

Spoke with Bill Fretts, Engineering manager at Cisco's Kanata campus
~3:00pm 15/Jun/2010 for 50 mins.

- They do a lot of software development
- They do a lot of overnight testing (electricity cheaper & far more reliable in Ottawa than in India!)
- they have a small ASIC team
- they have a small board team
- They are a large center for design verification/software testing
- one hire last week (1st in 3 years; recent grad)
- Hi-end hires (ie. people who've been published in IEEE)
- Cisco: technical organization; CEO level tend to be former designers; technical meritocracy; very innovative; emphasis on design automation, scripting, program automation; strong marketing organization; support Cisco T.O. & Cisco federal Gov't branch in downtown
- 2 directors in Kanata: Rich Dusome (Marketing (mostly enterprise)) **613-254-3497**
Mark Noel (Adv optical ethernet) spends most of time traveling
- Broadband ethernet taking over cellphone/wireless backhaul, cable TV, phone, other services
- 320 ppl in Kanata
- Bill & his group designed line card; 2 of 6 chips; 100Gb optical engine; 20 port x 10G optical engine
- Had McGill Engineering students in for a tour
- Useful Cisco courses
- ATM, FR, ISDN are now officially "legacy" protocols (too slow)
- SONET: very precise timing & jitter specs; miniscule tolerances, whereas Ethernet is completely connectionless so has few of these constraints; SONET being displaced
- Potential for loaner equipment: eg. 40Gb ethernet optical interfaces; 2500km single hop DWDM fibre, high power; also Ciena/Nortel is also into it.
- Equipment given to prestigious networking labs (eg. MIT) 40,000 hrs perfect operation in hot room; some modules went 27,000 hrs which should have been much less in order to be sold as "new"
- HW guys must meet environmental +55 to -5 C specs; products tested +/-5% Volts; +5% faster clock; 20-50 cards in each run; halt testing: increase heat until it quits;
- They work with latest computing engines from Intel; latest memory; latest disks (SSD); programmable FPGA work; both Xilinx & Altera FPGA; ASIC timing & modeling; FPGA's fast enough to be in 100Gb paths;
- Looks for personal projects & labs, building your own things; *initiative*
- Take fair number of coops (almost exclusively from university) even as soon as end of 1st year
- Must have taken opportunities; aptitude & interest required
- Kanata is recognized as a world-wide design excellence center
- GSR platform developed out of ottawa with their ASICs; switching fabric for CRS 3rd generation done there (both \$1B/yr revenue items)
- Best to train people how to learn, to manage own learning later on in their career; main thing is to get grads in the door because can't hope to teach technologies that will exist in 8 or 10 yrs
- Getting hands-on experience with equipment is most important
- Students should know & use cygwin; run able to run gcc & compile apps; step through them
- Most Cisco servers run linux; embedded linux in most of their applications

- Security is a HUGE issue: hours before opening of 1st Gulf war, Iraqi Alcatel-Lucent gear was hacked into, reloaded with new firmware & rebooted, taking down entire network; during Greece Olympics, Ericsson switch was compromised so that cell phone calls of top ministers were mirrored to other location(s). Closed source is NOT sufficiently secure!
- CRS devices are based on QNX; bought recently by RIM; API's have gone open source so that only closed-source portion is micro-kernel (essentially only a task queue & scheduler)
- Employment equity problems: mostly male geeks; they're willing to consider scholarships, bursaries, or other forms of assistance to female students