641.0	2.4	P&C Agent Gateway Data, PT
SZVMAS561	98.8	1.9	0	NSC Tops, WAS ND App, DEV
SZVMAS430	95.5	1.0	1.1	P&C NWBH, App, DEV
SZVMAS050	30.4	0.8	0.8	P&C Agent Gateway WAS App, IT
SZVMAS028	7.9	1.0	0.5	P&C, App, PT
SZVMAS026	5.8	3.3	0.6	P&C Customer Endpoint, App, PT
SZVMAS504	5.6	1.4	2.1	NSC Nationwide.com, App, ST
SZVMAS032	5.3	1.4	0.6	P&C Northstar, App, PT
SZVMAS044	4.7	1.9	0.7	P&C NorthStar, App, PT
SZVMDS002	4.7	7.8	1.4	P&C Agent Gateway Data, PT
SZVMAS550	4.4 C	1.2	0	13:49 NSC Nationwide.Com WAS App, IT

58.2%

VS4
z/VM CPU 2094 SERIAL 04BFBD DATE 08/01/07 START 19:56:00 END 19:57:00

AVGPROC-019% 11 MODEL-2094 SERIAL-4BFBD
CPU-214% USER-206% PROB-198% SYST-7% OVHD-8% IDLE-881% PAGING-41/SEC

INQUEUE-00223 Q0-00004 Q1-00073 Q2-00029 Q3-00117
ELIG-00000 LOADING-00000

Host/uid:	CPU%	IO/Sec	Pg/Sec	Description
SZVMAS100	30.0	0.7	0.1	P&C Agent Gateway WAS App, ST
SZVMAS110	11.7 C	5.9	2.5	10:03 P&C Agent Gateway, WAS, ST
SZVMAS021	6.0	1.8	0.6	P&C MarketLink, App, PT
SZVMAS031	5.3	1.4	3.4	P&C Northstar, App, PT
SZVMAS043	5.3	1.4	0.4	P&C NorthStar, App, PT
SZVMDS007	5.3	5.9	1.2	P&C Shared, DB, PT
SZVMDS100	4.5	6.2	0.1	P&C Agent Gateway DB, ST
SZVMAS027	4.4	1.6	3.5	P&C Customer Endpoint, App, PT
SZVMAS029	4.2	1.0	0.4	P&C, App, PT
SZVMDS003	3.8	3.4	0.7	P&C SRS/ARAS, WAS, DB, PT
SZVMDS104	3.8	2.6	0.2	P&C Vin / Vms Lookup / Nol, DB, ST

Conclusions

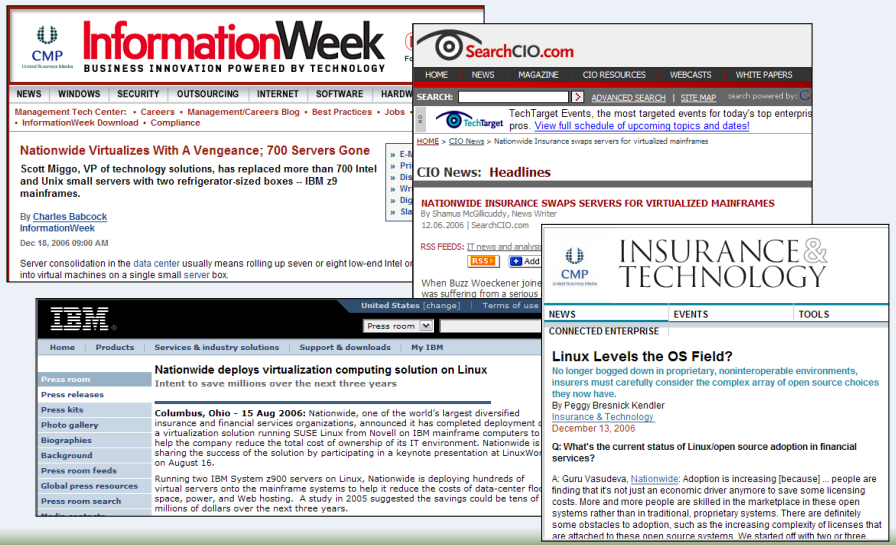
So, where are we now?

- **zLinux Total Cost of Ownership is *far* lower, provides faster roll-out (provisioning) and more services (DR) are included than any other platform alternative**
- **Over 465 virtual Linux servers active**
- **15+ live production applications**
  - **http://www.nationwide.com – the web front door to Nationwide Insurance. It was tested at 22 times its anticipated peak and still performed acceptably**
  - **More production applications in progress**
- **Forecasting indicates zLinux growth to continue at a high rate**
- **The zLinux project *has* and *is* saving** millions of dollars

So, where are we now?

- You may ask, are we all warm and fuzzy with zLinux now?
  - The short answer is, “Mostly”
  - There are still a few that try to say the mainframe is too expensive
    - We have to repeat the story a few times and show the facts again
    - Some of our best references are the ones we had the most trouble with in the beginning!
  - It is still easily proven that it is the Right Thing to be doing for the business!
  - Reed Mullen said it best when asked why do Linux on VM: *DUH!*
- With zLinux, working with z/VM is a COOL place to be now!

So does this stuff really work??!



…and more!

Nationwide Deploys Virtualization Computing Solution on Linux

Intent to save millions over the next three years

COLUMBUS, Ohio, Aug. 15 /PRNewswire/ -- Nationwide, one of the world's largest diversified insurance and financial services organizations, announced it has completed deployment of a
SUSE Linux from Novell on IBM mainframe co
reduce the total cost of ownership of its
sharing the success of the solution by par
presentation at LinuxWorld on August 16.

ES Enterprise Systems
Mainframe and High-end Server Solutions in Focus

Enterprise

Customers Get Hip to System z Value Proposition
Are a pair of recent Intel-to-System z defections a harbinger of what's to come?
by Stephen Swoyer

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Operating Systems & Middleware:
IBM Unveils Roadmap for Open Source Beyond Linux
IBM rolled out its next generation blueprint and roadmap to advance key
priorities and support for open source business models.
With this news, IBM announced Brazilian-based online gaming pioneer Ho
Nationwide Insurance, CommX, and RealPlus are among those pushing the
number of Linux-related customer engagements to more than 15,000 wor

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June/July 2006 ::
Insider Insights: Linux on the Mainframe Provides Big Savings for Nationwide Insurance
by Bill Carico
zJournal interviews Steve Womer, a senior consulting IT Architect at Nationwide Insurance, who has more than 27 years of experience in mainframe and distributed systems. For the past five years, Steve has been designing and implementing Linux solutions across various platforms.

Conclusions

- **Linux definitely is Linux – the same on all platforms**
  - **Code written for Linux on any platform can usually be used on any other platform that supports Linux with only a recompile (usually)**
- **Linux virtualization on zSeries can and does:**
  - **Reduce cost**
    - **Just software costs per engine can save you BIG $$**
      - **Simple math – note the difference in cost:**
        Take 100 servers on dual-core Intels - $LicenseCost$ * 200
        Take 100 servers on 15 IFL z990 (huge!) - $LicenseCost$ * 15
  - **Reduce complexity**
    - **Sharing R/O DASD, less complex network (wires), etc**
  - **Accelerate provisioning**
    - **Feasible to provision servers in minutes**
  - **Reduce human error of manual installation, configuration and even patching**

Conclusions

- Not every workload is suited to Linux on zSeries
  - But you have to try it for yourself
- Not all software is ready for Linux on zSeries
  - But you really should ask for it to be
- Things are changing rapidly
- Be careful what you ask for because you may get it!

…More details covered in the next session!

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Contact Info

Light travels faster than sound, that's why people seem bright until you hear them...

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