

Linux on S/390: The Beginnings of the Dream Machine

SHARE Session 9206/5549

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- What perceived and real shortcomings existed before Linux on S/390?
- What was needed to address these shortcomings?
- Brief history of the S/390 Linux ports
- What can Linux on S/390 deliver?
- How do VM/ESA and z/VM contribute?
- Are Linux in general, and S/390 Linux in particular, ready for the enterprise?

Genesis of a Dream

- VM is nice, but...
 - Our new hires don't know how to run it!
 - It's....(gasp)...old!
 - What's an EBCDIC?
 - Can I run Apache on that thing?
 - It won't run on my PC!

Genesis of a Dream

- OS/390 is nice, but...
 - Our new hires don't know how to run it!
 - It's....(gasp)...old!
 - It smells of Hollerith!
 - What's an EBCDIC?
 - Gee, it's awfully expensive!
 - It won't run on my PC!

Genesis of a Dream

- UNIX System Services are nice, but...
 - You want *how much* for the C compiler?!
 - It smells of 3270!
 - It's just <sigh> not quite UNIX.
 - What's an EBCDIC?

Genesis of a Dream

- I'm dreaming of...
 - Using all my UNIX skills on Big Iron
 - Running Apache on my mainframe
 - Leveraging Open Source in my business
 - Getting rid of all those #&\$* little servers
 - Gluing my mainframe apps to the intranet
 - Squashing Microsoft like a bug!

The Dream Becomes Reality



- Linus Vepstas: Bigfoot
- IBM Boeblingen builds “official/unofficial” port
- Marist College distribution
- May, 2000: “It’s official!”
- LinuxWorldExpo 2001: That’s “B” as in “Billion”

Linux on S/390 Delivers...



- Not emulation – it's the real McCoy!
- Smells of UNIX
- ASCII and byte streams
- Open Source: Free Speech, Free Beer
- Runs in LPAR, on native metal, or under VM
- S/390 architecture in the mainstream kernel
- Up-to-date kernel, utilities, and applications

...But on VM, it *REALLY* delivers

- Try it risk-free (forever)!
- Test Plan Charlie: Buy one, get 40,000 free
- You call that a LAN? Now *this* is a LAN!
- Which version, which version? Run 'em both!
- It's good to be the root!
- Reliable, scalable, and secure – just like VM!
- Microsoft: You can't touch this!

Virtualizing the Virtual: It's Turtles All the Way Down!



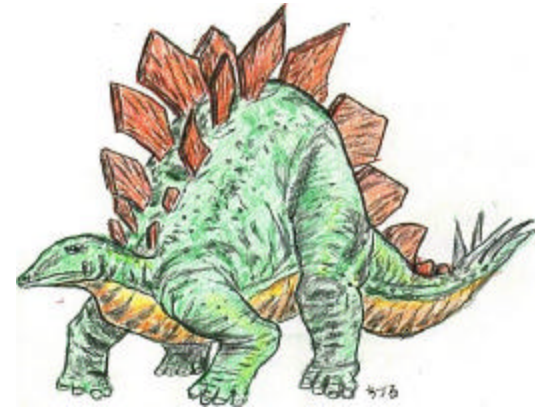
VM can virtualize virtual hardware, n levels deep, and can run *thousands* of images at once.

- Test Plan Charlie: 41,400 Linux images in an LPAR on a G5
- Test Plan Omega: 97,943 Linux images on a ZZ7, 12-way@160 MIPS each, 16G RAM
- Thornton: Linux/390 under Hercules under Linux/390 under VM ... whoda thunk it?

These specific demonstrations are “lab queens” but the practical value of this capability is very, very real!

“Why Would We Want to Do This?”

- The Bigfoot port forced the issue
- New life for big iron “dinosaurs”
- Integrating platform for S/390 legacy apps
- Rapid deployment of Open Source technology
- Because we **CAN!**



- CERT Advisories equivalent to commercial UNIX vendors
- NSA “Trusted Linux” initiative and Bastille Linux
- Journaling file systems:
 - IBM JFS ported to Linux
 - SGI XFS
 - Reiserfs (not quite on S/390...yet)
 - ext3

Linux/390: Enterprise-Ready



- Better performance on VM with kernel tuning
- Logical Volume Manager (LVM)
- IBM Java Technology
- DB2, Domino, MQSeries ... middleware is here
- Peer review of code – especially security
- 85% of US colleges teaching Linux courses

Linux Used by...

- IBM
- Oracle (development)
- SAP (develops and deploys on Linux)
- Bynari Systems
- Peoplesoft
- Winnebago
- InfoCrossing
- Siebel
- Lawson
- Veritas
- Reuters
- Rational Software
- Computer Associates
- Telia
- Korean Air

Resources on the Web

- Marist Distribution
www.linux390.org
- Linux/390 Project Home Page
www.linuxvm.org
- IBM Linux zSeries Home
www.ibm.com/servers/eserver/zseries/os/linux/
- IBM VM Linux Resources
www.vm.ibm.com/linux/



More Resources on the Web



- Official Linux Home Page
www.linux.org
- IBM Linux Community Development System
www-1.ibm.com/servers/eserver/zseries/os/linux/lcds/
- “Dream Machine” Article Online
www.linuxplanet.com/linuxplanet/reports/1532/
- Sine Nomine Associates
www.sinenomine.net
Look in the “Useful Links” for more S/390 Linux resources.

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The logo for Sine Nomine Associates, consisting of a blue rectangular box with a white horizontal line. The text "Sine Nomine" is written in white, serif font above the line, and "Associates" is written in white, serif font below the line.

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