

Plug and Play Multiseat

Linux Plumbers Conference 2009
BoF Session
Bernie Thompson

About the speaker

- “Linux vs. NT and OS/2” (Issue 1 LJ, 1994)
- S3's graphics driver guy on-site at Msft
- Cosource & Applix Linux Division
- Windows Development Manager @ Msft
- DisplayLink and now **plugable**The logo for Plugable Technologies features the word "plugable" in a bold, sans-serif font. The letter "p" is dark grey, while "l", "u", "g", "a", "b", and "e" are green. A horizontal line extends from the end of "able" to a black USB-A connector icon.
- Clearly a checkered past!

Multiseat

- Awareness
- What defines multiseat
 - “Terminals” are just collections of devices
 - Sharing computing power of central PC
- Size of multiseat deployments
 - Linux: hundreds of thousands
 - Windows: over a million (nComputing, etc.)

4 computers for the family







- Dr. Quentin Stafford-Fraser and others
- Vision for low-cost computing for the last few billion people on the planet
- Good background at <http://ndyio.org/>
- Founded DisplayLink as commercial arm
- Q one of the original developers of VNC

Internet Cafe scenario



ndíyo!

South Africa



ndíyo!

No more fighting over PCs



Dirt cheap

- \$299 Atom 1.6Ghz netbook (2GB RAM)
- Driving 4 USB terminals
- Good enough for web browsing and most of Edubuntu collection of apps
- Wormux a favorite app – explosions, joy!
- Also good for Open Office and Plumbers Conference presentations

Real Experiences at Home

- With kids, with Edubuntu applications
- Windows → Linux easy from UI perspective
- Tough from app compat perspective
- USB seats: Still some things to improve
- Deploy at school? A lot to think about.

USB Multiseat

Traditional

- PCIe Graphics
- Higher Gfx Perf
- Similar hw cost
- **Must open box**
- VGA/Display cable
- Limited – free slots

USB

- All devices on USB
- Limited until USB3
- +\$20 to USB dock
- **Plug and play**
- WUSB, CAT5
- Go crazy!

Demo

(Murphy begone)

Zero-state, No CPU, All USB



5V 2.5A (~7 port USB hub)



USB Graphics

- DisplayLink (displaylink_drv.so - GPL)
- MCT (sisusb_drv.so - GPL)
- Both have drivers for the adventurous
- More vendors coming, esp with USB 3.0
- Different from traditional 2D/3D graphics controller. Think remote framebuffer.

Still early days

- Many todos and outstanding problems
- Common issues across all multiseat
- Unique issues/opportunities for udev integration – taking advantage of USB plug and play, getting power management right
- Integration with new ConsoleKit

Code/script walkthrough

- This is a kernel developer's conference
- Only I'm probably least qualified in room ...
- <http://libdlo.freedesktop.org/wiki/MultiSeatTerminal>
 - End-user instructions
 - And some helpful scripts
- Notes on opportunities to improve very welcome!

Q&A



- A “next generation device company”
- \$99 zero-state dock/thin client
 - <http://www.amazon.com/gp/product/B002PONXAI>
- USB2 multifunction device with graphics, audio, eth, etc.
- Every chip/function on it has some level of open source driver – enabling interesting new uses for the device
- <http://getsatisfaction.com/> support
- More products coming with this kind of philosophy



BoFing (time permitting)

- Break into four groups
 - udev/kernel ideas
 - GDM/X ideas
 - Distro integration ideas
 - Interesting use case ideas
- Group leader reports back with top 3