

MUUGlines

The Manitoba UNIX User Group Newsletter

Next Meeting: April 10th, 2007: Things you can do with 'Embedded' Devices

The Linksys WRT54G is probably one of the most popular consumer routers around, but for unlikely reasons. Linksys had decided to use Linux as the operating system inside. Linux and hardware hackers around the world started poking around inside.

Shawn Wallbridge will be talking about various embedded devices that can be used in interesting ways.

Where to find the Meeting

Meetings are held at the IBM offices at 400 Ellice Ave. (between Edmonton and Kennedy). When you arrive, you will have to sign in at the reception desk, and then wait for someone to take you (in groups) to the meeting room. Please try to arrive by about 7:15pm, so the meeting can start promptly at 7:30pm. Don't be late, or you may not get in. (But don't come too early either, since security may not be there to let you in before 7:15 or so.) *Non-members are welcome, but may be required to show photo ID at the security desk.*

Limited parking is available for free on the street, either on Ellice Ave. or on some of the intersecting streets. Indoor parking is also available nearby, at Portage Place, for \$3.00 for the evening. Bicycle parking is available in a bike rack under video surveillance located behind the building on Webb Place.

The Amazing Command Line

By John Lange

Still, after all these years, the Unix command line still amazes me with its ability to perform seemingly impossible tasks.

Here is a recent example. I have been doing some work for a client that has been experiencing memory leak problems. In order to try and get a handle on the problem, every 15 minutes on a cron we dump vmstat, slabinfo, and free to a file as follows:

```
echo "===== >> /root/tmp/sysstats.txt
date >> /root/tmp/sysstats.txt
ps auwx >> /root/tmp/sysstats.txt
echo "# vmstat">>> /root/tmp/sysstats.txt
/usr/bin/vmstat >> /root/tmp/sysstats.txt
echo "# vmstat -s" >>
/root/tmp/sysstats.txt
/usr/bin/vmstat -s >>
/root/tmp/sysstats.txt
echo "# cat /proc/slabinfo" >>
/root/tmp/sysstats.txt
cat /proc/slabinfo >>
/root/tmp/sysstats.txt
echo >> /root/tmp/sysstats.txt
```

Sure all the data is there but what a mess. I had anticipated I'd be able to quickly view the data and isolate the problem but no such luck.

If the culprit was there it was well hidden in too much information. I realized if I was going to make any sense of this data I was going to have to graph out the data to see a pattern. But everything was stuffed into one big file so how was I going to get it out?

Command line to the rescue!

At this point I was only interested in the slabinfo from file so I needed to extract only that data. On this system, slabinfo outputs exactly 141 lines of data which can easily be discovered with:

```
# cat /proc/slabinfo | wc -l
```

The second line is where the data starts and it contains "# name" at the start of the line so here is how we extract only the slabinfo from the sysstats.txt file:

```
# grep -A 139 "^# name" sysstats.txt > slabstats.csv
```

We now have one big file containing all the slabinfo collected every 15 minutes. So far this is pretty simple stuff for the command line but we are far from generating anything useful.

slabinfo contains many columns of data and I only wanted to look at one single column, "num_objs", which happens to be the 3rd column. No problem:

```
# awk '{print $1,$3}' slabstats.csv > slabstats2.csv
```

awk extracts only the 1st and 3rd columns from the file. Ok, getting closer. We have isolated the data we want but it repeats over and over again in one file which is still useless for graphing. At this point the file looks something like this:

```
# <active_objs>
ocfs2_lock 32
ocfs2_inode_cache 11
.
.
.
# <active_objs>
ocfs2_lock 38
ocfs2_inode_cache 15
.
.
.
# <active_objs>
ocfs2_lock 32
ocfs2_inode_cache 13
.
.
.
```

etc.

And what we really want is the data in one row so we can graph it easily in a spreadsheet, like this:

```
# <active_objs>
ocfs2_lock 32 38 32 [...]
ocfs2_inode_cache 11 15 13 [...]
```

This is where you would expect it to get very tricky but once again, unix amazes us with its ease. Since we know each section of data is 139 lines, we split up each section of data into separate files:

```
# split -l 141 slabstats2.csv
```

split breaks the file into individual files. By default they are named xaa, xab, xac, and so on.

Now the truly amazing part; unix has a command called "join" which works a lot like a database join except on individual files. By default it matches the first column of each file and then combines the rest of the data on the row into a single output. So in our example we now have these two files:

```
file 1 "xab":
# <active_objs>
ocfs2_lock 32
ocfs2_inode_cache 11

file 2 "xac":
# <active_objs>
ocfs2_lock 38
ocfs2_inode_cache 15
```

The very simple join command produces exactly what we want:

```
# join xaa xab
# name
ocfs2_lock 32 38
ocfs2_inode_cache 11 15
```

Now the last bit of magic is to create a simple loop so we can join all the files. First we move the first file as our starting point:

```
# mv xaa finalslabdata.csv
```

Then we do the loop:

```
# for FN in `ls x*`; do join
finalslabdata.csv $FN > tmp.csv ; mv
tmp.csv finalslabdata.csv ; done
```

Presto! We have one big csv file that can be loaded into any spreadsheet and graphed!

Press Release - OpenOffice.org 2.2

March 29, 2007

The OpenOffice.org Community announce the release of OpenOffice.org 2.2, the latest version of the leading open-source office suite. With upgrades to its word processor, spreadsheet, presentations, and database software, the free software package provides a real alternative to Microsoft's recently-released Office 2007 product - and an easier upgrade path for existing Microsoft Office users. OpenOffice.org 2.2 also protects users from newly discovered vulnerabilities, where users' PCs could be open to attack if they opened documents from, or accessed web sites set up by, malicious individuals.

In version 2.2, users will immediately notice the improvement in the quality of text display in all parts of OpenOffice.org. The reason for this is that the previously optional support for kerning, a technique to improve the appearance of text written in proportional fonts, has now been enabled by default. OpenOffice.org's unique pdf export function has also been enhanced with the addition of the optional creation of bookmarks feature, and support for user-definable export of form fields.

Apple Mac users will notice a smaller download and a smaller installed size. The Apple Mac Intel version has many stability improvements, and bug fixes ranging from .ppt export to improved UNO connections. Version 2.2 now requires Mac OS X 10.4.x running X11.

Turning to some of the enhancements made to the individual components of OpenOffice.org, the Calc spreadsheet has received additional enhancements to its support for Microsoft file formats, including

improved support for Pivot Tables and some specialised trigonometric functions. Base, the database component, has improved SQL editing functionality as well as a new "Queries within Queries" feature. Compatibility options for some database drivers, such as Oracle ODBC, have been improved. Impress, the presentations component, offers improvements in the handling of hidden slides which has been made more intuitive.

Tiny Linux SBC steps up to PXA270

March 30, 2007

Gumstix has launched the third generation of its gumstick-shaped SBC (single-board computer) line. The tiny, Linux-friendly, PXA270-powered "Verdex" SBC offers 50 percent more processor speed and twice the memory of earlier models, and features an enhanced expansion bus, according to the company.

In addition to its Marvell (formerly Intel) PXA270 (aka "Bulverde") processor, clocked at up to 600MHz, the new Verdex SBC integrates up to 128MB of RAM and 32MB of flash memory soldered onboard, the company said. Other enhancements over previous Gumstix SBCs include support for USB host interfaces, inputs for CCD cameras, and better power management. Also available is an option for on-board Bluetooth, with a u.fl antenna connector, as shown on the Verdex XM4-bt board depicted at right.

The Verdex maintains the 3.2 x 0.8 x 3.2-inch (80 x 20 x 8mm) of Gumstix's earlier SBC generations. In addition to matching the dimensions of its predecessors, the Verdex retains the 60-pin board-to-board connector of the first generation SBCs (now referred to as "Basix"), which should enable it to support existing 60-pin expansion cards; these include audio I/O, digital I/O, various microcontroller co-processors for robotics applications, and serial and USB expansion.

On the software side, the Verdex SBC comes preinstalled with the latest Linux 2.6 operating system as well as the open source U-Boot bootloader, the company adds.

Yellow Dog 5.0.1 aims updated Linux at older Macs

Mar. 27, 2007

Terra Soft Solutions today announced the release of Yellow Dog Linux 5.0.1, a specialty distribution for older, PowerPC-based Apple G3, G4, and G5 computers. The distribution is said to have added more than 500 package updates to go with its 2.6.17 kernel and Enlightenment E17 desktop environment.

Yellow Dog Linux (YDL) was released last fall for the Sony PlayStation 3 with support for the former Apple PowerPC product line. Built upon Fedora Core 5/6, YDL v5.0.1 integrates the Enlightenment E17 desktop to provide “an unprecedented level of function and interface aesthetic,” a company spokesperson said in the release announcement.

Key new features, as listed by the company, in Yellow Dog Linux v5.0.1 include:

- Support for Apple PowerPC G3, G4, G5 systems
- USB storage, USB camera, and FireWire auto-mount
- 802.11b Airport auto-configuration
- 802.11g Airport Extreme (requires configuration)
- PCMCIA card wi-fi support (requires configuration)
- Audio support for all tested machines
- Enlightenment E17 desktop installed by default

Standard software includes:

- a graphical installer
- OpenOffice.org 2.0.2 office suite
- a full-featured suite of control panels
- Thunderbird 1.5.0.4 email client
- GIMP 2.2.11 graphics editor
- GAIM 1.5.0 messenger
- KDE and GNOME desktops optionally available

Starting with version 5.0, the company has also built a specialized edition for Sony PlayStation 3 with the Enlightenment desktop, the spokesperson said.

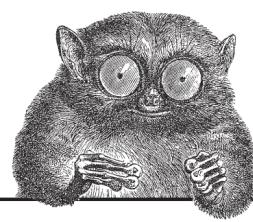
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