



S H A R E

Technology • Connections • Results

Installing a Novell SLES 10 Starter System without a Net(work)

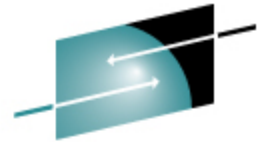
Session 9287
13:30 Thursday, February 28, 2008
SHARE – Orlando, FL

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847.771.9212



Disclaimer

(you expected something else?)



S H A R E

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- This is the first time this session has been presented, time is included for lots of questions and a live demo (wireless network permitting)
- This session will probably re-appear with significant improvements at the next SHARE.
 - After other “old timers”, ***and YOU***, chip in ideas, tell me what I’ve done wrong), what I should do differently, and what else I should be doing!
 - “**SHARE**, it’s not an acronym – it’s what we **DO!**”

Mandatory “Brag Sheet”

or: “Why should we listen to *him*?”

- Started as a “Teleprocessing Operator” in Feb. 1972
 - Thus, in Data Processing for over 30 years!
- VM-exclusive (mostly) since 1978 (30+ years of VM!)
 - (VM 370 Release 5 Program Level Change 6)
- Installed VM at Hewitt Associates in 1984
- Chaired CAVMEN for 6+ years
- Member of SHARE VM Technical Steering Committee since August 1997
- According to envelopes of various mailings: CIO; Partner-In-Charge; and Chief Cook, Manager of VoiceMail Systems
- **VERY** much ... a Linux “newbie”!

Agenda

- **What is and is NOT the “Starter System”.**
- How the “Novell SUSE Linux Enterprise Server Starter System for System z” ... came to life
- How long did it take to download from Novell and upload to a running z/VM system? (YMMV)
- Things learned to even get the Starter System downloaded (properly)
- How difficult was it to actually install?
- Creating the NOVSTART userid

Agenda – Live demo ?

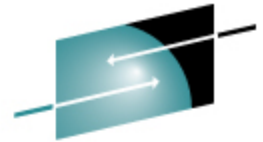
- If the wireless network permits
 - Unpacking the 150 disk (small enough for a live example)
 - Configuring the “NETWORK PARMS” file
 - Booting the first time
 - Correcting the inevitable “NETWORK PARMS” typo
 - Oh, you mean RTFM **before** starting!!??
 - What else? “Common Problems and Solutions” (way back on page 34)
 - PING! “Das boot” war gut!!
 - Exploring ... as time permits

What is and is NOT the “Starter System”.

- The Starter System is
 - an ***Installation*** System – replacing the traditional Intel-based Linux server booted from the CD to install Linux
 - From the Installation manual PDF:

“The starter system includes:

 - Utilities and configuration tools for quick installation of the starter system from a CMS terminal session
 - *Compressed disk images of the starter system, including a complete set of RPM packages as shipped with the SLES release.*
 - Utilities and configuration tools to assist with installation of additional Linux virtual machines from the starter system installation server. The configuration tools package also includes a "rescue" system that can be used to recover a SLES virtual machine if there are problems that prevent the server from booting and connecting to the network for normal maintenance.”

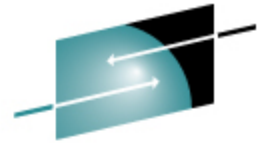


What is and is NOT the “Starter System”.

- The Starter System ***is NOT***
 - A Linux for System z server meant for customization or production use.
 - From the Installation manual PDF:

The Starter System Is Not Suitable for General Use

The starter system image has been highly customized for use as an installation server for other SLES-based Linux servers running in virtual machines. The starter system is NOT suitable for general use and you should not attempt to use it for any other purpose.



How the “Novell SUSE Linux Enterprise Server Starter System for System z” ... came to life

- As best I can reconstruct the timeline now ...
 - May 2003 - Hewitt considered its first Linux for System z “Proof of Concept” (POC).
 - May 2004 - Requested an SLES evaluation copy.
 - June 2004 - Defined a Linux z/VM userid.
- Our Internet Security group is (justifiably) paranoid.
 - Would not permit a workstation CD drive connection to mainframes.

How the “Novell SUSE Linux Enterprise Server Starter System for System z” ... came to life



Laborious security circumvention:

- One of our IBM reps visited another customer running a SLES VM.
- The customer shutdown their SLES FTP server, DDR dumping its minidisks to tape.
- Our IBM rep returned the tapes to us.
- We DDR restored the minidisks you our DASD, bringing the SLES FTP guest server up in under 30 minutes.
- The SLES installation CDs were mounted on a grid server (running Linux) connected to one of our z/OS systems.
- The CDs were mounted to USS on that z/OS system.
- The CDs were connected to the NFS (Network File System).
- The SLES virtual machine running under z/VM on a completely separate System z connected to NFS.
- The SLES virtual machine mounted the CDs and proceeded with an FTP installation from the CDs.

How the “Novell SUSE Linux Enterprise Server Starter System for System z” ... came to life



- That May 2003-June 2004 POC never progressed for other reasons.
- Time passes...
- February 2007- Mark Post begins working quietly within Novell to create a Starter System.
- May 2007 - Hewitt decides to attempt another Linux for System z (SLES) POC for a different application.
- For security reasons we are still not permitted to mount the latest SLES CDs directly to z/VM.
- The same tedious mounting process is followed.
 - (The POC is a success, but the budget for that application is slashed.)

How the “Novell SUSE Linux Enterprise Server Starter System for System z” ... came to life



- June 2007 - Local IBM team asked how Hewitt installed SLES on z/VM.
 - The IBM team reported similar and frequent security restrictions at other local customer sites.
 - Those customers do not have the grid and z/OS-USS-NFS circumvention.
- June 13, 2007 - After hearing that we were not alone in the lengthy struggle to install Linux for System z, I describe the difficulties, delays, and security concerns on the IBMVM discussion list.

How the “Novell SUSE Linux Enterprise Server Starter System for System z” ... came to life



- David Boyes of Sine Nomine Associates soon contacted me to discuss the issues involved.
- David discussed the issues with IBM and Novell, convincing IBM to permit distribution of the CMSDDR tool, and Novell to contract with Sine Nomine Associates to develop, document, and support the lengthily-named, above-quoted Starter System.
- October, 2007- David sent a draft copy of the new documentation to me.
- January 30, 2008 - Novell distributed the press release entitled “Novell Makes it Easier to Start with Linux on IBM's System z Mainframe”.
- February 2008 – and here we are.

How long did it take to download from Novell and upload to a running z/VM system? (YMMV)



- From from Novell at home, using IE 6+ over ethernet cable (not wireless), Comcast with 4mps download speed (and the purported “PowerBoost”):
 - Sorry... lost the doc, but many *hours (overnight!)*.
- From home, upload from laptop to z/VM over Comcast, using F5 VPN tunnel with some undocumented Hewitt “speed limit”:
 - NOV150.VMARC file (1.08 GB) took 7 *HOURS*, 13 minutes
 - NOV151.VMARC file (2.06 FB) took 14 *HOURS*, 49 minutes

How long did it take to download from Novell and upload to a running z/VM system? (YMMV)

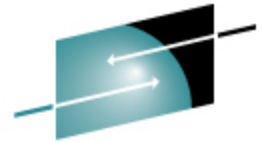


- At the office using IE 6+ over LAN ethernet cable (not wireless):
 - NOV150.VMARC file (1.08 GB) took **00:31:20**
 - NOV151.VMARC file (2.06 FB) took **00:55:00** (approx)
- At the office, FTP from laptop to z/VM:
 - NOV150.VMARC file (1.08 GB) took **00:34:00** (approx)
 - NOV151.VMARC file (2.06 FB) took **00:58:00** (approx)
- At the office using Firefox 2.00.12:
 - NOV150.VMARC file (1.08 GB) took **00:05:00** (approx)
 - NOV151.VMARC file (2.06 FB) took **00:20:00** (approx)
- **Firefox was 2 to 3 times faster than IE 6+**
 - **And the files were actually GOOD!**

Things learned to even get the Starter System downloaded (properly)

- Do *not* download with Microsoft Internet Explorer
 - At least not with IE Version 6; maybe Version 7 would be better
 - IE caused file download corruption which was not detectable
 - No reported download errors from Internet Explorer
 - No reported errors during FTP upload to VM
 - No reported errors reported during MD5 checksum verification on VM
 - MD5 checksums verified on VM matched those in the NOVELL web site
 - But when booting the NOVSTART server the first time, it never completed, instead ending with messages:
`request_module: runaway loop modprobe binfmt-feab` (5 lines repeated)
 - Downloading the NOV151 disk using Firefox (but not yet the 150 disk) resulted in
`request_module: runaway loop modprobe binfmt-0000` (5 lines repeated)
- *Recommended:* use Mozilla Firefox
 - I eventually used the now-current Mozilla Firefox 2.0.0.12
 - Booted properly the very first time!

Things learned to even get the Starter System downloaded (properly)



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NOVELL: Downloads - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://download.novell.com/Download?buildid=M5V5-w8h2M0~

Novell. Products & Solutions Training & Support Partners & Communities download Login

SUSE Linux Enterprise Server 10 SP1 Starter System for IBM System z Multilingual

downloads home
developer downloads
open source
beta downloads
patches
driver downloads
customer center

Name	Size
cmsdexec.exec	232.1 KB (237760)
nov150.vmarc	1.0 GB (1164196240)
nov151.vmarc	2.0 GB (2213447520)
nov191.vmarc	13.7 KB (14080)
nov19f.vmarc	12.5 MB (13195520)
novstart.sampasc	1.4 KB (1458)
novstart.sampdir	1.4 KB (1440)
s10sp1.bt	98.0 KB (100415)
sles-10-sp1_starter.system.DVD.s390x.iso	3.1 GB (3392315392)
sles10sp1_starter_system.pdf	128.1 KB (131228)
vmaexec.exec	86.9 KB (89040)

Install instructions

→ [how to use a download manager](#)

Product Description

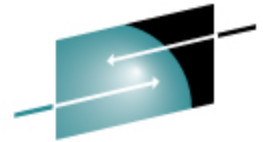
The SUSE Enterprise Linux Server (SLES) Starter System is a pre-built installation server for SLES that can be installed on your z/VM system using CMS tools, eliminating the need for coordinating access to a separate Linux or Unix system elsewhere on your network and minimizing the impact of network-based installation on your internal and external networks.

Activation Code

Click the button below to receive your activation code. Make note of the code, then click the link under Download Media to return to the download site.

→ [protected/Export.jsp?buildid=M5V5-w8h2M0~](#)

Things learned to even get the Starter System downloaded (properly)



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NOVELL: Login - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://download.novell.com/ICSLogin/?%22http://download.novell.com/protected/Export.jsp?buildid=

Software for the Open Enterprise™ United States - English search

Novell. Products & Solutions Training & Support Partners & Communities download Login

Novell Login

Authentication is required to access this page or file. → what does this mean?

Customer Center Home
About Novell Login
Create an Account
Edit My Profile
Validate Email
Forgot

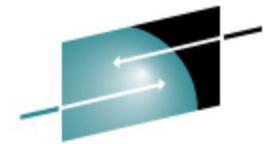
Login

Username: you can "Create and Account" button on the right
Password: *****
→ forgot password? Login

Create Novell Account
Create New

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Things learned to even get the Starter System downloaded (properly)



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NOVELL: Downloads - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://download.novell.com/protected/Summary.jsp?buildid=M5V5-w8h2M0~

SUSE Linux Enterprise Server 10 SP1 Starter System for IBM System z Multilingual

downloads home
developer downloads
open source
beta downloads
patches
driver downloads
customer center

Name	Size	
cmsdexec.exec	232.1 KB (237760)	→ download
nov150.vmarc	1.0 GB (1164196240)	→ download
nov151.vmarc	2.0 GB (2213447520)	→ download
nov191.vmarc	13.7 KB (14080)	→ download
nov19f.vmarc	12.5 MB (13195520)	→ download
novstart.sampasc	1.4 KB (1458)	→ download
novstart.sampdir	1.4 KB (1440)	→ download
s10sp1.bt	98.0 KB (100415)	→ download
sles-10-sp1_starter_system.DVD_s390x.iso	3.1 GB (3392315392)	→ download
sles10sp1_starter_system.pdf	128.1 KB (131228)	→ download
vmaexec.exec	86.9 KB (89040)	→ download

[Install instructions](#) [→ view](#)

[→ how to use a download manager](#)

Reminder: By downloading this product, you reaffirm your [agreement](#) to comply with the export laws of the United States and those of other countries.

MD5 Verification Checksums:

cmsdexec.exec	f0ee2cd1fd66686f089ca5fc987aebf
nov150.vmarc	de3aeb2bf03238d14906520148b2e5e6
nov151.vmarc	06f30ce8744a303eb507f0464d2245c5
nov191.vmarc	4d740e74a8fe66f7a3afc5bb2a097e4f
nov19f.vmarc	b882e7877e25350be1ba523d278afe12
novstart.sampasc	c0318c4cacab2c070cf2e86794d0a331
novstart.sampdir	75f2a7ff9bf9eaa13cfe0be09b0f992
s10sp1.bt	
sles-10-sp1_starter_system.DVD_s390x.iso	7145340035f18324303440f35604813a

Select a mirror location:

- Alternate - Dublin, Ireland
- Optimized - Worldwide
- Alternate - Salt Lake City, UT, USA

Things learned to even get the Starter System downloaded (properly)

- Novell recommends verifying the **MD5 checksums** of downloaded files, but the web site and Installation Guide make no recommendations about how to do that.
- Download and install the latest CMS Pipelines RunTime Library from:

<http://vm.marist.edu/~pipeline/>

Also download and install PICKPIPE EXEC from:

<http://www.vm.ibm.com/download/packages/>

- To display the MD5 checksum on a file which has been FTPed to z/VM, on the z/VM system enter:
 - **PICKPIPE UPLEVEL (NOSEGMENT**
 - **PIPE < fn ft fm | DIGEST MD5 | SPECs 1-* C2X 1 | CONSOLE**

How difficult was it to actually install?

- After fighting past the download issue, it was a piece of cake for an experienced z/VM'er. (YMMV)
- Define a z/VM userid (NOVSTART) as specified in the manual. *If you have a Directory Manager product, by all means... USE IT!!*
- Only if you have no Directory Manager (e.g. CA's VM:Secure, or IBM's DIRMAINT – both priced products; meaning “NOT free”):
 - Logon to MAINT
 - Run DISKMAP or DIRMAP to find free disk space cylinders as required in the Installation Guide
 - XEDIT USER DIRECT
 - Perhaps issue 'BOTtom' to get to the bottom of existing entries and add the new directory entry.

Creating the NOVSTART userid

An example:

USER NOVSTART password 512M 1E G 64 ON OFF OFF

ACCOUNT OVERHEAD 93S0

CPU 0

*CPU 1 (Removed 20080214 per IBMVM discussion of same date)

MACHINE XA 2

IPL CMS PARM AUTOOCR

IUCV ANY

OPTION MAX 2048

OPTION SVMSTAT

CONSOLE 009 3215 C

SPOOL 00C 2540 READER *

SPOOL 00D 2540 PUNCH B

SPOOL 00E 1403 P

Creating the NOVSTART userid

LINK MAINT 190 190 RR

LINK MAINT 19D 19D RR

LINK MAINT 19E 19E RR

SPECIAL 0340 HIPER 3 SYSTEM POLAR

MDISK 0191 3390 begcyl 00005 volser MR rpw wmw <mpw>

MDISK 019F 3390 begcyl 00050 volser MR rpw wpw <mpw>

MDISK 0150 3390 begcyl 03283 volser MR ALL wpw <mpw>

MINIOPT NOMDC

MDISK 0151 3390 begcyl 03338 volser MR ALL wpw <mpw>

MINIOPT NOMDC

MDISK 0F00 3390 begcyl 03338 volser MR rpw wpw <mpw>

MINIOPT NOMDC

Creating the NOVSTART userid

- Only if adding the userid without a Directory Manager product...
 - From the XEDIT command line, enter: FFILE
 - **Very important:**
 - Run DISKMAP and or DIRMAP, then XEDIT the resulting files, *hint*:
FILELIST (TODAY
examine all disk “OVERLAP” records (generally “BAD” things unless done for a very specific reason). Another hint:
ALL /OVERLAP/
 - As long as there are no unintended disk “OVERLAP”s, enter the command: DIRECTXA

Live demo ?

- *If the SHARE wireless network permits...*
 - Unpacking the 150 disk (small enough for a live example)
 - Configuring the “NETWORK PARMS” file
 - Booting the first time
 - Correcting the inevitable “NETWORK PARMS” typo
 - Oh, you mean RTFM **before** starting!!??
 - What else? “Common Problems and Solutions” (way back on page 34)
 - PING! ... “Das boot” war gut!!
 - Exploring ... as time permits

“How to Report Problems With the Starter System” (page 36)



- Gather doc as requested
- Submit as directed
- **Don't be shy.** It's new. It can improve.
 - ***You can help*** yourself and the next “newbie” on the block

- Questions?
 - Later...about session materials, or in general:
Mike Walter
Hewitt Associates LLC
847.771.9212
Mike.Walter -- hewitt.com
- ***Please***, fill in the **bubbles** on your Session Evaluation Form **COMPLETELY** in **DARK BLUE** or **BLACK** ink.
- **Help make this session better!** – ***write your comments on the back of your form.***