

Lintuition

Partially True Tales from My
Life as a Geek

PRERELEASE ONLY

By Wes Deviers

Feel free to share among no more than 4 friends. If I can create a binary marketing tree, that would be outstanding.

Please send comments to me via AIM or book@wesdeviers.net

A Message from The "Author"

Thank you for looking at this prerelease PDF. Either you are a personal friend of mine, or you have been suckered into reading this by somebody who knows me. The following beta-version stories, collectively and laughably called "my book", are works of fiction. I can personally guarantee a kernel of truth in every story and have done my best to stick to them as I remember. I cannot, however, guarantee the integrity of my memories nor the accuracy of my portrayal of these events. Also, as you read, you will understand why I legally must claim this as a work of fiction. If it were true, most of the people I used to work with should be in third-world prisons and would probably sue me for all of the money I make from this, which should total about \$25. I have only fleeting desire to give any of them (additional?) felony convictions, so the names of the guilty have been changed to protect my bank account from lawyers.

In some cases, the names of the innocent have been changed, too, at their request for a much cooler name. Any of my close personal friends, such as John or Creed Remington, who are reading this will certainly realize the degree of truth behind these stories. Please keep your mouths shut and I will buy you all ice cream.

Each short story, which I have egotistically labeled "chapters", are designed to be quick, funny reads. Perhaps the kind you would have in a bathroom or doctor's waiting room. At the same time, I have tried to make a somewhat cohesive picture of what life was like for me at my first non-family job. Persons with backgrounds in computer science or related fields should get slightly more laughs out of this book, but hopefully I have added enough sarcasm and self-deprecation to make it work for everybody. In some places I explained certain types of technology needed to understand the story. I apologize for this treachery, but you may end up learning something.

Happy reading. Love it or hate it, send me comments!...AND BUY THE FINAL VERSION! ;)

-Wes
Harrisonburg, VA. June 2006

Ramble

The mail server was down.

I could have claimed email downtime happened rarely, but lies are not the same as fiction. The e-mail server, cleverly named *fatboy*, consisted mainly of the discarded remains of better servers. My requests for a "good" machine to run email on fell on deaf ears. Even though the ISP was successful, the money appeared better spent on such critical investments as a refrigerator-sized VAX RAID cluster, a double-refrigerator-sized UPS with no batteries, and a decommissioned five-gallon-per-minute industrial coffee maker. To put it mildly, my boss had poor priority management.

During the early 2000's, a marketing epiphany led to the massive sale of 4U rackmount cases. The idea, which caught on wonderfully at my company, was that putting commodity motherboards, RAM, and power supplies in gussied-up rackmount cases would make them servers. It followed the same logic that allows racing stripes and spoilers to give a 30 horsepower boost to a Honda Accord.

I could not imagine a less impressive mail server. The case was a beautiful "computer beige" with fake-chrome handles. It had various buttons across the front, controlling things like "Power" and "Reset", all easily pressed. Flashing red and green LEDs, a place (not used) for a fan filter, and a totally sweet black stripe sat across the front. Naturally, the case had no lid, having long since been lost in one of the office re-arrangements. All the better, because if it had a lid there would have been no way to hang the three additional SCSI drives, upside down, from the top of it. Luckily, the power connectors held most of the weight; 68-pin SCSI connectors are not known to be load-bearing. Including the five SCSI drives and the DPT RAID controller purchased on eBay, the entire server had cost us less than \$600.

With these factors in mind, we remained ever vigilant yet unsurprised when the mail server went down. But nobody at the office knew about this particular instance yet. None of us had checked mail in the last couple of minutes. The phone rang.

Any person who has worked technical support for a service provider develops a sixth-sense about the phone. It seems to ring differently depending on why the moron picked up the other handset. If they plan to ask an idiotic question with a quick answer, like "My computer locked up, what do I do?" the ring is melodic. "Turn it off and back on again," you say. A gleam in your eye betrays that you are paid entirely too much for that simple call. You dodged a bullet. The premonitory Real Question Ring defies you. You feel the unavoidable coming on: having to help the moronic subscriber through setting up their account after a reformat. It is a procedure you have done roughly 16,000 times since you started the job last week.

Downtime Ring is totally different. A complicated relationship exists

between the service provider and the customer. The ISP cannot allow themselves to be wrong and thus your goal is to blame every problem on the customer. Downtime Ring foils that plan. Downtime Ring only happens when you legitimately screwed up and the customer finally got you. You cannot sense Downtime. It lurks under the phone receiver like two-week-old tuna lurks in the refrigerator. One day you pick up the phone to be assaulted by the acrid smell of the subscriber implying that you screwed up. And being correct. The correctness aspect is the part that smells, really.

Four of us were employed at that time. Vince's primary job functions were not answering the phones and chain smoking. Vince remained unmatched in the smoking arena, taking eight or nine smoke breaks per hour when he could get away from his secondary job duty of ignoring customers. Whenever the phone annoyed him too much, he would extinguish his cigarette on the concrete floor, tell the customer they had a virus, and recommend a motherboard replacement. Just in case. He sold a lot of motherboards, likely about one per pack. In one of his generous moods, Vince answered the phone.

"Net Express, how can I help you?" Vince perfected the art of garbling the introduction. It sounded startlingly similar to how I expected a dog smoking a cigar to enunciate.

"Yeah, hi. I keep trying to check my email and it's saying something about the server being unavailable. Is everything working right?"

"As far as I know. When did this start?"

"About 12 seconds ago."

A 12-second response time was no exaggeration. We had customers that must have put us on their emergency speed-dial key. I often imagined somebody having a heart attack and their 11 year old daughter running to press the button with the little "Fire" icon on it only to be rewarded by a smoking dog saying "Net Express..."

"Hold on," he said, "let me check with the network administrator." He put his hand over the phone and stuck his head over the massive pile of books that separated our desks. "Hey, bud. Is the mail server working okay?"

Not looking up from my monitor, I asked him the obvious question. "Is it the first caller?"

"Yeah."

"Have they rebooted?"

He spoke into the phone, then to me. "No."

"Always reboot first."

"Sir, please go ahead and reboot your computer and see if that fixes it." He was silent for a moment. Every customer's machine was comically slow, many taking more than five minutes to reboot. Vince asked them to call back if the reboot did not fix it. Standard procedure.

Before he had taken his hand away from the phone, it rang again. The instant new call indicated the Downtime Ring. Before he had finished barking the greeting, I did a quick exit from my Quake 1 Team Fortress game and fired up a terminal. The mail server was not answering pings. Crap.

A certain feeling comes over a professional network administrator when

"something is broken". I mingled somewhere between self-disappointment and utter dread. In this particular case, however, my feeling was closer to grim satisfaction in the knowledge that my cheap boss had caused yet again more downtime by not buying me good equipment.

This particular day, Murray had brought his toddler son to the office. He and his son had pitched camp back in the server room where Murray could rip gigs with competitive vigor. While he was explaining to women on ICQ about the hazardous life of a daredevil pirate fire-fighter, his son was occupying himself with some "toys" on the floor. In actuality, these toys were spare hard drives, Ethernet cards, modems, and a vast assortment of other items with highly poisonous neurotoxins. Thankfully, a thick layer of cigarette ashes and shattered dreams covered pretty much everything in the office, so Murray's son was protected from direct exposure to any computer chemicals.

The son, however, could not distinguish between discarded parts that became his toys, and highly expensive and relatively important things that were my toys. So it came to pass that I walked into the server room to see a delighted three year old boy pressing the power switch on-off-on-off-on-off-on-off, giggling hysterically that he could make the green LED change just by pressing a button. Unknown to him, he had also magically made my ping replies change by pressing the same button.

It was impossible for me not to laugh at this boisterous display of youth. It became increasingly possible as I noticed the three SCSI hard drives strewn about the office, gleefully thrown onto the floor and kicked under other servers. Significant parts of our customer's email had just been ripped apart and used as 10,000 RPM hockey pucks. I had a problem.

In the preface, I promised that some people might accidentally learn some things. Time for a technical departure! Early in the development of networks, the standard way to add space to a server was to buy a bigger hard disk and put it into the machine. There are various problems with that, not the least being that in 1989 a 120 Gigabyte hard drive was somewhat difficult to find. The answer: RAID. RAID stands for "Redundant Array of Inexpensive Disks." It is a technique that takes commodity hard drives, normally SCSI, and "links" them together into an array. Arrays are designated by their "RAID level". A Level 1 array has two or more hard drives that mirror the exact same information. That way, all but one of the drives in the array can completely fail and the data on the array is still intact. This is very expensive, because no matter how many drives you have, you only get one drive's worth of usable storage.

The answer to this problem ended up being RAID Level 5. RAID Level 5 uses some simple math magic to create a redundant array that keeps most of the space on the drives usable. So, if you have five 10Gb drives, you lash them together to get 50Gb of storage. The equivalent of one entire drive is used to create redundancy, so you end up with 40Gb of available space. Any one drive in the array can fail, and no data is lost.

Fatboy had a RAID5 array with four disks. Three of those disks were now strewn throughout the server room and I had no idea how they'd gotten there. Actually, I knew that a little boy had somehow removed them from the server

(remember, they were hanging out of the top) and through a series of unknown drops, kicks, throws, tosses, and smashes, ended up anywhere between 5 and 15 feet away. The absolutely critical point was if he had starting playing with the power button before or after he had yanked all the hard drives out. If the server had been turned off, all the data on the drives would be intact. If he had simply eviscerated the computer before turning it off, it was possible I could never recover the data.

I managed to restrain myself from uttering sailor-esque profanity as I grabbed the kid and marched him over to his father. I picked up the hard disks and stared at them, fully aware that the email spools for over 3,000 email accounts were literally in my hands. For a brief moment, I fancied myself as Computerana Jones holding the three Bit Idols that must be inserted in the exact sequence to reveal some vast treasure from the sunken civilization of Computer Atlantis.

Elapsed time since the first call: two minutes.

About five minutes later I had finessed a spare monitor from the decaying pile of computer flesh under Vince's desk. My clothes were saturated from the superfine cigarette mist that accumulated on and under every surface on "his" side of the office. The monitor, a 14" unbranded junker, emitted a noxious squeal whenever it was powered. I had balanced it on top of a thin metal rail. It was plugged in to *fatboy* with the VGA cable taut; the video card connector kept the monitor from falling forward.

DPT-brand RAID cards made a distinct electronic *twittle* at power on. If *Tron* had butterflies (or is that butterfiles*?) in it, they would have sourced the sound effect from my RAID controller. My procedure: turn the power off, change the drives around, and turn it back on. If the RAID controller did not report a failed array, then I had found the correct combination to plug the drives back in. With three drives, there were a maximum of nine possible combinations I had to try; consequently, I should have rebooted and initialized the RAID card a maximum of nine times. After what was likely the 30th *Tron* sound effect, I finally picked the combination that I had apparently stumbled over the previous 4 times around. The RAID BIOS awarded me with a simple "Found 1 Array". I let the computer start.

I remained painfully unaware if I had just revealed the wealth and magical weapons of Atlantis. It was entirely possible that the array had committed *seppuku* as its last act of hatred toward me and my blatant disregard for network administrator responsibilities. I could not have blamed it, but I crossed my fingers anyway. I promised to give it a shiny new stick of RAM if it booted up for me.

Much like seeing my first topless woman when I was 22 thanks to *National Geographic*, I still remember the utter elation of two simple things. The words:

Loading Linux.....

* I'm sorry...

painted in white text on a somewhat black screen. At that moment I would not have traded those two boring words for every *Busty Beauties of the Amazon* ever produced. Atlantis revealed and no ancient booby trap spear driven through my torso. A good day for any computer nerd.

The key in Information Technology is to try everything you can possibly think of to do. Then, when you solve the problem, pretend that you knew what you were doing the whole time. Never show weakness. With a self-important show of gusto and finality, I ripped the power and reset switch wires off of the motherboard. I would not be defeated by a three year old twice in the same day; no more buttons for him. The slightest hint of a strut was in my step as I returned to my desk. Vince gave me an "is it fixed yet, you moron?" look while he insisted that a customer's mail problems were due to a motherboard virus.

I looked at him with a sideways glance of self-assurance. "Oh, the mail's been up for a while. I was just reading the new *National Geographic*."

Roots

I cannot suitably convey my life as a computer geek without describing the incubator. Net Express was a graveyard. Imagine the scene from *The Lion King* where Simba is being chased around the elephant boneyard. Now, replace all the bones with computers, cover them with a Vesuvian layer of cigarette ash, and make the whole place smell old-book-musty. This is my Nerd Homeplace; the Walton's Mountain of my life in Internet Technology.

I was not yet employed. Myself and a group of friends were gathering in the parking lot for the first of many LANParties. A friend from high school, Mac, had been working for about three months and had "booked the venue". Mom dropped me off. It was somewhere around April of 1998 and I could not yet drive.

Net Express had an unassuming outside. We periodically tried to identify the color of the building, both the original and the much more interesting "modern version." When I found myself standing outside the door for the first time, various shades fluttered through my mind: *bile, vomit, algae, that weird lime-green old circuit boards had*. Never once did the actual color, *yellow*, enter into my mind. The metal siding had long since oxidized into a lightened, dull version of its former pee-yellow splendor. I opened the front door and the equally oxidized white ruined my shirt instantly.

The proprietor of our fine establishment, Hamilton, was classically trained as a heating/ventilation/air conditioning engineer. Engineers tend to get a lot of free books and magazines. If they really get to enjoy specifying, say, Cutler-Hammer products, Cutler-Hammer has the potential to clear hundreds of thousands of dollars over the the engineer's career. Consequently, every major and minor company that ever made an HVAC product *ever* would routinely send their entire catalog, perhaps fifty books, yearly. Nobody had heard of PDF, it appeared.

If it was not a desk, it was a bookshelf filled with catalogs. Gargantuan bookvaults with a thousand dead trees firewalled our highly trained and emotionally sensitive IT staff from any customer foolhardy enough to walk into the office. We established trade routes and alliances between desks by stacking books accordingly. We parlayed half-shelves to stifle potential desk invaders. In an odd sort of literary cannibalism, we literally built bookshelves out of books. And then there were the binders.

Binders are much harder to deal with than books; binders are angled, and normally not at equal angles so that opposite stacking maintains a level structure. The parts of the office not built or composed primarily of books became Jenga-like structures of death. A few years later, when we moved, some binders on the bottom had papers dated from the 1980's.

Like fine whiskey, Net Express was bottled and capped at the perfect age, capturing a flavor that could never be repeated. The floor, ancient concrete

poured by authentic Roman road-builders, held onto shattered chunks of cigarette-yellow floor sealant. In previous lives, the building had been a printing press and a mechanic's shop. Chemical and oil stains remained in various places, seeped into the flooring and half-heartedly covered by second hand rugs and ash.

We evolved the floor plan through the years. There was a large main room, a server room, an auxiliary office, and a unisex bathroom. The main room was L shaped, with the server room wedged into the angle and the bathroom and tiny office at the top. Extremely mobile portable walls better known as bookshelves were moved as needed to create smaller cubicles, a break area, and a kitchenette. Much later, through some underhanded means, we acquired a workshop counter that became our service area. It too, was filthy.

The garage was populated by whatever most recent set of junk came from eBay. It was also the blueprint room, where Hamilton turned CAD drawings into blueprints using copious amounts of ammonia. We staged LANParties, fired blow guns, threw knives, piled up trash, and generally abused any open area.

I became officially employed in this geek's paradise around March of 1999. Mac had been accepted to school in Florida and was set to graduate. He theoretically trained me as his successor, a series of lessons which mostly consisted of "have you ever used Linux?" and "you are really going to suck at this." He would later go on to call me various friendly things like "incompetent", which was patently not true. At least, not at the exact moment he said it.

Initially, our server room laughed in the face up uptime. Wires ran in all directions across the floor and through the dropped ceiling. The furniture included two folding tables and a chair with ripped covers, no padding, and a missing caster. There were four computers then: a webserver, a mail server, a RADIUS server, and the shell account machine. Each with exposed cases, no covers in sight, and no backup power. A recently-retired modem rack lay strewn in the corner in a tangle of serial cables and punch-down blocks. The only thing securely in place and potentially reliable was the T1 smartjack installed by GTE with the two reassuring green LEDs.

On my first day, the Smartjack spoke to me. It said "No matter how much you screw up, I'll always be here. I'm handled by somebody much better at their job than you are. My lights will never go out." I mocked it openly in return.

My desk was stuffed in the server room. My ears revolted from the buzzing, honking, ringing, whistling, grinding, and clicking. Some server rooms sound like a symphony; the various sounds mingle to produce Holst, Rossini, or Marley. No such luck for me. Imagine a running hard drive stuffed through a meat slicer.

They gave me a phone during my third week. This was quite an improvement, considering my job description of "phone technical support." My assigned desk was, thankfully, the most well built desk in the office and had absolutely zero books as part of the construction. The chair, on the other hand, was cobbled together and sat lopsided. The arms were ripped and at one time had probably been colored approximately puke green, although a completely different shade from the building itself.

One of the services we offered was a "shell account". Shell accounts

allowed knowledgeable customers to use a program called *Telnet* or *ssh* to directly connect to one of the machines we provided. Early on I claimed the shell server for my own personal workstation. Customers occasionally used the shell machine to download larger files from out-of-state FTPs or to mask their real IP address from other people on IRC. That meant for the first time, I was the root user on a machine used by other people. Power corrupts; root corrupts absolutely.

With UNIX, there was a concept called the 'superuser', or simply 'root'. The root account had the access privileges to do anything and everything to a system. Root could accidentally format the hard drive, change very low level system settings, or access any file owned by any other user on the server. Being young, I abused this to no end. Some of the customers were heavily into the "warez scene". "Warez" was a bastardization of the word "softwarez", indicative of stolen, cracked, or illegally trafficked software. During the wild-west days of the Internet liability did not surface as a concern, but our "official policy" was no illegal software or copyright violations. I forced myself, rather easily it seemed, to peruse users' data looking for illegal software. I found lots, copied it for myself, deleted their original, and if I felt nice, sent a notice.

On particularly kind days, users got a warning beforehand via an email designed to inspire fear.

From: root
To: abusiveuser@ourisp.net
Subject: Home directory space allocation

abusiveuser,

You are currently using 2,300 megabytes of your 50 megabyte quota on the shell server. While I was auditing usage, I noticed a number of files in your directory that are legally questionable. Please bring your space usage under your quota in the next 15 minutes. we are running out of space on the server and I will be forced to delete random files until you are under quota again.

Thanks,
root

If I were feeling like a complete jerk at the time, I would delete their data first and then pre-date the email to show that I had sent it at least two hours earlier. When the occasional subscriber would question my authority, I would remind them of the Acceptable Use Policy and the "No illegal transferring of data" clause. I would also threaten to check how much space they were using for e-mail stored on the server. They would shut up immediately.

Root was fun. Powerful. But in all honesty, I did not abuse my power with any consistency. My desktop and subscriber shell machine operated as a benevolent dictatorship. Since it was my desktop, it always had the highest priority on the network, the largest storage space, and the most powerful

processor. And this one time, I lit it on fire.

The server room was the dirtiest part of the building because there was no easy way to clean it without taking the entire service down. So, it simply never got cleaned. Even before all the smokers moved in, years of collected dust and insulation had given every surface a palpable and permanent gritty feeling. Much of it came from the spray-on insulation added to the building during the Pierce administration. Years of heat and cosmic rays began evaporating it into the air long before I showed up.

Surprisingly, the bathroom remained clean against all of our best attempts to defile it. Net Express shared the building with another business. We were separated by a thin wall and easily-picked door lock. The bathroom was firmly under our control, but they had a better air conditioning and a drink machine, so there was a territorial truce. Luckily for us, the two women who worked next door took it upon themselves to clean the bathroom and did not throw away our constant stock of Victoria's Secret catalogs.

When I walked out of my server room there was a thin, dedicated path to the front door that veered to the left. Immediately outside the doorless opening to the right sat the refrigerator and a slop sink with an attached table. The entire kitchenette took up about eight feet. Directly on my left, across the aisle from the kitchenette, was a "desk". Once again, the borders and side walls were defined by bookshelves and stacks of paper to about chest level, creating a cubicle. Standing in the door frame and facing forward, I found Hamilton's desk. It was arguably the most cluttered of all, with double-bookshelves stacked and being used as load-bearing walls. I would not have been surprised to find original engineering diagrams of the Pyramid of Cheops among the conglomeration of papers on and around his desk. On the other side of the kitchenette was a five-foot hallway with the bathroom on the right, a spare junk storage office on the left, and the aforementioned easily-picked-door straight ahead.

The rest of the office became impossible to describe. Furniture and books were moved so often and without planning that it could be called a floorsketch at best. The last thing remaining to describe, physically, was the garage. In an odd twist, somehow we had managed not to utterly destroy a 30' by 15' parcel of open floor. The garage was alternately used for blueprints, storage, and radio work. It also had an overhead door on both sides, one to the outside and one into the building. For the most part, it provided us with a staging location for large projects and the bigger LANParties. It was also exceptionally clean because the other company used it more than us.

Intellectually, Net Express provided both accelerator and brake. I had full choice of any new technology or design I wanted to try as long as the cost was approximately zero dollars. Linux, the free operating system designed by nerds, for nerds, worked wonders. Even in the late 1990s, Linux operated quickly and was very stable and proved to be a good choice to run an ISP with absolutely no money. We constantly had an inflow of computer junk that was both antiquated and broken, thus forcing me to learn much more about hardware than I otherwise would have. And most importantly, I had nobody to ask questions. At the ripe age of 17, with zero experience and no training, I was the defacto network

administration guru of a Linux-based ISP. Months one through six were perhaps the greatest crucible of my professional life.

Throughout the rest of this written account, remember: I was hired to answer customer phone calls.

T1

The Internet created a new measuring stick for success as a geek. Questions like “How many roads must a man walk down?”, “how nice was your car?”, or “how hot was your wife?” all created scales that rely on the experience of others to evaluate your own success. But the cantankerous geek wanted...no, needed...a solid scale by which to compare themselves. The Internet provided this. Finally, after dozens of years, computer geeks could objectively measure their Electronic Penis with real, solid numbers.

The unit? Kilobits per second.

Bandwidth was the key. It created a new type of class warfare before the term “broadband” ever reached wide acceptance in data applications. But before I can explain why, I must explain how.

“Bandwidth” is simply a measure of how much data a network connection, like your Internet connection, can push through at a time. It is traditionally measured in kilobits per second. A “bit” is the now-cliche 1 or 0 that represents some data. If you have 1,024 of these bits lined up, you have a kilobit. So, the normal way of measuring the bandwidth of a given connection is by representing how many kilobits it can transfer in a second.

For reference, here are some common connection types and their approximate theoretical speeds:

<i>Connection Type</i>	<i>Speed (kbps)</i>
28.8 Analog Modem	29
56K Analog Modem	52
ISDN	64
Dual ISDN	128
T1	1,600
DSL	750 – 4,000
Cable Modem	1,000 – 10,000
T3	46,000

When I started at Net Express in 1998, the 33.6Kbps modem was king. Basically, anybody connecting from a residence was using dial-up service. I, however, used a machine directly connected to the epitome of fast Internet access: the leased-line T1. To any readers born after about 1990, a 1,600 kbps connection was certainly nothing to write home about. For me T1 was probably equal, if not better, compensation than my initial \$7/hr wage.

Frankly, it was magical. A new, bandwidth hungry format had just hit the small time: MP3. Nobody realized MP3 would eventually revolutionize the

industry and bring intellectual property rights to the forefront of American politics. The great thing about MP3: it was an actual song. My friends, and to a lesser extent myself, had spent years carefully building our vast library of poorly-done MIDI rip-offs of popular songs. MIDI only did notes, no voices; still, if you listened hard enough, you could pretend they did not, in fact, utterly suck. MP3 suffered from one problem, though. Relative to the connection speeds and hard drive sizes of the time, each MP3 was *huge*. Stealing a song was a careful, loving process, often taking many hours to find the correct version, at the correct bitrate, from somebody willing to let you steal them blind when they failed to pay attention.

T1 was my vaccination against the disease of slow copyright violation. Whilst my pathetic friends on their pathetic modems were waiting forty-five minutes to download a single song, I was stealing songs from university public file servers in seconds. My Internet was always-on, available at a second's notice to relieve me of boredom or to reload hampsterdance.com endlessly on Vince's computer as a prank.

None of this really mattered, though, unless I showed it off. And I did. Our office owned one of the first CD writing drives in town. Yamaha developed an early external drive that used a SCSI bus, loaded with a tray, and wrote CDs at an astounding 1.5x. Occasionally.

"Certainly, I'll be more than glad to download that huge copy of Netscape 3 and put it on a CD for you. I can do it in about a minute, you know." I would smirk at whatever friend I was lording my ultra-fast 1.544 megabit T1 connection over. "It's really no trouble at all. See, I just click," I would click for effect, "and then...wow! It's already done!"

And this was how geeks compared ourselves. Entire days of our lives were spent changing archaic registers and special modem "init" commands to eke out the tiniest gain on our dial-up access. We replaced the Windows dial-up networking software with specialized versions to get trivial speed boosts. We sacrificed chickens, hard drives, monitors, and chickens stuffed with hard drives and put inside of monitors, for the mildest gain possible. No change was too hard, no increase too trivial. But at work, I needed not bother. My bandwidth: fatter; my equipment: superior. My kilobits were measured, and they were longer.

Holding superior connectivity over friend's heads and laughing derisively at them was not the point of T1, merely an entertaining side effect. The point of T1, and this chapter, was that it made the Internet and browsing the web actually fun. I never heard "snappy", "responsive", "quick", "impressive" used to describe browsing with a modem. Modems coined the term "world wide wait", "busy-signal bonanza", and "Ping of Death". I grew up associating T1 with the Holy Grail, the unreachable pinnacle of Internet achievement, the stuff of legends. A guy with a T1 could single-handedly DoS attack 40 modems simultaneously, while downloading entire movies, while chatting on IRC, while pretending to have a girlfriend. And it turned out to all be true. Especially the "pretending" part.

Whenever something as fantastically orgasmic as The T1 Connection exists, there is a harsh price to pay. In this case, our T1 provider extracted \$2,200 a

month in small, unmarked bills. Or, if our mafia contacts and funds were not available, the provider offered a generous "Salt Mines" alternative payment plan.

Our T1 held the coveted position of "the only reliable thing in the office" for most of my time working there. Telecommunications companies, lovingly referred to as "telcos" by the industry, could charge asinine prices for T1 because they were the only game in town. Skilled companies created a reliable T1 service and that stomaching high prices became bearable. Whenever our service went out, the safe bet indicated that I screwed up somehow.

Bolted solidly to the wall of the server room sat "the smartjack." In a blinding flash of obviousness, years ago telecommunications companies realized that shady operators, like Net Express, often hired worthless network administrators, like me. They designed a plethora of idiot-proofing technologies for the customer premises. That smartjack existed purely to give me something reassuring to look at while a technician with actual skill sat at the central switch and asked me which color of pretty light turned on "when I do this?" Most smartjacks have three conditions: "Everything is great!", "You screwed up", or "Somebody appears to have gone insane with a backhoe and I'm going to need you to go ahead and call this number." In the true fashion of every technologist since the vacuum tube was invented, each of those potentially Internet-threatening situations could be represented easily with a series of Idiot Lights.

This idiot learned quickly that "Green and two yellows, send data my fellows!" There was even a neat, special Idiot Light for the "Maybe you should take a look at this" condition. It cleverly changed color between red meaning *you screwed up*, and yellow meaning *it might not be your fault exactly, but you probably had a lot to do with it*. Nobody else seemed to grasp my ingenious rhymes or the fact that a red light is Bad, and thus I became the official guardian of the T1 circuit. Every morning when I went to work at about 2 PM, I would check the lights, verifying their readiness.

Trying to decide how much bandwidth to dedicate to a project or set of customers easily occupies an entire, much more boring book. Our T1 could support about 180 simultaneous modem users, 30 DSL sers, or exactly one Vince downloading a movie from Morpheus. A few years into my employment, we added additional T1s to increase our overall bandwidth and I taught myself how to throttle a new type of application paradigm called "Peer To Peer", made famous by Napster.

Vince and Murray were the crown princes of stealing things on the Internet and P2P made their jobs ridiculously easy. Innumerable times, I had to pull their Ethernet cords or throttle them to modem speed because they sucked down the entire T1. After all, if they used all of the bandwidth, I could not use it for critical business related activities like reading Slashdot or hosting a Quakeworld tournament.

On one occasion, I noticed Murray left Morpheus (now Kazaa) running overnight, trying to steal a screener rip of the newest crappy Tom Cruise movie. Totally unacceptable. We had this discussion many times; did he not understand that, as the network administrator, my web browsing must be uninhibited? I logged into the router, an HP Vectra running Linux, and did some command-line

magic. My good connection: instantly restored. His connection: somewhere close to the effectiveness of carrier pigeons. But slower.

I came in the next afternoon and saw a connectorless Ethernet cable. Or, more precisely, a cable that appeared to be coming out of the back of my machine with the other half propped on the seat of my chair. Lovingly cut with a maniac's hand, blue sheathing was ripped and the wires mangled and lifeless. I had no Internet. My computer and shell server had been severed from the world. It gouged deep into my heart, like having your girlfriend stolen by your best friend who also works with you.

"Who cut my Ethernet cable?" I asked with casual politeness, very loudly, and to no one in particular. My boss stuck his chin up to see me over his book pile.

"Oh, Murray said something about doing it. He he he." His fake laugh; the laugh that says *I heartily enjoy trouble and there is about to be some.*

"Why did...screw it. Is he in the back?"

"Yes."

Naturally I knew why. I decided to start a war the previous night and this was merely retaliation. He must not have realized that while he could create minor irritations, I could make his work-life horrible. In the land of worthless users, I reigned as the Bandwidth Lord. Seek my favor and ye shall have unending access to the greatest stolen software and pornography of the world. Gain my ire and the consequences would be tragic. I walked into the back server room with a sliced, six-foot-long Ethernet cord.

"So" I said, still with no desire for confrontation. "I found this on my chair. Any idea how this got there?" Murray swiveled in his chair and put down his cigarette.

"Any idea why I can't get any sort of speed out of the Internet? I can't even sign on AIM."

"Did you reboot?"

"Yes."

"Huh. That's weird. I don't know, man, I run Linux and that never really happens."

"Cut the shit. What gives you the right to throttle my connection down?" He emphasized the "my" in the same way that a southern Baptist preacher would emphasize "Jesus" had I throttled His bandwidth.

"Because you were taking up the entire T1 for about five hours last night. Customers were calling, mail wasn't getting through. I had to do something. You can't just go home and continue to steal the entire 'net."

"I work here the same as you do."

"Actually you don't. What is it, exactly, that you do? Wireless? When is that going to work out for you? It's been eight months. And regardless, I never do that kind of crap." Which was not exactly a lie. Whenever I needed to do a long download, I throttled my connection down to something reasonable and let it run all night, leaving "plenty" left over for e-mail, web hosting, and whatever else came up.

At this point, Murray's face flushed and his hair spontaneously combusted.

"You aren't the only one who works here. I have known Roger for years. I'm a part owner in this company and what I do at work isn't your business. I forbid you to throttle my connection down any more."

I just stared, awestruck. Murray did not own part of the company. He barely owned a clean shirt if example were to prove anything. And my hackles were up. It was time to call his bluff. I suspect I was getting a bit red faced myself. Questioning my decisions does not bother me. Much. But lying to my face while questioning my decisions implies a whole new area of torment that heretofore had been unconsidered.

"Let's check on that." I took a few steps out of the room and conversed with the owner and my boss, Roger. After pinwheeling and dodging the subject for about a minute, I finally got out of Roger that there were no other owners of the company. I walked back into the server room and faced Murray. I spouted off commands from some deep reservoir that I normally do not possess.

"Here's what's going to happen. You are going to run a new cable and crimp it by the time I get back from lunch. When it works, I will raise your bandwidth limit to something useful. Once you figure out how to not steal all the bandwidth every night, I'll give you unfiltered access back. My machine is the shell machine, which means that right now you have cut service off to a few dozen users. Service that they have paid for. Service that, apparently, you should be getting paid for as well. I'm going to lunch. Fix it."

"Not until you admit that you were wrong."

"I wasn't. My responsibility is to Roger and this network. You might have him in your pocket, but I have customers I have to deal with on the phone who might also be my friend. Do you think John is happy about having his service down for four hours last night?" John is a dear friend of mine who graciously kept a number of servers collocated at our "facility" regardless of how bad we screwed up. More on him later.

"I'm not going to fix it." And then, in a wonderful example of grown-up control, Murray walked over to the server rack, snaked his hand around back, and unplugged the Linux router. "There, now my throttle is turned off, I'm going straight through the Cisco. I don't want to see that Linux router turned on ever again."

Now I was pissed. The Linux router had replaced the Cisco for all important functions except actually dealing with the T1 itself. Which meant that every customer, all email, every machine was now non-functional. "What are you doing, you idiot? That's not going to speed your connection up, it cuts everyone OFF."

I did not anger easily. At this point, however, I likely could have ripped Murray's spine out and fed it to him Mortal Kombat style. I could almost hear Roger in the background, loving this harsh interaction, chanting *finish him!* A key part of my personality was that the angrier I got, the more quiet and measured my words became.

"Ask Roger if the Linux router can stay plugged in."

There was a golden rule at the ISP. It did not matter how many customers were offline or how many things were broken. As long as Roger had Internet

access everything was fine. At that exact moment, Roger did not have Internet access. So I asked him.

"Just bypass it. Murray seems to think that you having the Linux router in place gives you too much control. Nobody else can use it."

"So you know how to use Cisco equipment now?"

"Well...no. But Murray claims to."

"He's a moron. He doesn't even know what a MAC address is. I was hired as your network administrator. Are you going to take this idiot's suggestion on how to run this? The guy who can't even get wireless to work across the building? Or the guy who actually installed it and knows both Linux and Cisco. The guy who, in fact, runs the entire network for you and built it from scratch?"

Roger had gotten the drama he was looking for. It probably would have played out for a good ten minutes before I, livid and fuming, left the building after cutting the T1 cord myself. But Murray had violated the Golden Rule; I had maintained it. Throttling Murray's connection kept Roger's working. I stood staring at Roger's desk, infuriated for no good reason.

"Plug the router back in, Murray. Fix his cable, don't steal all the bandwidth. And you guys stop arguing over this stuff." I had won; the incident soon forgotten. Strangely enough, a very similar set of circumstances and an almost identical argument would, in a about a year or so, be why I emptied my desk and marched indignantly off the job. The first time.

Hopefully, our little tirade gave some insight as to why bandwidth seemed so important. The mystique of the ISP and the events that surrounded the company made more sense given how personally important every aspect of it was to me. I loved bandwidth, but I also loved the job and some of the people. I loved the learning and the responsibility customers entrusted me with. And I took it very seriously.

Bandwidth occupied a special place in my friends' hearts for years. When we made Net Express LANParty central during my tenure, we did so because of the T1. My workplace became the after school hang-out for all of my friends, and not a few of my enemies, because of fast Internet access. School work and research were easier. Experimenting with new software was faster. I inadvertently stumbled into the realm of Internet sophistication and brought everybody else along.