

# MUUGLines

The Manitoba UNIX User Group Newsletter

Volume 31 No. 1, September 2018

Editor: Trevor Cordes

**Next Meeting: September 11, 2018  
7:30pm**

## Presentation: Managing Systems with Ansible

Ansible is an OSS IT automation engine, in the vein of Chef and Puppet. But what exactly can you do with it? John Gunkel will be filling us in. He'll be covering key concepts, package management, templates, roles, GUI interfaces, and more! A demo will bring it all together.



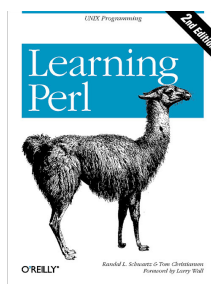
ANSIBLE

## RTFM: tcpdump(1) with Adam Thompson

Debugging an application's behaviour is sometimes easier to do by looking at the interactions it has with other systems on the network than by examining the application itself. Modern UNIXes all come with a tool, tcpdump(1), that can examine, filter, decode, and log all the traffic seen at a network interface – whether it originates on that system or not. Adam will discuss the most common options for tcpdump(1) and hopefully demonstrate a simple example.

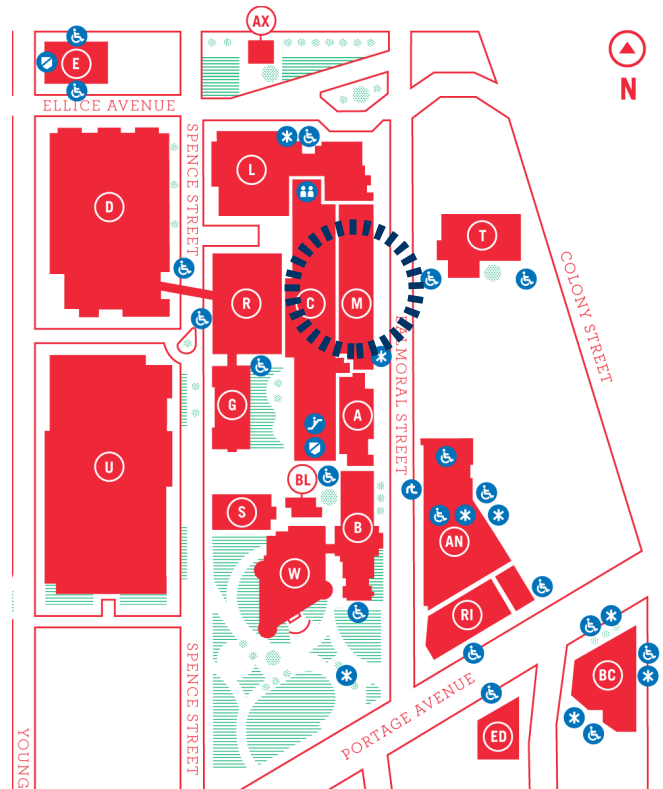
## Door Prize Book This Month: Learning Perl

Learning Perl is a hands-on tutorial designed to get you writing useful Perl scripts as quickly as possible. Perl is a language for easily manipulating text, files, and processes. It comes standard on most UNIX platforms.



A classic from O'Reilly Media, this is the older 2<sup>nd</sup> Edition, but not much changes in the Perl5 world, so it is still directly applicable. And it's still your editor's favourite language!

**Where to Find the Meeting:  
1M28 Manitoba Hall, U of W**



Meetings are held in the University of Winnipeg's Manitoba Hall (marked "M" on the map), along Balmoral St. We can normally be found in room 1M28, but occasionally get relocated to nearby rooms. If there is a change, it should be conveyed via a couple signs around the halls. Parking is available on the surrounding streets, or the bus terminal parkade. Please see <http://www.uwinnipeg.ca/maps> for further information about parking and access to the campus.

## Linux Kernel 4.18 Released

August 12 saw the newest kernel version released. 4.18 "Merciless Moray" contains 578k

code insertions and 677k deletions. Notable changes include: support for the Steam game controller as HID device, BPFILTER beefs up packet filtering, AMDGPU improvements including support for VegaM-on-Intel, better Icelake support, DM Writecache that should help with DB I/O loads, USB 3.2 and Type-C improvements, first looks at online file-system repair and more for XFS.

Coming soon to a (cutting edge) distro near you!

## Linux 4.19 Lets You Be Skeptical

Hot on the heels of the 4.18 kernel, development on 4.19 continues apace. RC1 allows a kernel builder to select whether to trust the in-CPU hardware random number generator using the `RANDOM_TRUST_CPU` flag.

The issue at hand is that, post-Snowden, it is reasonable to suspect hardware manufacturers may be purposely providing weak RNG's to provide certain actors with backdoors into the world's computers.

Since the kernel already uses several sources of entropy for its RNG needs, this option will predominantly affect the early boot process when, without enough randomness from other sources, the kernel may rely more heavily on what the hardware provides. Conceivably, with this flag off, the early boot process may block (delay) while waiting for the other sources of entropy to become available.

This basically punts the decision to distro makers. This author guesses the big/normal distros will stick with the status quo so as to not miff users who don't care about good entropy. However, this adds another upsell that the security-oriented distros can tout.

Perhaps in the near future they could add this as a kernel command line option which one could toggle in their grub setup.

## More Meltdown/Spectre Variants

The gift that keeps on giving, researchers have found three more variants of the memory side-channel exploits. L1 Terminal Fault (aka Fore-shadow) allows attackers to read the contents of

the L1 data cache. Luckily, OS patches should be enough to solve this one, without much of a performance hit.

Along the same lines is an exploit of the Software Guard Extensions (SGX) present in many modern Intel CPUs. (Ironic, isn't it.) This flaw requires a microcode update.

The third flaw affects computers running multiple VMs. It allows an attacker in one VM to gain information from all the other VMs. Each VM must be patched to fix this one, or you can disable hyperthreading. Good luck with that.

<https://tinyurl.com/ydz2jcbw>

This author has noticed a steady and perceptible decrease in Linux computer performance starting around April, when the first Meltdown/Spectre variant patches began appearing in mainstream distros. Each new fix seems to make things slower. Hopefully one day soon we'll start getting the promised optimizations to the fixes, to alleviate some of the performance problems.

## Intel Bans Benchmarking

In a bad PR move, Intel released a recent version of their microcode files, which Linux distros include to automatically update your CPU microcode on each boot, with a questionable change in license. The new wording included a clause that you must not "publish or provide any software benchmark or comparison test results". The microcode updates were intended to fix the new L1 Terminal Fault flaw.

Intel has been increasingly interested in obfuscating the true performance impacts of the growing pile of fixes for Meltdown/Spectre variants. This latest attempt, however, may take the cake.

The smart guys at Debian spotted the worrying license verbiage and refused to push offending updates to deb update repositories. Ruckuses were raised.

Intel has since amended the license to not be so deranged and all is well again with the world. And microcode.

<https://tinyurl.com/y7mkgz4k>

## Console Output For Everyone

Linux kernel 3.5.0 introduced a readable `/dev/kmsg` which allows for a truly wonderful feature:

```
dmesg -w
```

This great option, also available as `--follow` allows any terminal, including ssh sessions in an X terminal, to get the same real-time view of the kernel messages as the console does.

In theory, this could allow a panicking, oopsing or otherwise burping kernel to output those critical “bug” details (backtraces, etc.) to a remote system in realtime. This would allow a remote admin to view that all-important pre-death information.

In many kernel blowup scenarios the final `dmesg` information does not make it to userland logging helpers, and is not saved to disk, even when you have your system setup to save `dmesg` output using `syslog` or `journald`. Without that output it is often impossible to troubleshoot such problems. This new option offers remote admins hope.

Of course, this assumes the panic is not in the network layer, and that the message can make it out before complete kernel freeze-up.

## High Performance Images

2016 Bendell et al., O'Reilly Media

A Book Review by Trevor Cordes

Do you work with the web at all? Ever used an `img` tag? Then this book is for you. It'll quickly (in 300 pages) bring you up to date with all the latest HTML5 image technology and give you concrete pointers on what to use in your work right now.

Mobile targets are a core focus, as is the corollary of responsive design. But this is not just another “responsive” book: it delves deep into the performance, delivery and quality aspect of images on platforms limited by screen size, bandwidth and CPU horsepower.

Intriguing are the chapters devoted to the theory behind image formats and, especially, lossy com-

pression. In it you'll find a superb explanation of how JPEG actually works, with subsampling, entropy encoding, and transforming from raster data to frequency data with DCT.

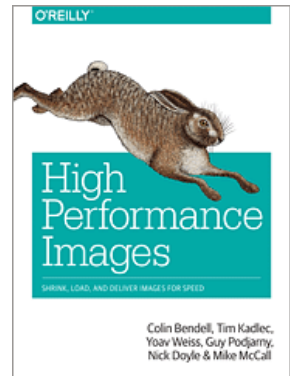
You'll gain a deeper appreciation of how quality and subsampling settings actually work to affect perceived final quality and file size. (Ah, that's what those settings in `gimp` actually mean!)

Another section talks in depth about the competing, upcoming stars in the format world: WebP, JPEG XR and JPEG 2000. You'll gain an understanding of their pros and cons, browser support, and future outlook. SVG is also covered in its own chapter.

When and how, exactly, do browsers load the image data? How does it all fit into HTTP, and – more importantly these days – HTTP/2 connections? How can you optimize the flow of your data, including CSS and JS files, to the browser? All is revealed using detailed examples of actual browser loading sequences and timings.

Probably the most important takeaway from this book is the chapter on all the new HTML5 options to allow browsers to make intelligent choices regarding image selection. `srcset` and `picture` (and more) tags/options are covered in depth. As are client hints. These allow you to effortlessly allow the browser to choose, for example, high DPR images when using retina-type displays; or low-width versions on small mobile screens. The new options are myriad.

There's even more in this book than I've described here, and it's quite well written, with very few errors. Pleasant to find near the end was a summary section entitled “So... What Do I Do Again?”. After dousing the brain with the copious content, it was refreshing to be hand held into concrete “next steps”. There's even a nice history of web image use going all the way back to the beginning, with screenshots of ancient software which will bring a tear of nostalgia to many a MUUG member's eye.



May we never again catch you with a “responsive” web site with a 500k 2000-pixel wide homepage image CSS-scaled to 300 pixels!

Bottom line: 8/10, recommended.

## Super-Programmers Exist!

Blogger Yevgeniy Brikman argues that the mythical “10X Developer” really exists. Blurry photos of such figures walking through forests and sticking their heads out of lakes weren’t just fakes and hoaxes.

Can a single rock-star programmer really produce as much value as ten merely competent ones?

*Some programmers are a bit better than others, but surely, a single programmer could not consistently close 10 times as many tickets as another! And a team of 10 will always outperform a single coder! Nine women can't produce a baby in 1 month! [...]*

*From years of experience, a great programmer will know that errors are much more costly to fix later. By making good decisions up front, a 10x programmer may avoid months of work down the line.*

A great read if you are a programmer, or frequently deal with them.

<https://tinyurl.com/yau3qr29>

## Linux Distro Visual Timeline

Super awesome visualization of all the Linux distributions plotted over time, in SVG format! Worth a peek. Check out the madness that is Debian and Red Hat.

<https://tinyurl.com/b9sgqh8>

## Quick Perl Documentation

perldoc

**-m** shows you the source module file.

**-f** shows you docs for a builtin function.

**-I** to see the path to a module file.

## MUUG has gone social!



Twitter:

[twitter.com/manitobaunix](https://twitter.com/manitobaunix)



Facebook:

[facebook.com/ManitobaUnix](https://facebook.com/ManitobaUnix)



Meetup

[meetup.com/Manitoba-UNIX-User-Group](https://meetup.com/Manitoba-UNIX-User-Group)



**Help us promote this month's meeting**, by putting this poster up on your workplace bulletin board or other suitable public message board:

<https://muug.ca/meetings/MUUGmeeting.pdf>

## Sponsors



A big thanks to Les.net for providing MUUG with free hosting and all that bandwidth! Les.net (1996) Inc., a local provider of VoIP, Internet and Data Centre services, has offered to provide a 10% discount on recurring monthly services to MUUG members. Contact [sales@les.net](mailto:sales@les.net) by email, or +1 (204) 944-0009 by phone, for details.

<https://les.net/>

## Creative Commons License



Except where otherwise noted, all textual content is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

<https://creativecommons.org/licenses/by-sa/4.0/>