Linux on the Microsoft XBox

Because its your machine

By Aaron Grothe

Disclaimer

- This talk is NOT about how to play hacked games on your Xbox

- Modchips can allow you to do this, but this talk won't go into this area

Warning

- You CAN turn your Xbox into a big box of parts if you do this wrong

- I've had good luck with my conversion so far

Caveat Emptor - Let the buyer beware

Speaker Info

- Falliable - Just found out I had a typo in one of my patches to the kernel should have been XTEA_DELTA instead of TEA_DELTA (Ouch!!!)

- Was President/CEO of Heimdall Linux, a company that was doing a Common Criteria version of Linux almost 4 years ago

- Have a couple of patches in the kernel - Crypto subsystem

- If I'm going to fast or mumble, please let me know

Why run Linux on an Xbox?

- The Xbox is a relatively cheap PC ~$120.00 used
- Makes a decent media center
- Can be a quiet desktop computer
- Taste of the future with TCPA and Palladium

Finally
- Because you can!!!

Why I did my Xbox?

- Wanted a machine to do static analysis on the Linux Kernel
- Not enough memory to do the job
- Machine has been relegated to an interesting experiment
- Also use Linux to play DVDs - No playback kit for me

Xbox Specs

- Intel Celeron 733 MHz CPU
- 64 MB of RAM
- nVidia GeForce 3 graphics card
- Dolby Digital AC97 sound card
- 8 or 10 GB hard disk
- DVD drive
- 10/100 Ethernet
- 4 USB ports

A Bit of Xbox on Linux History

- The Xbox is a PC - Original Paper
- Project A & Project B
- Operation Project X - If you're bad at Math

3 Major Methods to Get Linux onto your Xbox

- Software install - Mechassault method
- Soft/Hard install - Soldering needed, Cromwell Bios
- Mod Chip

- Others such as Hot-swapping harddrives are left as an exercise

Software install

- The Xbox game Mechassault has a buffer overflow in it
- This can be used to take control of a running Xbox and install software on it

Software install Pro/Con

PROs

- Don't need to Open Xbox
- Can undo it
- Can still play games

Software install Pro/Con

CONs

- Limited to loopback device on original hard drive
- Lose Xbox live support
- Might get whacked by next cool game (Halo 2???)

Soft/Hard install

- This involves soldering two wires onto your Xbox's mainboard
- This allows the bios to be overwritten with a clean room bios
- After this your Xbox is pretty much a legacy-free PC

Soft/Hard install Pro/Con

PROs

- Can change out hardware such as bigger hard drive
- Should be able to undo provided you save everything
- No loopback equals faster hard drive access
- Can upgrade to CD-RW or DVD-RW drive

Soft/Hard install Pro/Con

CONs

- Lose ability to play Xbox games
- Pretty easy soldering, but still some risk

Mod Chips

- Mod chips are available for various versions of the Xbox
- The requirements vary from chip to chip
- Some require soldering, some don't
- Some use original bios some download it and put it into flash memory
- Some allow use of Xbox live, some don't

Open Source Mod Chips

There was a company that offered the plans for their mod chips under the GPL, the name of the company was Hibana and

they offered their mod chips at http://www.aussiechip.com.au (not a working link). I'd like to find a copy of this if anybody finds it while spellunking (it is not archived at archive.org).

- Won't work for newer Xboxes

It might be cool to throw up at Sourceforge or Yahoo Groups.

Mod Chips Pro/Con

PROs

- Can change out hardware
- Some still let you do Xbox live

Mod Chips Pro/Con

CONs

- Cost money
- Some legal questionability, because of hacked game play
- Constant race with Microsoft
- Quality varies greatly

What do you need for the software install

- Mechassault (right version)
- Save game either on USB memory stick or Memory Card
- Additional machine to talk to system (optional)
- CD-RW or possibly CD-R with Xebian on it
- Xbox -> USB connector for keyboard/mouse - Memory stick

Mechassault Info

There are TWO versions of Mechassault
Check the Laser Etching on the back of the DVD to make sure you have the right version

- MS02301L is the correct version
- MS02308L is the Wrong version
- Game of The Year or Platinum Hits version are probably bad

Buy used if possible

- get ready for dumb looks by the people at Gamers
- Gamestop people appear to be less stupid

Creating a USB memory stick with save game

- Get the right media. Lexar aka Jumpdrive work well
- Micro Advantage Quickdrives don't
- Have to format with fatx, will wipe everything on stick

Easier to find somebody and get it on an Xbox memory card

Notes on CD-RW and CD-Rs

- Lot of people dislike the Phillips and Thompson DVD drives
- Samsung's DVD are supposed to be most stable

- A lot of the problems can be handled by buying decent media

Versions of Xbox

- If you get a later version of the xbox you might need to install an older system image onto your C:\ drive

- The best way to get an xbox is to get a used one that has a manufacture date before November 2003

- Legally??? Probably, if you own an older Xbox already - IARNAL

Xbox version 1.6 version warning

- Latest version of Xbox is very difficult to install Linux on
- Video driver is different
- Mechassault trick I used doesn't work
- Bios isn't flashable so the hard/soft method doesn't work
- Mod Chips only way known

Linux distributions for the Xbox

- Xebian - Port of Debian to Xbox, most stable
- Gentoox - Gentoo port, has ups/downs
- Mandreak - used for initial work - dead now

Needs a version of DSL on it :-)

64Mb = !KNOPPIX - Xebian can run as a Live CD

Steps to installing

- Copy save games to hard drive
- Load mechassault
- Go to campaign load Emergency Linux
- Connect via crossover cable
- Get hard drive key and backup C:\ drive

Steps to installing (cont)

- Restart Xbox with Mechassault
- Go to campain and select Install Linux

- Restart Xbox and install Xebian CD
- Login and do XBOXinstallscript

Cool mods to do to your Xbox

- Blue leds - Hacking the Xbox has all you need to know about this

- 128MB ram - Xbox has place to Solder chips

- Rack Mount - Kits exist that let you rack mount your Xbox

- Xbox Skins - dress up your Xbox

- VGA output - Instructions on Xbox-Linux site

3 Cool Things Xbox needs

- Damn Small Linux - DSL Linux
- Geexbox
- Something like WebTV for easy e-mail, browsing etc

Resources

- Xbox-Linux Project
http://www.xbox-linux.org

- Hacking the Xbox by Andrew Huang
ISBN 1593270291

Resources

- Get the Xbox->USB cable

http://www.xbox.com/en-us/pso2/keyboardadapter.htm

http://www.lik-sang.com

- FriendTech

http://www.friendtech.com

Resources

- Xbox Customization Site
http://www.maxconsole.com/

- Xbox Hacker Site
http://www.xboxhacker.com/

- Xbox Scene
http://xbox-scene.com

What the future holds for Xbox & Linux

- Microsoft Xbox 2 is going to be radically different
- Probably no hard drive
- IBM Power PC chips for CPU
- ATI - video card

Sound like a Nintendo Gamecube to anyone?

Other Linux variants on Consoles

- Gamecube Linux
http://www.gc-linux.org

- Playstation 2 Linux

http://playstation2-linux.com

- Linux DC: Linux for the Sega Dreamcast

http://linuxdc.sourceforge.net

Help

If anybody wants to buy an Xbox memory card and loan it to me I'm willing to load the Mechassault save games onto it for you.

It is easier than doing the USB memory stick trick.

Please check with me via e-mail to make sure I don't have my machine borked at the time

Summary

- The average user will probably have a better linux experience with a regular PC

- The limited memory hurts, no KDE - XFce works well though

- If you want something different though by all means an Xbox running Linux isn't that difficult and is cool enough in its own right

- A lot of the Xbox-linux people have moved onto Gamecube linux lately

- Don't get a Version 1.6 Xbox

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