Why Did We Choose FreeBSD?

Index

Why Did we Choose FreeBSD in General?

We are using FreeBSD version 6.1. 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 that responds well to extremely heavy load.
- Multiple firewall packages built in to the base system (IPF, IPFW, PF).
- High-end debugging and tracing tools, including the recently announced port of the Sun Dynamic Tracing tool, DTrace, to FreeBSD.
- Ability to gather fine-grained statistics on system performance using many included utilities like systat, gstat, iostat, di, swapinfo, disklabel, etc.
- Items such as software RAID are supported using multiple utilities (ata, ccd. vinum, geom). RAID-1 using GEOM Mirror (see gmirror) supports identical disk sets, or identical disk slieces.
- Take a look at the most stable web sites according to NetCraft (http://news.netcraft.com/archives/2006/06/06/six_hosting_companies_most_reliable_hoster_in_may.html). FreeBSD sites are listed at #1, 3, 4 and 5.
- 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 uses 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 nearly 15,000 ported applications available for FreeBSD.
  - You can update your entire ports tree using the newly released portsnap facility in FreeBSD 6.
  - 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.
  - You can run Linux applications under FreeBSD by using the Linux Binary Compatibility feature of FreeBSD with almost no hit in performance.
  - You can run older FreeBSD binaries if necessary using the FreeBSD 4.x and 5.x compatibility

libraries.
- 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 (2006). In summary the issue has been the lack of a reliable, "free" (i.e. you don't pay for the OS) version. In addition, there are so many choices, each with their quirks, that anything we teach is quite likely not going to be what you will use in your own shop.

Recently (1st and 2nd quarter 2006) there have been some hopeful developments in the Linux world. SuSE (now Novell) has made a version of their up-to-date Linux distribution available for free download. In addition, Ubuntu has released Ubuntu 6.06 LTS (Long Term Support), which is aimed as a server operating system including simple LAMP installation, IBM DB2 certfied, and Ubuntu uses the Debian Package Manager for software updating and distribution.

With that said, here is our list of caveats for the major "free" versions of Linux currently available:

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

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

  - **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.
  - **Suse/Novell**: The name sums it up. This could be an excellent distribution to consider, but it's general availability is something that is brand new. This has been a *major* issue with Linux companies; whether to keep a distribution freely available or not. Only time will tell if Novell will continue to make SuSE Linux current available freely. Otherwise, this is a reasonable choice for a server OS. The major reported issue has been the substandard packaging system.
  - **Debian**: From a technical standpoint is extremely stable, free, and has an excellent package management system. Debian is probably the Linux distribution that most closely matches the philosophy of FreeBSD in terms of stability and package management. In addition Debian has available a huge number of packages (almost 15,500 as of June 2006), and as superior package management system called *apt*. A major issue, or a major plus, depending on your point of view with Debian is how conservative the project is when releasing software. Generally software that ships with Debian is not as current as software that ships with older Linux distributions. This can be worked around by installing newer versions from the Debian "experimental" branches, but if that's what you want, then why use Debian in the first place? Often Debian users will need to update the installed kernel to support newer hardware. The method for upgrading the kernel in Debian is different from other Linux distributions.
  - **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**: This is looking like a very good possibility. The project is backed by a dot-com millionaire who has stated that Ubuntu will remain free. The project has advanced nicely, received many, many awards, and is quickly becoming one of the most popular Linux flavors available. Ubuntu 6.06 LTS (June 2006) is a server-version of Ubuntu with "Long Term Support". All excllent items. The major issues are how new the distribution is, and the fact that it uses the same software repository as Debian, meaning that many items may be older than in other Linux distriubtions. For some this is good and for others this is bad. You must decide for yourself.
- **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 the couple of years has seen an increase in the number of FreeBSD downloads and installs, possibly due to this very issue (or, maybe because version 6.1 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 (it's gotten better).
- 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.
  - Poor adherence to 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 - June 2006)
  - Corruptable memory space. (greatly improved in newer versions)
  - Default configurations are consistently insecure and broken (same can be said for many Linux distributions).
  - *Extremely* poor response record to major security problems, even after making security their "#1" issue.
  - Unclear division between bundled software and OS features. Consider IE.
  - Windows costs money to buy, on a per seat basis.
- Microsoft has consistently made "anti-consumer" moves over the years. Consider:

- Willing to pay 500 million US dollars to by Adware vendor Claria
- Crippled MP3 encoding to 96-bits originally in XP. Only after consumer outcry was this changed.
- Artificially breaks LDAP, Kerberos, and a host of standards by adding Microsoft only "enhancements" to their versions of these protocols.
- *Still* does not include basic security items such as SSH, proper TLS support for secure POP, etc.
- Still uses RPC, a design declared dangerous and insecure over 15 years ago! And, a major reason for many of the security breaches in Windows.
- Forced companies to ship with an inferior web browser (IE), or lose the ability to buy Windows at competitive prices.
- Won't let you update their OS unless you use their web browser.
- Subversively install software on your system, including a *prerelease* (read beta) version of Windows Genuine Advantage Notifications software to PCs as a "high priority" item in the built-in update feature in Windows.(June 2006).

The list goes on and on and on and has been going on for quite some time. Microsoft hides theirs mistakes from the public, spins problems as not being issues, and pretty much takes whatever route is likely to generate the most revenue. You as the end-user of this sotware suffer. There are other companies that make closed-source operating systems that do not behave like this.

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. Almost every study that shows otherwise was either paid for by Microsoft, or done by a company with Microsoft connections. This is how their marketing machine works.

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.

Last modified: Tue Jul 5 15:18:46 CLT 2005