Fedora on PPC/SPARC/IA64

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Fedora/PPC

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Title

What is it?

- Fedora that runs on PowerPC (PPC) architectures

- These are common run-of-the-mill Macs or even the IBM POWER boxes

- iBook's, PowerBooks, iMac's, G5's, miniMacs, eMac, etc...

- Been around for quite a while (possibly since the Red Hat Linux days)

- Churned out from the Red Hat build system

- Core 1, 2, and 3 have had more users since each release, and for Core 4, we expect to make it an official from the build system

What we have working

- Fedora on x86 and Fedora on PPC are alike
  - Very few packages are excluded from PPC (and some can actually be fixed
    - more are excluded from ppc64; these don't exceed 31 packages currently
- All hardware is known to work, except for:
  - Airport Extreme
  - sleep in the newer iBook G4's and PowerBooks
    - fixed in a kernel patch (which we have binary kernels for)
  - Latest touchpads in the PowerBooks
  - 3D accelerated graphics with some video cards (nvidia binary only drivers are x86)
  - modem (flaky, pay for possible)
- Fedora Extras

What we want to have working

- boot.iso and NFS installation option is a complicated choice for most users

- better video detection, out-of-the-box

- auto-partitioning
  - blessing the disk bootable

- sound
  - patches for system-config-soundcard appeared in Bugzilla the day after I posted the to-do list

- greater 64-bit support

- " Just Works" power management; better battery life support

- video-out on iBooks/Powerbooks
  - some of it works with apmud

- Mac-On-Linux
  - hack on sheep.c and other funnies

How we achieve it

- Fix the installer:

    - anaconda. Start building trees, and looking at the Python behind it

- Fix system-config-display

    - Python

- Fix system-config-soundcard

    - Python

- apmud is in Extras for power management!

- Kernel and userspace apps with gcc4?

How you can help

- Try testing out the builds/releases

- Join the coding (python, C always appreciated)

- http://www.bytebot.net/geekdocs/ibook/fedorappc.html

- Help out on list: fedora-ppc@lists.infradead.org

- Join us on irc: irc.freenode.net, #fedora-ppc

- Try Rawhide

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Aurora SPARC Linux

- History

- 1.0 Release

- 1.92 Release

- 2.0 Release

- The Future

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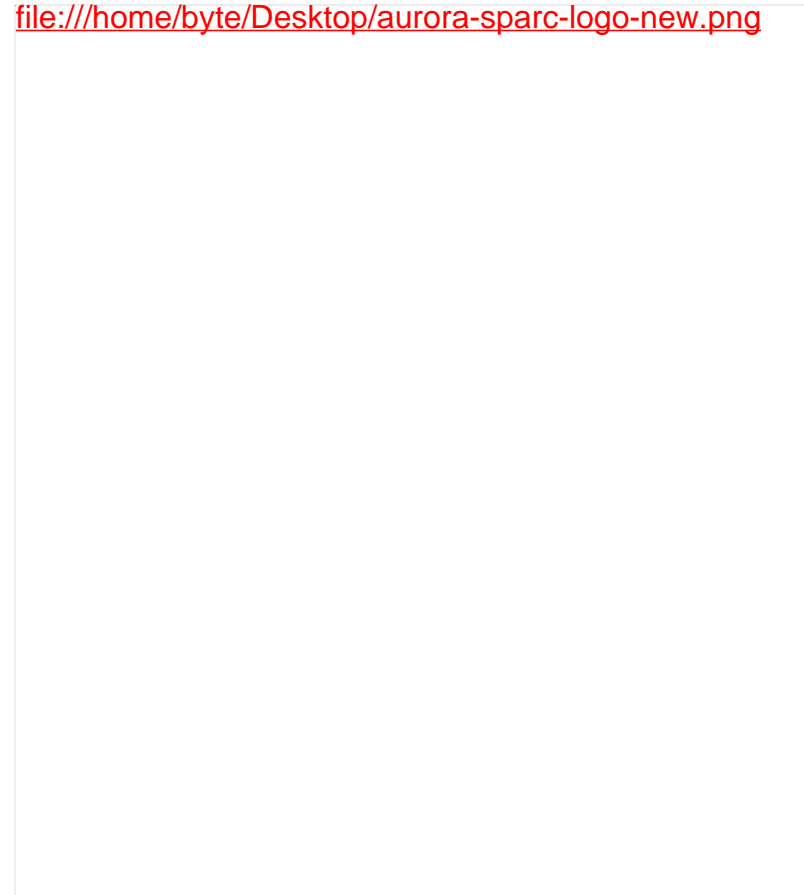
Aurora SPARC Linux: History

- On October 8, 1996, Red Hat released Red Hat Linux 4.0 (Colgate)

  - This was the first Linux distribution for SPARC

- On April 3, 2000, Red Hat released Red Hat Linux 6.2 (Zoot)

  - This was the last Red Hat Linux release for SPARC

    - ...although, there was a Red Hat Linux 7 SPARC Beta!

- In early 2001, there were only three major Linux distributions supporting SPARC

  - Debian

  - Mandrake

  - SuSE

- Of those three, only Debian continues to support SPARC today

![redhat logo]

Aurora SPARC Linux: More History

- In late 2000, I owned a SPARCstation 5, which I had named Aurora.

  - I named the machine Aurora because it was Sun's name for the "pizzabox" style chassis used for the SPARCstation 4, 5, and 20.

- Initially, this machine was running Red Hat Linux 6.2, but I quickly found myself frustrated with the age of the components, as compared to what I was using in Red Hat Linux 7.0 on my x86 machines.

  - Debian was too old, it was older than Red Hat Linux 6.2!

  - Mandrake wouldn't install properly on my SS5.

  - I didn't even want to attempt SuSE, after spending the previous 3 months working to get SuSE PPC to install properly on an RS/6000.

- What I really wanted was a matching version of Red Hat Linux 7 for my SS5.

  - Unfortunately, the Red Hat Linux 7 sources wouldn't build cleanly from a RHL 6.2 environment.

Aurora SPARC Linux: Still More History

- Since I couldn't build Red Hat Linux 7.* directly from Red Hat Linux 6.2, I opted to use Linux From Scratch (LFS) as an intermediary.

  - Over the course of 6 months, I built an LFS system on my SS5 using source revisions as close to Red Hat Linux 7 as possible.

  - When that was finished, I added rpm support, and started rebuilding (and patching) Red Hat Linux 7 source packages for SPARC.

- During this process, I asked a lot of questions on various mailing lists related to Linux and SPARC, and I discovered that there were other people interested in the packages I was building, so I decided to make them publicly available.

- Since I couldn't call it Red Hat Linux (that name was already taken), I named it Aurora SPARC Linux, after my SS5.

Aurora SPARC Linux: Making a full tree.

- The first build of Aurora only had a fraction of the packages that composed Red Hat Linux 7.1, and was primarily designed so that someone running Red Hat Linux 6.2 SPARC could upgrade some functionality to that level.

  - This was before things like yum. Thus, it was very very painful.

- Thankfully, Jakub Jelinek discovered that I was doing this work, and suggested that we merge trees. He had built more than half of the Red Hat Linux 7 tree for SPARC already, but wasn't interested in maintaining a distribution.

- At this point, I decided to go ahead and try to make a full tree.

  - I targeted Red Hat Linux 7.3 for the base

Aurora SPARC Linux: LinuxWorld 2002

- On July 1, 2002, Aurora released Build 0.3, which was all of the Red Hat Linux 7.3 SRPMS rebuilt for SPARC, except anaconda.
- I took this build to LinuxWorld 2002, where Aurora had a booth in the .ORG pavilion, and we handed out CDs to confused attendees. Sun provided a Sun Blade 100 for us to show Aurora on, and we spent most of the pre-show time fixing bugs so that it would actually run on the new machine.
- On August 9, 2002, we had the first installable build of Aurora (Build 0.31).
- It was about this time that I discovered that Aurora actually had users I didn't know personally. And they started filing bugs.

Aurora SPARC Linux: 1.0 Release

- With a lot of patience, and a little help from people like Peter Jones and Jeremy Katz, the 1.0 build of Aurora SPARC Linux was completed on January 19, 2003.

    - This was completed approximately 8 months after Red Hat Linux 7.3 for x86 was released.

    - The build was marked " stable" , and is still in use in many places today.

- Initial work was started on a Red Hat Linux 8 tree, then Red Hat Linux 9, but the demise of the Red Hat Linux line put a stop to that.

Aurora SPARC Linux: Fedora (1.92 release)

- A lot of Aurora users, not wanting to lose their Red Hat based Linux, asked me to port Red Hat Enterprise Linux to SPARC.
    - I opted against doing this. Why?
        - Because I didn't want anyone to think that Linux/SPARC was Enterprise tested or ready. Its a fun platform for home or hobbyist use, but not appropriate for your bank to rely on.
- When the Fedora project was announced, it gave Aurora a good source code tree to use as a base, but with an aggressive timeline that was impossible for me to keep up with.
    - I chose to target Fedora Core 2 for the next release.

Aurora SPARC Linux: Yum yum, eatemup.

- When I finished the FC2 release (Aurora Build 1.92), I tried to revive the Anaconda bits, and found that SPARC support had become severly bitrotted in the time between Aurora 1.0's Anaconda and FC2.

  - Hey, it was only four major releases.

- After discussing the state of Anaconda with Jeremy Katz, it was decided that the FC3 tree would be a much better starting point for doing Anaconda SPARC work.

- I pushed the 1.92 tree without ISO images, apologizing profusely.

- However, much to my surprise, the Aurora user community quickly documented the process of upgrading from Aurora 1.0 to 1.92 via yum.

  - Note for those playing the home game, this is essentially using yum to upgrade a live system from Red Hat Linux 7.3 to Fedora Core 2 in one shot.

Aurora SPARC Linux: 2.0 Release (?)

- Since that time, I've been working on a 2.0 release of Aurora, based on the FC3 source tree.

  - At this time, I've only got three packages remaining to be built:

    - comps, rpmdb, anaconda

  - Peter Jones has committed all of my previous anaconda fixes from the 1.92 attempt into the upstream Fedora CVS.

    - This should hopefully lessen the pain of trying to make installable CD media.

- So when will Aurora SPARC Linux 2.0 be released?

  - When its done, of course. ;)

Aurora SPARC Linux: The Future

- Obviously, having Aurora fold into Fedora is the logical next step.

- Unfortunately, Red Hat doesn't currently have any SPARC machines in their buildsystem.
  - We could perhaps work around this if Fedora was using an independent buildsystem, but right now, no such animal exists.

- Since CVS is public now, we can start to generate (perhaps even commit) patches for SPARC support for the Fedora development tree, instead of keeping them internally as one offs.

- Fedora PPC has shown that it is possible to make Fedora builds for uncommon architectures, but for the near future, Aurora will continue to be a separate (but beneficial) entity in the Fedora family.

So, why do you care about this?

- Because Aurora has been the most fulfilling work I've ever done in the Linux community. Its also been the hardest, most annoying task. And I don't get paid for it by Red Hat (or anyone else for that matter).

- It proves that with patience, and a healthy dose of masochism, you can make Fedora Core run on any architecture that the Linux kernel supports.

- Don't be afraid to start a Fedora for Alpha, Mips, VAX, or whatever weird hardware architecture makes you happy.

  - You'll probably find that you're not alone. You'll learn a lot, and you might even have fun in the process.
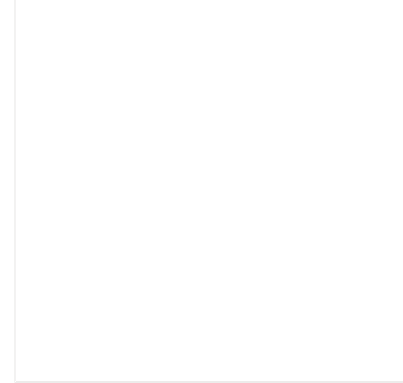
IA64 Fedora Core Development

1. Introduction

   - Prarit Bhargava

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2. Why do we care?

3. Current State of IA64 Development

4. Fedora Benefits

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IA64: Why do we care?

- Companies are using IA64 boxes
    - IBM
    - HP
    - NEC
    - Silicon Graphics (SGI)

IA64: Why do we care?

- Large, powerful, systems

    - ex) NASA's 10,240 processor Columbia

    - 64-bit Itanium 2

    - Linux driven (SGI ALE + ProPack)

    - 2.4 Kernel base ...

IA64: Development Status

- No FC3 release

- " Official" release status ended during FC3 devel

- Few developers for IA64

- A few known issues

  - Broken installer, broken boot.img

  - Minor bugs in a few packages

IA64: Fedora Benefits

- Linux -- " Make it better"

- IA64 debug

  - Architecture easier to debug in some cases

    - Spinlocks!

    - Interrupts!

- " New" technology available now