SUSE Enterprise Linux 10 SP2 (s390x) installation sequence

1. Obtain a copy of SUSE Enterprise Linux (SLES) 10 SP2 from the Novell website. You will be required to register in order to download the operating system. Start at http://download.novell.com/index.jsp
2. Select SUSE Enterprise Linux as the product
3. Select SUSE Enterprise Linux Server 10 SP2 as the version and click on the search button.
4. Select **SLES 10 SP2 for z series eMedia Kit (6 files)**
5. You only need to download the first DVD image (DVD1) for the purposes of this demo.
6. Once you have downloaded the .iso image we suggest you burn it onto a DVD for future use.
7. Insert the resulting DVD into the DVD drive on the host system. If you are using OpenSUSE 11 this should automatically mount as /media/SLES10SP.001.
8. The installation sequence for SLES 10 SP2 (s390x) needs to have a source for the installation media. This can be provided in several ways, but an FTP server is the easiest to implement.
9. On the host operating system configure the FTP server (found in Yast for OpenSUSE) to offer /media/SLES10SP.001 to the anonymous user. Make sure the server is restarted and the FTP firewall port is opened after you set up the configuration. For an installation on a Windows host make sure that FileZilla is correctly configured to offer the D: drive (or whatever your DVD drive is) to the anonymous user.
10. Once the FTP server is set, for Linux open a command line window, size it to 80 x 30 to be able to see all of the Hercules control panel. You start the Windows emulator from the Start menu.
11. Before you can start the emulator you must set up the IP address of the emulated network interface. The address of the emulated network interface is contained in the hercules configuration file (**/opt/TurboHercules/data/sles/conf/hercules.cnf - Linux**) (**c:\TurboHercules\data\sles\conf\hercules.cnf – Windows**)
12. Using your favorite Linux editor change the addresses for the CTCI interface at the bottom of the file. The CTCI "NIC" is a virtual network interface. For it to function is has to have a connection to a real "partner" interface that is part of the host operating system. The address of the virtual NIC and the partner must be within the same subnet (the file starts with the 192.168.0.zzz subnet, but you can use anything that is compatible with your network). The only restriction is that the host system partner NIC and the emulated system NIC must have static addresses.
13. Once the configuration file is appropriately modified, begin executing Hercules on Linux by entering:
    cd /opt/TurboHercules/data/sles
    ./startherc
    On Windows go to the Start Menu, select "All Programs", "TurboHercules", TurboHercules Install" and "Launch Hercules"
14. The emulator will begin executing. After reading the hercules.cnf file it will set up the emulated machine and create a command prompt at the bottom of the window. You are now ready to IPL (initial program load – i.e. boot) the emulated mainframe.
15. At this point the emulator software has direct access to the host file system. You can begin the IPL process by entering:

ipl /media/SLES10SP2.001/suse.ins

On Windows you enter **ipl D:\suse.ins** (assuming D: is your DVD drive)

16. Execution should begin and you should begin to see the usual messages you get during the boot of Linux. After loading all of the usual boot modules the system will settle down to the Main Menu.
17. To start the installation enter "**.4**" *The period is necessary in front of any command you want to pass on to the running software. If there is no period, the entry will be taken as a command to the emulator software itself.*
18. "**.1**" to Start the Installation or update
19. We'll be installing from the network so enter "**.2**"
20. We will be using the FTP server so enter "**.1**" At the Choose Network Protocol menu.
21. We will be using the Channel to Channel (CTC) interface so select "**.3**"
22. The network interface has two interfaces to the mainframe CPU. One address is for the read channel the second is for the write channel. Enter "**.0.0.0400**" for the read channel.
23. Enter "**.0.0.0401**" for the address of the write channel.
24. The network interface can support several protocols.
    We will be using the compatibility mode so enter "**.1**"
25. We are using a static configuration of the NIC address. Enter "**.2**"
26. Enter the IP address of the emulated machine's network interface. For example:
    "**.192.168.0.63**"
27. Enter the IP address of a NIC on the host operating system – the PLIP partner. For example: "**.192.168.0.61**" *Note that both the emulated machine's NIC and the host system NIC must be statically assigned and in the same subnet.*
28. Enter the IP address of your local name server. In our example it is: "**.192.168.0.1**"
29. Enter the address of the FTP server. For our example it is: "**.192.168.0.60**"
30. We are operating with the anonymous user so enter: "**.2**"
31. We don't need an HTTP proxy so enter "**.2**" at the Use a HTTP Proxy question.
32. Since we have the DVD mounted at its rood directory enter: "**./**" for the directory on the server.
33. Enter "**.3**" to select a SSH display type
34. Enter a temporary password for the SSH logon: "**.password**"
35. If everything is working correctly the system will begin loading the installation system from the FTP server. After loading the installation software it starts a series of daemons, sets up security keys, etc. Eventually it sets up the ssh daemon and gives you the instructions for logging on from a ssh connection.
36. On Linux open a second terminal window on the host machine and log on to the emulated machine with: "**ssh -X** root@192.168.0.63" (enter your configured NIC address of the emulated machine). For Windows launch Portable PuTTY. You will be asked if the unknown connection is ok. Click on Yes to continue.
37. Agree to the DSA key fingerprint and enter your SSH password.
38. Enter "**yast**" to start the SUSE installation program.
39. While YAST is getting its act together select the Hercules window and press the escape key to flip to the Hercules front panel display. This will show you the performance of the emulated

machine. You can use the escape key at any time to flip back and forth between the front panel display and the Hercules command window.

40. Eventually the graphical YAST install window will appear and you are now into a fairly normal SUSE Linux installation.
41. Select your language.
42. Agree to the license.
43. On Disk Activation select DASD disks.
44. Click on Select to select the DASD device.
45. Click on "Perform Action" and select "**Activate**". At this point the DASD device should show as active and formatted.
46. Clock "**Next**" twice to move on to the Installation Mode screen
47. Select New Installation and "**Next**". The system will download a bunch of small files and parse them.
48. Select your timezone. Don't worry about the clock at the moment. It will probably not be correct.
49. You will need to partition the DASD device. Select "**Change**" at the bottom the Installation Setting screen and select "**Partitioning**"
50. Set up a /boot partition with "**+100M**" in the End field (*don't forget the "+" sign on this and the next entry)*
51. Set up a swap partition with "**+1.0GB**" in the End field
52. Set up a "/" partition with the rest of the disk in the End field (should be about 10016)
53. Click "**Finish**" when you are satisfied with the partitioning.
54. If you want to change the Software, click on "Change" and select "**Software**"
55. When you are finished with the configuration click "**Accept**". You will get a pop-up license from Agfa. Click on "**I Agree**".
56. Confirm the installation by clicking on "**Install**". After formatting the DASD and setting up the mount points, the installation routine begins the main installation of Linux on the DASD.
57. This phase of the installation will take a quite a bit of time (about 2 hours or more depending of the speed of the host system) so take a break.
58. At the end of the main installation phase the system displays a message about a shutdown on the YAST window. Accept it. The emulated machine will disconnect and shutdown.
    Note: At the end of the first phase of the installation the SLES installation routine should show a "Finish" button. If you only see the completed progress bar, you may have let the system wait too long and it partially disconnects from the YaST window. To continue the installation you need to do the following:
    a. *Enter "exit" on the emulator command line. You may have to do this twice to get the emulator to properly close.*
    b. *Close the SSH window (Linux) or close the PuTTY window (Windows). This will close the X-Window as well.*
    c. *Remove the SLES 10 SP2 DVD from the DVD drive.*
    d. *Reboot the host system.*
    e. *When you are back at the desktop* ***launch the XMing X-Window server.****(Windows only)*

f. ***Load the SLES 10 SP2 media back into the DVD drive***.
g. *After the media loads and you close the File Explorer Window you can Launch Hercules again. (From the command line in Linux and from the Start Menu in Windows.)*
h. *Make sure that your Firewall setting are still correct so that the emulator can communicate with the FTP server (the FTP port is open).*

59. Move to the emulator window and press the "escape" key to toggle back to the command line window if necessary. Re-IPL the machine with the newly loaded image by entering: "**ipl 0A81**" Note that there is no "**.**" In front of this command as this is a command to the emulator. The Linux system software will display a message asking for a re-ipl or not. Enter "**.1**" (this is a response to the emulated operating system) to continue. Wait for the system to finish setting up the network interfaces and display the message as to how to proceed with the logon.
60. On the host terminal window re-logon on to the emulator with:"**ssh -X root@192.168.0.63**" or whatever your address is configured as.
61. Accept the authenticity with a "**yes**" and enter your password.
62. Enter "**/usr/lib/YaST2/startup/YaST2.ssh**" to continue the installation process.
63. Confirm that you want to detect the Network Cards. Click "**Continue**"
64. Enter your "real" password for the root user and click "**continue**"
65. Set up your machine name and site information. Click "**continue**"
66. Make any changes you deem necessary on the Network configuration screen and click "**Next**" to continue.
67. For the purposes of the demo we suggest that you skip the test of the Internet connection. Select "No, skip this test" and click "**Next**" to continue.
68. At the Installation Settings screen accept the default configuration and click "**Next**"
69. Select "Local (/etc/password)" for the Authentication method on the User Authentication Method screen. Click "**Next**" to continue.
70. Create a new, non-root user on the New Local User screen. Click "**Next**" to continue.
71. It will take the system a while to finalize the system configuration. Take a short break.
72. Read the release notes and click "**Next**" to continue.
73. Click "**Next**" to accept the hardware configuration.
74. De-select "Clone this system for Autoyast"; click "**Finish**" to complete the installation. The installation routine will close the X-Window and will return to the command prompt. You are still logged in as root. At this point you can exit and re-login as the user you created or as root again as you wish. The system is completely installed.
75. When you finish with the system, the correct way to shut it down is with a command through the SSH command window that you have been using. The cleanest command would be: "**shutdown –h now**". This will stop Linux and halt the emulated machine. At that point you can go to the Hercules console (use the escape key to get to the command line display) and enter "**exit**" to stop the emulator program.
76. To start the system use either the command line (Linux) or Start Menu (Windows). At the command line enter "**ipl 0a81**". Enter "**.1**" for an ipl and wait until the system completes initialization. Open your communications window (SSH in Linux and PuTTY in Windows) and begin playing.

77. If you are interested in a speed test, move to the register display on the emulator command window then enter: **openssl speed -multi X rsa1024** where X is the number of processors you have configured into the emulated system. Watch the MIPS display and try to record the highest number you see. Record the sign and verify times along with the sign/s and verify/sec. If you have the opportunity, send the results back to us along with a brief description of your host hardware.