



# OpenSource at HP Community Involvement and Internal Use

Michael Schulz  
Technical Marketing Manager  
Hewlett-Packard

© 2004 Hewlett-Packard Development Company, L.P.  
The information contained herein is subject to change without notice



# Objectives



- Open Source community projects that HP participates in and sponsors.
- Report some of HP's successes using Linux and other Open Source software internally.

“The question for us isn't 'Will Linux dominate the world?', but 'What part of the world will Linux dominate?'”

---

Carly Fiorina  
CEO, Hewlett Packard Company  
Linuxworld 2002

# HP delivers Linux for the Real World



## Linux R&D Approach

- Embrace Linux for what it is ... a disruptive technology
  - Don't pre-suppose what Linux can and can't do
  - Target areas where Linux fits now
  - Contribute to Linux development as needed to meet requirements
  - The ultimate market and use model is not yet known ... be nimble!
- Participate as a member of the community, consistent with community values and behaviors, to develop enterprise capabilities and robustness on Linux that are of interest to HP.

# Supporting and maintaining the “freedom” of Open Source

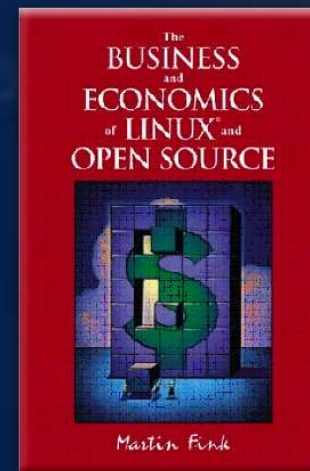


## Linux community participation

- Leadership for Linux Standard Base
- IA-64 kernel development & maintenance
- Sponsor of kernel summit, Ottawa Linux Symposium, LinuxConf.aus, Debconf, and much more
- Significant contribution to Open IPMI, Xfree86, and System Imager
- Sponsoring or founding member:
  - Open Source Development Lab [OSDL]
  - Linux International [since 1995]
  - Clustering foundry and handhelds.org
  - Gelato Federation
- Extensive support of Samba and Apache projects
- Co-development of the Lustre cluster file system
- Commitment to Debian and its community

## HP Investment

- Open Source Program Office
- Dedicated Linux & Open Source Lab
- Migration of UNIX functionality to Linux
- Global Services & Support infrastructure



# HP's Contributions in Open Source

## opensource.hp.com



- Itanium maintainer
- HP's leadership in SAMBA
- Debian Project
- Linux Standards Base
- Pegasus Project
- Linux on PA-RISC
- Handhelds.org
- Founding member of OSDL
- Data Center Linux Working Group
- The Gelato Federation
- OpenSSI
- ScTL
- Printer drivers
- Apache
- KDE & Gnome

Over 44 open source projects

HP sponsors Open Source Institute Award

# OpenSSI – Open Source project

- Goals include availability, scalability and manageability
- Based on HP technology released under GPL license
  - 1.0 version available today
- Technology pieces include:
  - membership, single root and single init, cluster file systems integration
  - single process space and process migration, load leveling
  - single and shared IPC space, device space and networking space
  - single management space
- Best Open Source Project of the 2002 LinuxWorld, Aug.
- <http://ssic-linux.sourceforge.net/>

# Handhelds.org iPAQ Linux Development



- A networked handheld computer usable as a PDA
  - *Fundamentally different view* than PalmOS, WinCE
  - Seeing opportunities in vertical markets
- Established to foster open source development
  - Itsy was the first Linux PDA (Compaq Research)
  - iPAQ H3600 was the first commercial PDA to run Linux
  - Linux 2.4.19, GTK+ and Qt user environments, IPv6, MobileIP, IPSEC...
  - Full *native* Linux development environment (Debian)
  - thousands of applications are available
- Very large developer and user community
  - Support for all iPAQ H3xxx series
  - Support for H54xx being completed
  - Support for H19xx, H22xx well underway
  - Optimization for XScale soon
  - Completion of fully open source PDA application set imminent





# Open Source Development Lab and HP



- The OSDL charter
  - provides computing resources to Open Source developers in enabling Linux-based applications for data center and telco-class solutions
- Working Groups –a forum to guide Linux development
  - defining Carrier Grade Linux extensions (CGLE) to add enterprise capabilities (Kernel and System hardening)
  - Provide a unified forum to guide the development and adoption of Linux in the data center and telco industry
- Linus Torvalds joined OSDL in July 2003
- HP support for OSDL
  - Founding member - 2001
  - OSDL VP, is Martin Fink, HP's VP of Linux Operation
  - Khalid Aziz is chairman of Carrier Grade Linux Working Group
  - Steve Geary, Data Center Working Group steering committee
  - HP products are deployed inside OSDL labs



# HP Open Source Program Office

- Open Source Policy Document
  - General policy on how and when to use open source
  - Guidelines for employee participation in projects
- Open Source Review Process
  - Group of open source experts
  - Business and legal review
  - Pointers to resources
- Open Source Portal
  - Web portal for all of HP's open source activities
  - <http://opensource.hp.com>



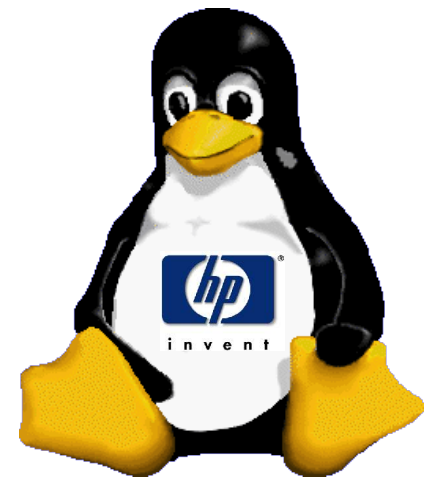
# HP's Open Source Policy Objectives

- Ensure legal compliance: honor open source licenses and prevent unintentional “copylefting”
- Establish proper business controls based on a clear understanding of open source
- Have a central place where all open source activities are understood for consistent communication inside and outside of HP

# HP's use of Linux

## Over 4800 systems and growing ...

- All external email is routed through Linux rim servers on HP's firewalls - to the tune of >3TB/year.
- DNS infrastructure is rolling out on Linux (~100 systems at present).
- Enterprise Directory service hosted on Linux clusters.
- Client DHCP service delivery hosted on Linux.
- Network time is provided by Linux rim servers - NTP is a critical element to keeping our routers and network in sync.
- HP's internal and secure instant messaging network (Jabber) is implemented on Linux servers.
- Linux clients and servers in use for electronic design automation [Synopsys]
- Utility Data Center deployment including 36 node Itanium Linux cluster used for HP Labs research computing
- Oracle 9iRAC application testing and validation for production deployment



# Hewlett Packard Company

## Industry: Technology Solutions Provider



- Challenges

- Cost reduction of traditional “big-iron” services
- Corporate infrastructure uptime
- Instant messaging, email routing, domain name services, network time, firewalls - open standards
- Engineering desktops, centralized IT environment

- HP Solution

- HP servers running essential services and applications on Linux
- Over 15,000 total Linux devices on HP networks

- Results

- Cost reduction through open standards and commodity hardware
- Near five nines uptime observed at a fraction of the traditional price
- Workstations & servers provisioned and managed centrally by IT with Linux on tap.



“Everyone at HP uses Linux every day, when browsing the web, sending email, chatting, or using HP networks in any manner.”

Craig Lamparter  
HP Services





# Hewlett Packard Company

## Industry: Technology Solutions Provider



- How was the solution selected
  - HP requires cutting-edge intranet infrastructure tools (bind, postfix, etc)
  - Linux is *the* Internet reference platform
  - Latest tools are tested and supported on Linux first
- Interesting Experiences
  - Surprisingly secure, no viruses, no hacks, no worms
  - Linux scales *down as well as up, reduced complexity, appliance-like functionality*
  - Near five-nines uptime observed without the cost of implementing a HA environment, focus is on *resiliency rather than single point availability.*
  - We're working directly with the opensource community, our improvements are provided to the upstream maintainers
- Results
  - Essential services stay up, even during viral storms
  - Easy to support (as much as 50 boxes per admin)
  - Open standards, open source, clear and easy future



“Everyone at HP uses Linux every day, when browsing the web, sending email, chatting, or using HP networks in any manner.”

Craig Lamparter  
HP Services

# Enterprise Directory Integration Using Open Source Software



Enterprise wide authentication for HP portal

- Leverage existing Windows domain authentication
- Open source integration project based on SAMBA
  - HP created – NT authentication plugin

Enterprise wide identity management

- HP created - Dynamic groups plugin

HP services has deployed for customers

Available at [sourceforge.net/projects/dsntauth](http://sourceforge.net/projects/dsntauth)



# External Access to Enterprise Email Integration with Open Source Software



*Enable secure external access to email from the Internet through the use of an IMAP proxy and web-enabled interface.*

- Enables ubiquitous access to email over the Internet from a wide variety of devices/appliances
  - Choice of clients
  - Access from Airport kiosks, Internet Cafes, PDA on the beach
- Accelerated integration of open standards, open source software components
  - Allows unprecedented flexibility and customization
- Integrated with HP's Enterprise Directory



# HP Linux Client Focus

- Riding on the “wave”
  - HP wants to be ready should market take off
- Provide Linux friendly and enabled hardware
  - Deliver Linux into emerging markets
  - Linux requires resources and HP has capability
  - Product line focused – where it makes sense
  - Leveraged across the company

# Technology & Readiness by usage model and some considerations



- **Consumer (Readiness – Very Low)**
  - Limited application availability – very few games
  - Technically adept users pioneering and succeeding
  - Internet and Email capable, however dependencies on Internet Explorer may yield issues
- **Office/Knowledge Worker (Readiness – Medium Low [application dependent])**
  - OpenOffice application suite available
  - Integration with existing infrastructure can be difficult [document formats, .NET, etc.]
  - Internet and Email capable, however dependencies on Internet Explorer may yield issues
- **Transactional Worker (Readiness – High [application dependent])**
  - Applications must be available or a web-based application certified with Mozilla
  - Industry-standard thin client model represents significant cost savings: reduced client management, increased client image consistency, improved reliability, improved/centralized management
  - Internet and Email capable, however dependencies on Internet Explorer may yield issues
- **Engineering/Specialized Worker (Readiness – Very High)**
  - UNIX application legacy, although ISV Linux support ramping fast
  - Performance demand plays to Linux strength
- **Application Developer (Readiness – Very High)**
  - Developer tools and ecosystem now mature for Linux and Open Source
  - Increased Developer flexibility – may work at home or on the road using industry-standard clients

## Meeting Expectations

Emerging Markets

Mature Markets



VOLUME USAGE



# Currently Shipping Linux Desktops

Product Family



HP Compaq  
D530



HP Compaq  
D330



HP D325

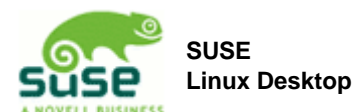


HP Compaq  
D220/230/240

Tested &  
Delivered



Linux  
Certification



# HP & SUSE

- HP and SUSE have an agreement which allows HP to distribute future version of SUSE with its PC systems.
- HP announced the nx5000 pre-installed with SUSE
- HP will deliver SUSE 9.2 on models of business line of desktops systems this fall
- HP will provide support for SUSE operating system

# HP Compaq t5515 thin client



- New operating system: HP's first thin client based on open source **Linux** code!
- New processor: 800 MHz Transmeta Crusoe
- No changes to dimensions or bezel
- Two memory configurations:
  - 32MB Flash and 64MB DDR system memory
  - 128MB Flash and 128MB DDR System memory provides room for customer to “customize” image
- Graphics:
  - ATI Radeon 7000-M graphics for our best color depth and the sharpest resolutions
- 4 USB ports, serial, parallel, **P/S2**, audio in and out
- USB 2.0 and optional PCI expansion on 128 MB Flash model

# Why a Linux Thin Client?



While Linux has only penetrated a small fraction of desktop clients, in the thin client market Linux is 20% of the market and has been growing 50%-70% a year! In server based computing with thin clients, all applications are actually hosted on the servers or blade PCs so the client side operating system is less important for applications, and other considerations such as security, freedom to modify code and cost become more important.



# To Learn More



- Linux product information starts at [linux.hp.com](http://linux.hp.com)
- Many HP supported Open Source projects (Debian, Samba, etc) are referenced at [opensource.hp.com](http://opensource.hp.com)
- Linux for iPAQ – [handhelds.org](http://handhelds.org)

*Thank You*



i n v e n t