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**T**he annual Ottawa Linux Symposium just concluded in Ottawa, Canada, and it was every bit as fantastic as I expected. Every year, in the middle of July, hundreds of the world's most well known Linux community figures head for Ottawa to hang out, talk shop, and generally enjoy the various Linux conferences cunningly arranged to coincide with the fine weather.

### About OLS

This year, the official conferences associated with the event included the Linux Kernel Summit (KS), the Desktop Developer's Conference (DDC), the GCC summit, and the main Linux Symposium. All of these events take place within days of one another at the Congress Center (Centre des Congres), organized by a team of dedicated community members

## Community Notes

# LINUX IN OTTAWA

who have been in this game for quite some time. In fact, this year was the 8th Linux Symposium, and things have really come a long way since Andrew Hutton formed the first OLS back in 1999 out of a few carefully arranged speaker invitations to well known members of the community. The scale of the conference may have changed with time (this year, over 850 people attended), but the event is still true to its original goal of bringing Linux developers together.

The conference kicked off on a Wednesday and ran through to the Saturday night final dinner in a non-stop extravaganza of talks and other events that left many of us running on very little sleep by the weekend. Of course, we've done it before – most of us many times – and we're used to the kind of rampant craziness that always accompanies these events, but to the uninitiated, it might all be a little overwhelming. The conference material itself was as eclectic as ever, with talks covering mostly low level stuff. (Desktop material has long since been off-loaded into other events, such as the Desktop Summit.) This year there was some criticism that the event was a little too eclectic in its choice of some of the material – and a bit inaccurate in some of its room sizing estimates.

OLS is by now a very large event, so many talks run simultaneously. Consequently, it's never possible to attend everything in person, though a

truly excellent set of conference proceedings are available freely on the conference website <http://www.linuxsymposium.org/>.

### Highlights

Wednesday's highlight for me was a talk given by Kristen Accardi entitled "Enabling Docking Station Support for the Linux Kernel is Harder Than You Would Think." Kristen gave an excellent discussion of the many issues around docking station support and how development of generic kernel support for docking stations lead her to throw out a number of preconceptions, including the idea that all docking stations are extensions of PCI hotplug. Actually, many docking stations are based around USB and weird combinations of general purpose IO.

Thursday's highlight was a well done pictorial analysis of the performance of



**Figure 1: Greg Kroah-Hartman tries on a balloon hat at last year's OLS.**

ext3 and other Linux filesystems on a PVR-type device. The guys at Philips research had found (in particular) that the age-old theory about always keeping 5-10% reserved free space on a filesystem generally does help avoid fragmentation. Linux, of course, usually has a 5% reservation for the root user, so typical systems retain a minimal amount of free space anyway. Unfortunately, it would seem that writing large files foils this system because, in that case, block allocations are made only from one particular block group on the underlying disk. Using various tools, the team was able to show this through a graphic of file system activity as they hammered the file system with large video files. We also saw visually just how bad Microsoft's NTFS is at coping with fragmentation when it is compared against XFS.

On Thursday evening, we were treated to one of several corporate sponsored evening BOF sessions. I went along to the PowerPC BOF, which combined a number of core community players with some insane prize giveaways. We're talking multiple Powermac G5 systems and some very funky embedded PowerPC devices being given away every few minutes. That fit in nicely with one of the many evening dinners that took place during the conference, and also with one of the many opportunities to drink a little too much of everything before partying the night away in a club called Heaven, which is now infamous to a certain group of attendees. That wouldn't have been quite so bad really, had it not been for the fact that nobody ever really sleeps during OLS. There's always someone up and working in the hotel lobby or a private party to go to, even at 3 in the morning when all you really want to do is curl up and hope that you're functional again by the morning.

Sometime on Thursday, a good friend of mine arrived from Montreal. He'd skipped out on a couple of the conference days to prepare for his tutorial. Eric's last minute tweaks paid off, since his tutorial on "Reverse Engineering USB Drivers for Compatibility" on Friday lunchtime was one of the most entertaining and interesting of the conference.

Eric had successfully modified usbmon, a generic USB monitoring interface that allows kernel hackers to dump raw USB packets, and hacked into it support



**Figure 2:** Along with the parties and speeches were many more contemplative moments.

for a relayfs-backed large buffer that could be read from the regular libpcap library. His modifications to the ethereal network analysis tool subsequently allowed for visualization of data sent between USB devices and the host machine as if it were regular network traffic. Such ingenuity is excellent when you need to reverse engineer existing Windows drivers that are running within a VMWare session or to figure out just exactly what a USB device is doing when you plug it in. The Slashdot crowd liked this talk a lot too – Eric's web server was slashdotted the next day.

Saturday morning started out with an excellent resource management talk by Rik van Riel. In the talk, Rik explained how Linux systems need to be modified in order to cope with running many different virtual machine environments. Resources need to be allocated intelligently, so that virtual machines have the resources they need but do not starve other virtual machines running on the host. It is also necessary to occasionally claw back additional memory (and other resources) from virtual machines when they are required elsewhere. Rik helped to explain the shortcomings that we face at the moment and where we need to go in the future in order to handle changing uses for Linux.

## Keynote

The main event for Saturday was, of course, the keynote address by Greg

Kroah-Hartman. Greg is the author of Udev, a critical piece of software that handles adding and removing devices from Linux systems. (You'll find an article on Udev elsewhere in this issue.) Greg is also the author of many parts of the Linux USB subsystem. He also maintains numerous drivers, is a key kernel contributor, and oh, he co-wrote a book you may well have heard of called *Linux Device Drivers* (O'Reilly).

Greg K-H talked at length about the "lies" and "truths" of Linux kernel development, how to get patches into the Linux kernel, the dangers he sees with binary drivers, and many other topics. Not only did he make a number of important points, but he did so with humor and was met with a rapturous applause. If you have chance, look for a copy of Greg's Ottawa Linux Symposium presentation on his website <http://www.kroah.com/>. You'll also find a lot of other cool stuff at Greg's site.

## Conclusion

I enjoyed this year's Ottawa Linux Symposium. The show provided me with a great opportunity to hang out with friends in the Linux community, and it also offered me a chance to see some of the state-of-the-art research that is going into making Linux even better than we know it already is. I'm looking forward to next year's conference and encourage you to consider tagging along next time. ■