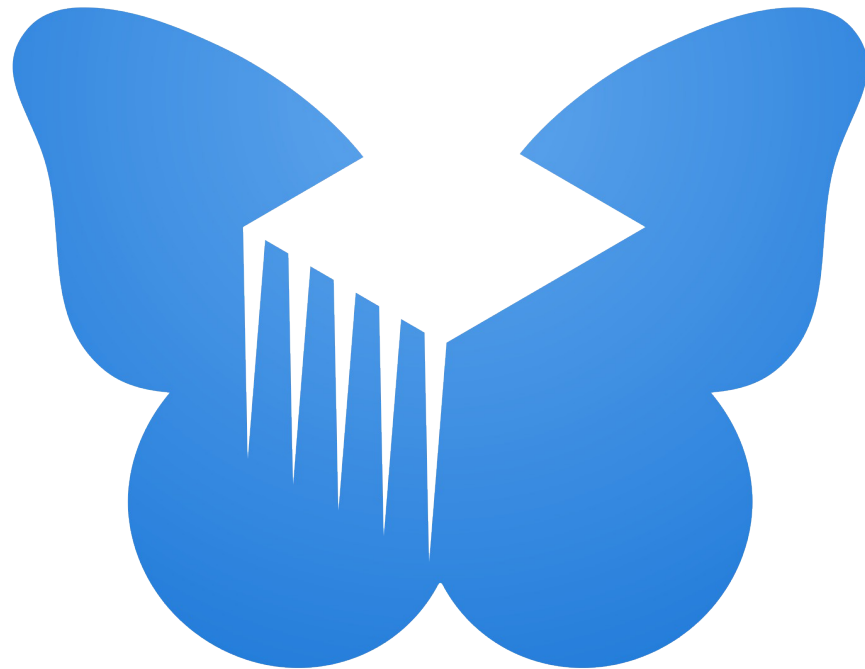


Freedom: Out of the Box!

An Update on Activities at the
FreedomBox Foundation

Bdale Garbee



What's the Problem?

- We willingly hand personal data to companies to manage on our behalf, with little real thought given to consequences.
... our lives are under increasing scrutiny
- For-profit companies, *no matter how noble the intentions stated in their terms of service*, **must** operate within the rules of jurisdictions in which they operate...

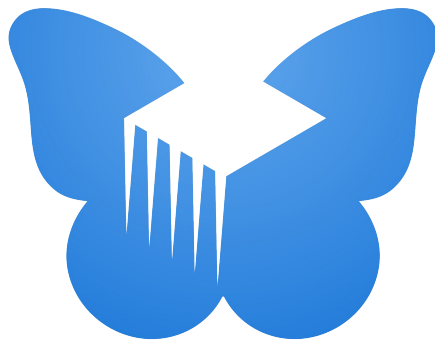


Freedombox Vision

- A FreedomBox is a personal server running a free software operating system and applications designed to create and preserve personal privacy.
- Running on cheap, power-efficient plug computer servers that individuals can install in their own homes.
- Contribute to building privacy-respecting federated alternatives to contemporary social networks
- Mesh networking to augment or replace existing infrastructure.
- Facilitate collaborating safely and securely with others in building social networks supporting demonstration, protest, and mobilization for political change.



The Foundation



FreedomBox

FreedomBox Foundation

- Founded by Eben Moglen
- Board of Directors
 - Eben Moglen
 - Bdale Garbee
 - Yochai Benkler
- Executive Director - James Vasile
- Technical Advisory Committee
- Working Groups



Work of the Foundation

- Technology
- User Experience
- Publicity and Fund-Raising
- Industry Relations



Technical Advisory Committee

- Bdale Garbee, chair
- Jacob Applebaum
- Sam Hartman
- Sascha Meinrath
- Rob Savoye
- Matt Zimmerman

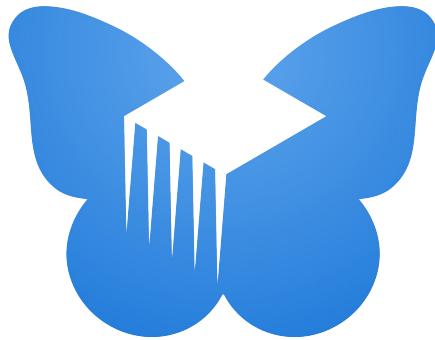


Working Groups

- Teams that will design elements of our FreedomBox reference implementation .. the current list includes:
 - Promotion and Visual Identity
 - User Experience
 - Network Protocols
 - Peer Model
 - Configuration
 - Social and Applications
 - Security
 - Documentation
 - Platform
 - DreamPlug Hardware Testing Group



Decisions



FreedomBox

Bounding the Challenge

- Focus on software, not custom hardware
- Servers and services, not client devices
- *Platform* for federated distributed social networks
- Make use of existing infrastructure where appropriate, while working to move away from central infrastructure control points
 - Domain Name System
 - Certificate Authority “cartel”
 - Existing connectivity infrastructure vs “mesh”



Why Debian for Freedombox?

An association of individuals who have made common cause to create a free operating system

- Completely open volunteer organization, with an intense focus on freedom
- Very strong technical infrastructure
- Root of a very rich ecosystem of derivatives
- Is quite international
- Runs on all relevant hardware architectures
- “All Free Software gets packaged for Debian”



FreedomBox via Debian

- Future Debian stable releases should have everything needed to create FreedomBoxes “out of the box”
- FreedomBox being built with Debian packages
- New software created for FreedomBox will be packaged and delivered via Debian
- Regardless of how successful we are, all our work will survive and remain available



XMPP and GPG

- The first “application” we wanted to deliver is a secure chat service .. harder than it looked!
- Fundamental decision to base collaboration infrastructure on XMPP
 - Prosody on a single host
 - Apache + jwchat
- OpenPGP (GnuPG) keys as root of trust
 - Monkeysphere + Apache module

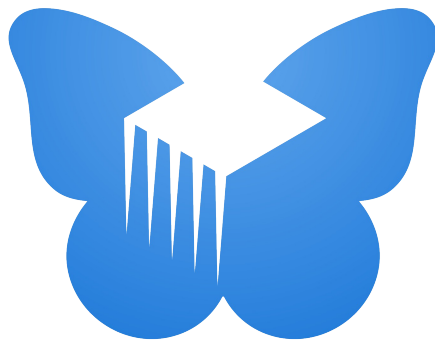


Making Keys Useable

- OpenPGP keys are great, but how do we establish initial trust relationships?
- Among many ideas, a promising one is to take advantage of smart phone technology to facilitate initial key exchange
- Stefano Maffulli led initial work on ManusVexo
 - Creates QR code from fingerprint
 - Uses camera to capture data for initial connection



Hardware



FreedomBox

Initial Hardware Target

- DreamPlug from GlobalScale Technologies
 - Marvell Kirkwood @ 1.2Ghz
 - 512 MB RAM and 2 MB SPI NOR Flash for bootloader
 - 2 GB internal microSD for kernel, root filesystem
 - 2 x Gigabit Ethernet
 - WIFI 802.11 b/g using Marvell uAP
 - Bluetooth 2.1 + EDR
 - 2 x USB 2.0, 1 x eSATA 2.0, 1 x SD socket
 - Audio Interfaces





Behind the Scenes

- Using the DreamPlug forced the Foundation to engage in GPL compliance activities
- Identified and have now largely resolved several source availability issues
 - Marvell uAP user-space utilities
 - GlobalScale modifications to u-boot
 - Kernel patch set
- A remaining frustration is the uAP driver, which requires a large binary firmware blob



Other Interesting Hardware

- Other plug servers
 - Sheeva
 - DreamPlug predecessor, similar specs, integrated JTAG
 - Tonido
 - Internal support for 2.5” SATA drive
- Set-top ARM boxes
- Developer boards
- On some level, anything that can run Debian



Accomplished

- Many Debconf11 talks related to FreedomBox!
- U-boot changes for the DreamPlug and kernel content pushed upstream by Jason Cooper
- DreamPlug kernel packaged by Hector Oron
- User-space tools for Marvell uAP packaged
- Two freedom-maker “developer releases”
- Proposed privoxy config from James Vasile
- 2-day architecture meeting in New York in October
- “Hackfest” in New York drove rapid progress

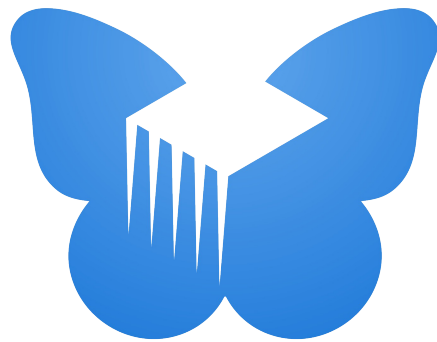


Santiago

- Allows users to negotiate services without third party interference
- OpenPGP signed and encrypted messages over HTTPS reduces MITM attack surface
- Can use Tor network as a proxy
- Created by Nick Daly
- First release candidate announced in mid-May



Forward from Here!



FreedomBox

Plans for FreedomBox 1.0

- Privoxy with a rich set of rules
- OpenVPN support for client connections
- Santiago able to set up ssh tunnels
- Plinth modules
 - Initial set-up
 - DHCP server on/off
 - DHCP client vs static IP config
 - Tor minimal controls



Going Forward

- Periodic “releases” of reference implementation
 - Integrate plinth as user interface framework
 - Enable config of Monkeysphere + ssh “tricks”
 - Finish building a secure XMPP “chat” stack
- Work up the stack, add more applications
- Support more platforms
 - Image builds for more plug models?
 - x86 virtual image building in freedom-maker



Truly Free Hardware?

- The time we've spent dealing with GPL compliance issues, etc, exceeds the time it would have taken to “turn on” a new platform!
- At least one credible hardware community is interested in creating a purpose-built device
 - Dual-core fast ARM
 - Sufficient DDR3, flash
 - Wifi with master and multi-ssid support
 - Two 100 megabit wired network ports



FreedomPhone?

- Previous attempts to build an open phone from scratch never achieved critical mass
- Several teams are working to cut Android down to address privacy issues
- HP's published roadmap for release of webOS presents an intriguing opportunity...
 - Commitment to upstream kernel.org integration
 - Fully open stack
 - Enyo cross-platform app dev environment



How to Help?

- Be conscious about privacy and other freedoms in all that you do! (Do you have a gpg key yet?)
- Join a working group!
- Experiment with software and help refine the list of alternatives to cloud services referenced at <http://wiki.debian.org/FreedomBox/LeavingTheCloud>
- Help us select Debian packages and determine configuration specifics to deliver on our vision
- Financial contributions to the Foundation are always welcome!



They who can give up essential liberty to obtain a little temporary safety, deserve neither liberty nor safety.

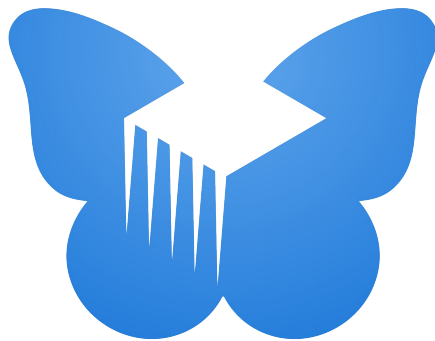
Benjamin Franklin



Questions?

<http://freedomboxfoundation.org>

<http://wiki.debian.org/FreedomBox>



FreedomBox