

# Project Cauã

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# Who Am I?

- In the computer industry since 1969
  - Mainframes 5 years
  - Unix since 1980
  - Linux since 1994
- Companies (mostly large): Aetna Life and Casualty, Bell Labs, Digital Equipment Corporation, SGI, IBM
- Programmer, Systems Administrator, Systems Engineer, Product Manager, Technical Marketing Manager, Educator, Author
- *Extremely* large systems to *extremely* small ones
- Vendor *and* a customer

# Who Am I? Linux

- May 1994 – funded Linus Torvalds at DECUS
  - Obtained Alpha for him to do port
    - CISC/RISC
    - 32/64 bit
  - Assembled DEC engineering team
- 1995 – Assumed ED role for Linux International
  - LMI – defended Linux Trademark
  - LPI – created SysAdmin certification program
  - LSB – Linux Standard Base
- Promote Linux Worldwide

# What Do You Think Of?



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# Latin America

- 83 per cent of the people live in Urban areas (and more moving in)
- Often the Internet is not 500 miles away
- We can train and re-train people.





# Goals

- Create *millions* of new, *private sector* high-tech jobs in Latin America, many millions more worldwide
- Make computers easier to use
  - Ease of use is not about “i”...but about “u”....
- Create more environmentally friendly computing
- Decrease cellular wireless contention
- Create gratis WiFi bubble over urban areas
- Create low-cost or gratis Super Computing capability
- Using *sustainable*, private sector funding

# The Model In A Nutshell (Or at least on one slide)

- HA Servers In Tall Buildings
  - UPS and Generator
- High Capacity Internet brought into basement
- Thin clients throughout building
  - Fat clients also supported
  - Connected to server by high-throughput  
ETHERNET/POE
- Wireless LAN/Mesh supported
- HPC grid formed by servers

# Create Millions of New Jobs

- Enable systems administrators to start own business
  - Business plans
  - Marketing materials for end users
  - Training/Certification/licensing
- “Systems Administrator/Entrepreneur”:
  - Finds customers
  - Borrows money from a commercial bank
  - Buys equipment
  - Leases computing services to end-user customers

# Vertical Markets

- Small/Medium Business (SMB) in large office buildings
  - Typically no Systems Administrator
  - Great loss of data and time
- Apartments/Condominiums
  - “Home Automation”/multimedia
  - Replace many smaller systems
- Hospitality
  - Small hotels same facilities as large ones
- Point Of Sale (POS) systems

# Apartments/Condominiums

- “Regular desktop computing”
- Over The Air Digital TV
- IpTV:  
“MythTV/LinuxMCE/xbmc” functionality
- IpRadio
- VoIP
- Control of lights and heat
- Security System
- Store pictures
- Store music
- Calendar
- Alarm Clock

# “Hospitality” Functionality

- Reservations
- Room allocation
- Accounting
- ERP/CRM
- Website
- Point-Of-Sale terminals
  - Handhelds
- In-room
  - IPTv
  - IPradio
  - VoIP
  - Access to Internet
  - Alarm clock
  - Room service
  - In-room movies



# SMB Market

- 1-30 people
- Provide file, email, print services
  - Linux
  - Windows
  - OS/X
- Create “time-sharing”
  - Eliminate Viruses, SPAM
  - Help customers use computers better

# Environmentally Friendly Computing

- Reduction of electrical usage
- Lengthen life of computers
- Active resale and recycle programs
- Reduce bad chemicals in computers

# Reduce Electrical Usage

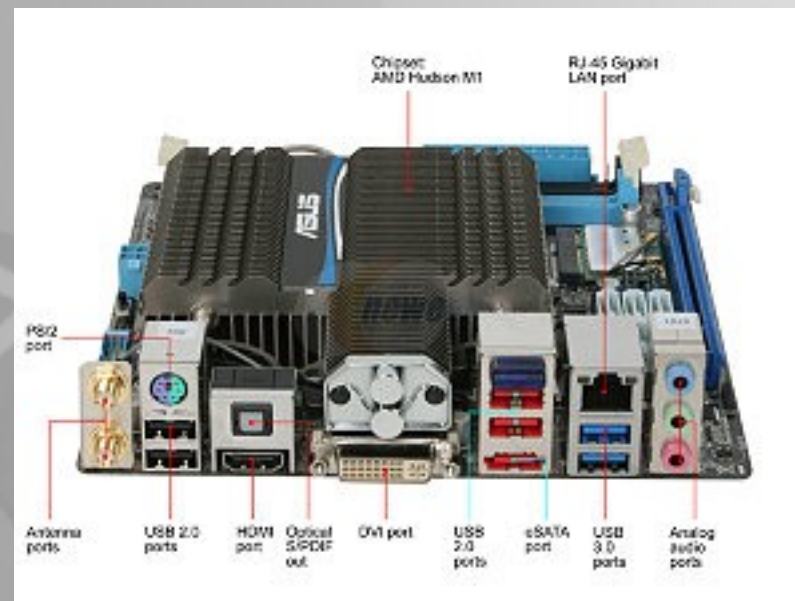
- Desktop computers  
250-1000 Watts
  - 350W average
  - 2x to cool
- Thin clients – 10 watts or less
- Green LCDs



*Itaipu – 14GW – 350w x 40,000,000 desktops*

# Solution: Thin Client

- Less than 10 watts – 12 Volt
  - “Always on” (PoE)
  - “multi-function” (with virtualization)
  - USB 3.0 (5 Gbits/sec.)
    - wireless mesh router and backhaul capable (802.11/WiMAX)
    - Cellular modem
- No noise
  - No fan
  - No moving disk
- Long life



# Home Grown Thin Clients

- Thin clients and USB 3.0 “dongles” designed at local universities
  - Design open and published
  - Manufacturing details, certifications
    - licensed R\$ 2-4 per board, no minimum
    - Universities – details free
    - Hobbyists – details free
- Open bios, open drivers
- Thin clients manufactured in local factories



# Why Bother With Home-Grown?

- Import duty
  - finished products 100%
    - \$100 motherboard sells for \$200
  - Assembled products 6% on parts
    - Most parts available in Brazil
- Creates jobs and expertise in Brazil



# Resell and Recycle

- Three servers
  - Momma Bear and Poppa Bear
  - Baby Bear
    - Made of two thin clients put together
    - Runs off 12 volts
- Need “Poppa Bear”
  - Sell Momma Bear to new SA/E
  - Use money to buy “Poppa Bear”
- Parts are inter-changeable and under warranty

# Gratis Wireless “Mesh”

- Each thin client a WiFi “host”
- Each thin client a femtocel
- USB 3.0 dongles used to allow flexibility
- FON model
  - 1-2 Mbits/sec “gratis”
  - More available “paid”
- “Mesh” mostly a “LAN”
  - Hardwired backhaul for every thin client
  - QoS applied to wired network



# Supercomputer Grid

- Server machines multi-core
  - Turn down cores, memory, disk when not used
- High performance Internet connects machines
- GRID structure could be set up and managed
  - Apartment house servers little used during weekdays
  - Office building servers little used during weekends
- GRID computing for sale at low cost

# What About Training for SA/Es?

- Certify 10000 SA/Es per month for 200 months
  - Training over Internet or DVDs
  - Use virtualization to allow virtualized network training
  - Use older systems for real hardware training
- Specialized training for specialized tasks
- University and classroom training
- LPI certification
- Licensed by government
- Bonded (insured) by insurance companies



# How Does SA/E Afford to Buy Business?

- Loans
  - Private banks (Commercial and Credit Union)
  - Friends and Family
- Loans Underwritten
  - Underwriting program – no bank will “lose”
  - Small charge per loan to cover cost of program
- Other funding/business models also exist
  - Purchase of networking/equipment as building cost

# How Much Will SA/E Make?

- \$ 1800 per month base salary:
  - 300 thin clients as customers
  - \$ 6 per thin client per month
- Other ***additional*** revenues:
  - “Restores”
  - Classes
  - Sales of additional hardware
  - Printing services
  - Web site/programming for customers



# SA Is An Entrepreneur

- Leases hardware, software and services to customers
- Rotates old equipment out over time
- Keeps servers responsive
- Owns their own business – is their own “boss”
  - May have “apprentice”
  - Sells business on moving/retirement
- Trained, Certified, Licensed, Bonded

# How Large Is This Project?

- 194 Million Brazilians
- 83% in Urban Environment = 154 Million people
- 400 Million thin clients
  - Two thin clients per person
    - One at home, one at work
    - One at home, one at school
  - 90 million POS terminals
- 300 thin clients per HA server
  - 1.3 million HA servers
  - 2.6 million systems

# Currently In Discussions

- Telefonica
  - Latin America
  - Brazil, Mexico, Ecuador
- Brazilian Government
  - Minister of Communications
- Banks
  - Caixa Econômica Federal
  - Banco do Brazil
- Various housing and communications projects

# Project Cauã Boards: Board of Directors

- Daniel Coletti – Xtech
- Douglas Conrad – OpenS
- Dionara Conrad – OpenS
- Marlon Dutra – Propus
- Andre Franciosci – Franciosi Consulting
- Denis Galvão – Isolve
- Rodolfo Gobbi – 4Linux
- Jon “maddog” Hall - LI
- Kauê Linden – HostNET
- Jody Newman – Ibex Group
- Raphael Peregrino da Silva – Linux New Media do Brasil
- Dr. Marcelo Zuffo – USP

# Project Cauã Boards: Technical Board

- Felipe Augusto (faw) van de Wiel - Debian
- Bdale Garbee – HP
- Gustavo Noronha (Kov) Silva - Debian
- Pablo (Spectra) Lorenzoni – Debian

*More to come*



# How To Find Project Cauã: [www.projectcaua.org](http://www.projectcaua.org)





# Questions?

