

Run ESXI 4.1 on usb stick, cheap/ silent whitebox

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Date Last change 6 november 2010
Version: 13

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1. Intro

Why?

ESXI is a great free system to run multiple virtual computers on. However, ESXI runs only on specific often expensive or noisy or large hardware (server systems). Often ESXI does not install or run on non-server hardware because of the network cards or the disk-controller. Therefore using ESXI on non-server hardware can be very difficult because you have to find and run drivers that are not supported. Using ESX-server instead is not wise since it is end of life.

Solution:

You can run a cheap whitebox¹ by using

1. cheap intel nics, intel pro/1000/GT (29 euro)
2. 64 bit processor and sata drives (AMD is cheapest)
3. running ESXI from an usb stick (10 euro)
4. using sata drives for storing your virtual machines

When you use 1-3 you can flawlessly get an ESXI instance running. Solving four can be done after that (but success is not guaranteed of course).

2. Why not use a whitebox that is on the whitebox HCL?

If you do it will save you some time of course. However, even a whitebox can be better of running on an usb-stick:

- Easy to change harddisks. You don't have to install esxi again, just the vm's
- If you use iscsi you don't need a harddisk at all for the esxi host, saves energy
- it is just handy to have an usbstick available

Tools:

1. Use a system with 64bit cpu and at least 4 gig ram (8 is better, 16 is better) with sata harddisk and 2 network cards intel pro/1000/GT.
2. USB-stick of 4 gig, or get two
3. Software
 - rmprepusb (usb formatting tool) [free]
 - esxi 4.1 iso [free]
 - un-rar tool (winrar) [free]
 - ubuntu iso, for instance desktop 64 bit [free]
 - putty (ssh client) [free]

¹ A whitebox is hardware not supported by vmware.

- scp client (winscp) [free]
- vmware vsphere client [free]
- power iso [free for a while]

Windows Software	url
rmprepush	http://sites.google.com/site/rmprepush/documents/release-2-0
esxi 4.1 iso	http://www.vmware.com/products/vsphere-hypervisor/
winrar	http://www.rarlab.com/download.htm
Ubutu iso (get the 64-bit desktop!)	http://www.ubuntu.com/desktop/get-ubuntu/download
putty	http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html
winscp	http://winscp.net/
Vsphere client. In webbrowser connect to ip-address-esxi	For 4.1 it is: http://vsphereclient.vmware.com/vsphereclient/2/5/8/9/0/2/VMware-viclient-all-4.1.0-258902.exe
Power iso	http://www.poweriso.com/

Steps to get there.

1. Set up the system
2. prepare and test the usb install
3. get remote access
4. get the sata drive to work
5. use ESXI

3. **Set up the system.**

Well, install the intel nics in the computer and fire it up

4. **Prepare and test the usb install**

1. Open the ISO image, VMware-VMvisor-Installer-4.1.0-260247.x86_64.iso with Winrar and find "imagedd.bz2" and open it up.
2. Once you've opened "imagedd.bz2" extract "imagedd" from it
3. Plug in the USB Stick and then open RMPrepUSB. The only things we need to concern ourselves with are the white box at the top that lists all detected drives, and the blue button, File -> USB. Make sure to select the correct drive from the white box. Next, click on File -> USB button.
4. Select All Files from the drop-down and select "imagedd" and click Open. Several Prompts will appear, keep the defaults and click OK for each one. **Make sure you have the correct drive selected or you can potentially overwrite the wrong USB Stick/Hard drive** When you've verified click OK.
5. Now we're done writing the image onto the USB Stick. You now have a bootable USB Stick with VMware Vsphere Hypervisor (ESXi 4.1.0) installed.
6. Put the stick in the host system, make sure the bios boots from it and make sure the sata controller is set to ahci (not sata or raid).
7. Boot the system. You will now see ESXi starting up (yellow screen)
8. Adjust it to your liking
 - <F2> adjust management network (user=root, password = empty)

- set it to static ip-address. I suggest 192.168.0.100, netmask 255.255.255.0, no gateway. Save that (management network restarts)
 - enable ssh. Go to remote support. Enable remote ssh support
9. reboot and find out if it still works

5. Get remote access

10. Connect with vsphere client (install and connect, takes a while). Install the license, configuration → tab license features
11. if it works fine use putty to get acces to the machine remotely. Accept the new ssh fingerprint, log in as root, password empty. Halt the server
12. Make a backup from your configured usb stick. Use rmprepusb, write usb-> file. Install that file to the second usb and test it. Now you know for sure the backup is ok.

6. Get the sata drive to work

13. Fire up ESXI. Connect with vphere client. Look under configuration storage adapter. If you see some sata drive, your drive works. Go to next step. If not, lets work
14. Prepare a linux to boot from. Use the ubuntu cd-rom, or make an ubuntu usb install (or use any other linux with a command prompt):
 - to make an ubutu usb stick, download the ubuntu iso and extract (use poweriso and mount it for instance) usb-creator.exe
 - Once you have usb-creator.exe, run it and point it at your .iso file or your Ubuntu CD-ROM, point it at your USB flash drive, make sure you have the right device selected, then "Make Startup Disk".
15. We will now find the adress of the disk-controller. Boot your linux. Open a command prompt and run "lspci" or "lspci | egrep -i ata". You are looking for the line that describes your ata controller. Mine is [00:12.0 SATA controller: ATI Technologies Inc SB600 Non-Raid-5 SATA]. My mainbord is an Asus m2a-mx. We now know the adress (I'm not sure what adress this is) for the ata controller. Now look up the adress 00:12.0 with lspci -n. You get something like [00:12.0 Class 0106: 1002:4380]. 1002:4380 is what we must use in the next step.
16. We will know test if we can get the sata controller to work. Boot again with ESXI. Connect with ssh (putty). Add the sata controller adress to a file with adresses.
 - Type: echo "1002:4380 0000:0000 storage ahci" >> /etc/vmware/simple.map
 - type: vmkload_mod ahci
 - If ahci loads fine it probably means success. If not, something went wrong.... Houston you have a problem
17. Connect from vsphere and check if you can now see a sata storage controller [configuration-> storage controllers].
18. Make the tested address permanent so it will stick after a reboot. To do so we install a new oem.tgz with the changed simple.map file

we make a custom /bootbank.oem.tgz with an altered /etc/vmware/simple.map##

esxi will load our file in stead of its standart simple.map

copy paste this in putty on the esxi host with your address in stead of 1002:4380###

this should work for any sata controller [I think]

```
cd /tmp/
mkdir -p oem/etc/vmware
```

```
cd oem/etc/vmware
cp /etc/vmware/simple.map simple.map
echo "1002:4380 0000:0000 storage ahci" >> /tmp/oem/etc/vmware/simple.map
```

```
cd /tmp/oem
chown -R 201:201 ./etc
chmod -R 755 ./etc
chmod 644 ./etc/vmware/simple.map
#chmod 644 ./etc/rc.local.d/startscript
tar -cvzf oem.tgz etc
cp oem.tgz /bootbank/oem.tgz
cd /bootbank/
chmod 755 oem.tgz
```

```
#####
reboot
```

19. After the reboot the storage controller should be visible in the vsphere client
20. make a new backup from the usb stick.

7. Use ESXI

21. You can not start to use esxi and its data storage
22. use winscp to copy-paste files onto esxi and backup your machines

8. Websources used:

- <http://www.virtualgeekhub.net/content/how-install-vmware-vsphere-hypervisor-esxi-410-usb-stick>
- <http://www.virtualizationadmin.com/articles-tutorials/vmware-esx-articles/installation-and-deployment/10-steps-install-use-free-vmware-esxi-4.html>
- <https://help.ubuntu.com/community/Installation/FromUSBStick>
- <http://www.vm-help.com/forum/viewtopic.php?f=13&t=362>