Why Did We Choose FreeBSD?

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Why Did we Choose FreeBSD in General?

We are using FreeBSD 5.4. Here are some more specific features which make it appropriate for use in an ISP environment:

- Very stable, especially under load as shown by long-term use in large service providers.
- FreeBSD is a community-supported project which you can be confident is not going to 'go commercial' or start charging any license fees.
- A single source tree which contains both the kernel *and* all the rest of the code needed to build a complete base system. Contrast with Linux that has one kernel but hundreds of distributions to choose from, and which may come and go over time.
- Scalability features as standard: e.g. pwd.db (indexed password database), which give you much better performance and scales well for very large sites.
- Superior TCP/IP stack (so much so that Microsoft used it for Windows 2000).
- FreeBSD has an excellent distribution system. Possibly one of the best around:
  - You can purchase FreeBSD media on CD or DVD from FreeBSD Mall, BSD Mall, or this list of publishers.
  - You can obtain FreeBSD for free via an extensive set of ftp mirrors, or by
  - Using Bittorrent
  - Instead of RPM or apt-get FreeBSD using the pkg facility. This facility can resolve dependencies when packages are missing, unlike RPM.
  - You can install from source using the Ports collection. Currently there are almost 13,000 ported applications available for FreeBSD.
  - You can synchronize your FreeBSD source and even upgrade an entire release using the FreeBSD CVSup facilities. You can run local CVS servers almost trivially to make FreeBSD source and applications available locally.
  - Finally, you can run Linux applications under FreeBSD by using the Linux Binary Compatibility feature of FreeBSD.
- And, in case you missed this, ***FreeBSD is extremely stable***, particularly under heavy load.

Why FreeBSD Rather Than Linux?

Here we touch upon the larger issue of why we chose FreeBSD over Linux at this time. The argument goes like this:

What are your reasonable "free" choices in the Linux world at this time?

- RedHat?
- Fedora Core?
- Debian?
- Gentoo?
- Ubuntu?
- Mandriva (Mandrake), SuSE (now Novell), Turbolinux, etc.?
- Others?

Each of these choices has serious issues, with, in our opinion, Debian being the best alternative at this time in the Linux world. Here are the issues broken out by distributions:

- **RedHat:** No longer offers any free versions of their software. You must pay to use Red Hat Enterprise Server. While not that expensive (Go here for pricing), around USD $349/year/server, this is too much for many smaller ISPs.
- **Fedora Core:** Uses absolutely cutting edge technologies that are often not ready for production environments. For instance, selinux was integrated in to both FC2 and FC3 before it was/is truly production-quality ready. Once you choose your version of Fedora Core, then you *must* migrate to a new version within approximately one year as your version will no longer be supported by the Fedora Core team. Migrating a production server every 12 months to a new Operating System is not a good idea. Here's the Fedora Core Release Schedule.

  Update: As of June 3, 2005 Red Hat Inc. has decided to hand over control of the open-source Fedora Project, creating the new Fedora Foundation to manage the project. This means the future of Fedora is uncertain at this time. If the Open Source community does not embrace Fedora Core, then the project may stall or become outdated. Previously almost all direction and development on Fedora was done by Red Hat staff. This change may be for the better, but as of now this is unclear.

- **Debian**: From a technical standpoint is extremely stable, free, and has an excellent package management system. But, for newer Linux users it installs with Kernel version 2.4.27 (Debian 3.1 as of June 2005) and requires you to update immediately to kernel 2.6 if you need this functionality. As going to Debian from Red Hat or Fedora is almost as big a jump as going to FreeBSD (in our opinion), then why not teach you what we consider to be a superior operating system to begin with?
- **Gentoo:** Tempting, but has more than one package management system and neither is complete at this time. This feature is critical. In addition, Gentoo, like Debian, is a big change from Red Hat or Fedora Core.

  Update: As of June 14, 2005 Daniel Robbins, the founder of Gentoo Linux and its former chief architect has accepted a position to work at Microsoft.

- **Ubuntu**: offers a truly free Linux distribution that comes on a (currently) 500 MB single CD. But, additional software for Ubuntu must be downloaded over the network. For slow connections this can be difficult. In addition, Ubuntu is not aimed at the server environment. While it can be configured to run as a server, the distribution is new with minimal real-world testing.
- **Mandrake, SuSE, Turbolinx, etc.:** Either don't offer any ISO images from which you can install the OS, or the version that is "free" is very minimal in nature and no guarrantees that they will continue to make it available.

With Red Hat pulling free versions of their OS and replacing them with Fedora Core, which changes too fast and is not production-ready, this has created some serious discussion in the Linux community about what people should do. Some of this discussion suggests using FreeBSD instead, and this past year has seen an increase in the number of FreeBSD downloads and installs, possibly due to this very issue (or, maybe because version 5.4 is so cool! :-)).

Why Did we Choose FreeBSD Rather than Windows?

- Windows design has been driven by market forces, which has led to many dubious design decisions.
- Windows does not scale. Windows Server still breaks down under heavy process load.
- An extremely poor history of security flaws. Windows boxes are unsafe to put on the open Internet, even after they have been patched.
- An almost complete lack of remote management and scripting features.

A few more reasons...

- Microsoft has spent 10 years, so far, trying to fix the original design of Windows to make it work better, and they have been somewhat successful, but the core OS still has fundamental and broken design flaws, these include:
  - Dynamic Link Libraries
  - User and System registry. Attempts to separate these fail. The registry is your OS and it's a binary file. Corruption leads to OS meltdown. A very weak link.

  - Lack of adherence to open standards. For example: Active Directory is based upon LDAP, but adds extensions that cause it to fail with open standard LDAP servers. This lack of adherence to open standards means that you *must* use Microsoft-only methods to solve your problems. You have no escape route.
  - Incorrect Digital Certificate signing methods
  - Dependent code. Many services *must* run other services to work. (examples: Telephony is needed to do NAT, and you *still* cannot turn off RPC and have a useful server running.)
  - Corruptable memory space. (improved in 2000 and XP)
  - Default configurations are consistently insecure and broken (same can be said for many Linux distributions).
  - Unclear division between bundled software and OS features. Consider IE.
- And, as you know, Windows costs money to buy, on a per seat basis.

Open Source and "free" operating system costs money as well, but, at least you are paying for your time and energy. Very few *independent* studies have been done an what it costs to run Windows vs. Linux or Unix in a business. The few independent studies that have been done consistently show Windows to be more expensive to run.

We could go on, but really this is an issue of experience. If you look around you'll see that the majority of Web servers and larger email servers are not running under Microsoft Windows, and there are many reasons for this.

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