

Rice Tea

- Julien McArdle -

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Cover Photo by Nintaro.

In memory of Steve Cisler.

Introduction

I would like to thank you for having purchased this book, though if you're anything like me, you've probably downloaded it for free as you contemplate whether it's worth your monetary support.

This book has come a long way from the six-page film concept that I originally concocted sometime in late 2006. First slated to be a realistic take on the 1995 film *Hackers*, this project evolved to become an entirely original story on its own.

If there is one thing that hasn't been affected by the metamorphosis from a screenplay to a novel, it is this work's adherence to reality. While the overarching story line may be fictitious, the technical abilities represented are not. They mirror the true experiences of those talented few that populate the digital tubes.

To that end, I would like to acknowledge the following for their valuable contributions on the Internet that helped shape this novel:

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PROLOGUE

Enter the Black Hat

In the windowless basement of a suburban home, in the wee hours of the morning, sat a twenty something man perched over the glare of his multiple computer monitors. In the one, he was playing some Hentai – at this point, the animated high school girl was giving off high-pitched squeals typical of the Japanese genre as she was being thrust into by her male compatriots.

However, at this point, the hacker wasn't paying any attention to the video. Rather, all his attention was focused on his other monitor. In it, he had a terminal window open in which he was issuing commands, the green text of his typed words set on a backdrop of black.

The desk on which his computer lay was pristine – his monitors and speakers were placed in perfect symmetry, the flat surface completely devoid of dust. This was an anomaly in this basement room, with the rest in utter disarray. Clothes were strewn all over, the posters were peeling down, and used cans of caffeine energy drinks peppered the floor. In this mess were also various technical books, usually opened to a certain page, on topics such as C programming and the TCP/IP protocol.

The hacker entered a few final commands in the terminal window, and sat back watching the screen spurt back copious amounts of text. The man smiled in relief. It was working, and on the first try. The black hat hacker had succeeded.

ONE

Just Another Morning

Seth lay in bed, his alarm buzzer still ringing by his side. His head turned to face the source of the annoyance, and with it, his arm came violently down to silence the contraption. The buzzer continued. He had missed. With a sigh, Seth took a better look at the alarm and navigated his fingers carefully around its buttons. With a small tap, the room turned quiet.

Seth was an average height, average build, twenty-two year old. His face featured brown hair and green eyes, the latter usually complimented by his stylized translucent glasses.

Slowly getting up, he turned his head to look out his window. His room on the upper floor provided a nice view of the greenery behind his townhouse, a rarity in the bleak asphalt and concrete landscape that surrounded him.

After a quick shower, Seth put on some clean clothes and worked his way down the stairs. He turned to go into the living area, or the “man center” as he sometimes called it. Against the wall stood a large second hand television, to which game consoles of all sorts were plugged in – between him and his two roommates, they owned all of the most recent gaming hardware. Beneath the television and the consoles lay a hefty rack-mount server, that would appear to be more at place in a data center than a residential home. To the side of this humming machine was a laser printer, with a single freshly printed out sheet.

Seth snatched the sheet, and brought it to the kitchen. Inside,

he found his roommate cooking some eggs. Grabbing a lone magnet on the fridge, he posted up the piece of paper. The sheet was the product of Seth's boredom one afternoon, an automated script on the server that would run every morning at 6:30AM. It compiled weather information with the day's top tech headlines and some statistics about the server's current performance.

On this day, much like those before it, news of the Météo botnet were making the rounds. A new update had been released overnight, and more than 120,000 computers had thought to have been infected in the space of hours. While these newly enslaved machines might seem fine to their owners, they would in fact covertly be used to relay spam or assist in large-scale fraud operations. This was bad news for system administrators the world around.

Seth's focus was however not in these news, but rather the breakfast he would make himself. As soon as he had pinned up the sheet, he opened the fridge door to reveal its lackluster contents. He grabbed the loaf of expired bread, and put two slices in the toaster. Turning to his roommate, he asked:

“How was the LAN party last night? I didn't see you come in.”

“Yea, we went for some karaoke after. We beat Carleton U's comp-sci team again.” Always glad to hear when the other university in town had been beat, Seth replied “Good stuff.”

Seth ate his toast, loaded up his MP3 player with some new songs, and prepared his bag for school. On his way out, he yelled back “I'll get the mail!”

TWO

University

It was perhaps early spring, but with the sun beaming down it felt almost like summer. The snow that had been so pervasive the month previous had entirely disappeared. People were no longer shackled by the heavy winter coats that were a necessity even the weeks before. Seth felt unusually liberated as he wore his light-jacket on his twenty minute walk to the nearby transit station.

The transit system in Ottawa was a hybrid of diesel buses and light rail. Every morning, Seth would walk to the nearby station where he would grab a train down to his university. Over the years since his move to this city, he grew fond of the transit network's efficiency.

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After a twenty-five minute ride, Seth's train stopped right on front of his campus, and he got off. A large sign, written in both English and French, welcomed him to "Canada's University." He had always found the University of Ottawa's bold assertion rather amusing.

Walking through the university center, Seth stopped to grab a coffee. French vanilla, as per usual. As he poured in a bit of milk, he looked up to a nearby mounted television screen at the news. The price for the barrel of oil had again increased, and three analysts were feverishly debating the source of this latest hike.

“Seth!” Seth, shaken out of his television-induced stupor, looked around. A young man was fast approaching him. He was built, his goatee well-trimmed – the man looked like a twenty year old version of a Hollywood top actor.

“Oh hey Jinks,” Seth replied unenthusiastically.

Jinks went on. “So I tried hacking that 127 dot whatever IP address you gave me yesterday. I used Sploitster and everything.”

“Find anything interesting?” Seth responded.

“Yeah! Check this out!” Jinks pulled out a newspaper from his side, practically shoving it into Seth's face. Jinks continued. “It was an ATM!” Seth was still readjusting his eyes to read the newspaper held up so close to his nose.

“Look!” Jinks exclaimed. “It spewed twenties randomly on the ground somewhere in hick-town Saskatchewan. That was me!”

The Internet Protocol, or *IP*, address Seth had given to Jinks was a loopback – it was a specially assigned address that would connect Jinks to his own computer. Jinks couldn't of accessed any other computer using it, much less an ATM. That was the thing with scriptkiddies like Jinks: they knew how to use certain programs to cause damage, but they didn't know the most basic tenets of computing.

“Uh huh, nice. Look Jinks, I gotta go to the washroom. Classes start in three minutes. I thought you had some now as well?”

“Yeah, well just one – Polish cinema. I should go too. Later Seth.”

“See ya.”

Seth threw the remnants of his coffee in a nearby bin, and walked to the nearby door. Past the door were large concrete steps that brought students to the lower level of the university center.

Seth walked down the steps. At the bottom of the stairs, he could see the washroom doors in the distance to his left. Turning in the opposite direction, he headed down a long hall, an into an open doorway which greeted students halfway down. He had come into the dark, funky smelling, dungeon that was the university's arcade. Save for a lone light hung atop of an old pool table, the room was entirely lit by the hyperactive screens of its coin operated games. Seth figured that most of these machines had to be at least twenty years old, but these retro games were cheap to play and had really caught on with the campus' students.

Seth walked up to the *Street Fighter II* slot arcade machine, where two students were furiously shifting their joystick and mashing buttons trying to beat each other's virtual characters to a pulp. Seth, looking at the taller of the two players, subtly pronounced "Gab, we got class in less than five." The message received no reply, the player's attention entirely consumed by the machine. However, the pattern of prerecorded pained grunts emanating from the game's characters started to shift, and within seconds, Gabriel had dealt the finishing blows. He looked back at Seth.

"Okay, I'm done."

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The duo walked with utmost haste down the halls of the university's computer science and engineering building. It was amongst the newest structures on campus, with a design that proudly showed off its support beams and heating ducts to all its patrons. It was also home to numerous computer labs, rooms filled with networked computer stations.

Stopping by one of the doors, the two quietly entered. The professor in the midst of discussion paused for a brief second at

the interruption, glaring at the two late-comers. Seth mouthed his apology to the unimpressed teacher, who then continued on his lecture. The two found some empty seats near the back and listened to the professor, slowly getting their bags off their back as to not produce any further noise.

The professor went on. "This term project is worth 30% of your final mark ladies and gentlemen, so listen up." Seth logged into the computer on front of him, paying only half-attention to the words of his middle-aged lecturer. Looking off to the side of his computer monitor at his fellow classmates, Seth's eyes couldn't help but to fixate themselves at the girl sitting half-way down the room. Her name was Kerstin. She had a rounded face, shoulder-length black hair arranged in a ponytail, and a very cute European accent that came out whenever she asked questions. To top it off, she was an extremely competent programmer. Whereas others wrote limiting textbook answers to the problems given in class, she was one of the few that could think outside the box and develop intriguing efficient solutions.

The professor's unintelligible droning voice was punctuated by Gabriel's clear whisper.

"I think you're freaking her out."

Kerstin was staring back directly at Seth. Abruptly shaking out of his apparent daydream, Seth's eyes immediately returned to the idle screen on front of him.

"Fuck," he muttered.

"Not bad," said Gabriel. "You haven't even met her yet and she already thinks you're a freak. It only took you what – three months?"

"Yeah, thanks." Seth replied with a smirk.

The professor went on for some time on the minutia of memory management in operating systems. Finally, alerted by the communal ruckus of students packing their bags, the lecturer took a look at his watch.

“Oh look, we're all out of time. See you next time, and take a look at the assignment due next week!”

Stretching his arms, Gabriel looked to Seth. “Are we still on for the beers?”

“You know it.”

“See you there in what... ten minutes?” Gabriel continued.

“Sounds good to me,” replied Seth.

THREE

The Digital Losers

Seth sat waiting at a table at the local university pub, *1812*. It was one of his favourite hangouts. Not only did it provide a great view of the campus, but the beer was decently priced, and it was rarely home to more than a few patrons.

Coming by with two beers in hand, Gabriel sat down, sliding one of the alcoholic beverages to Seth.

"Thanks."

The duo took out their laptops, and flipped them open. As he was waiting for his laptop to boot up, Seth began speaking. His gaze did not shift away from his laptop screen.

"You know, I'm really going to miss all of this."

"Miss what?" asked Gabriel in return, as he sipped his bottle.

"University. All those parties. The stupid shit we've done. Feeding the hamster weed. Or like after Christmas - making roadblocks with the trees people were throwing out."

"...or the races down the hill with the computer chairs," countered Gabriel. "It went by fast, didn't it?" he finished by saying.

"Yeah, it's depressing," concluded Seth.

"Who says that all that has to end though?"

Gabriel looked back down at his laptop. It had now finished starting up and was standing idle. He began typing a few commands.

"Let's see what kind of catch we have for today," he mused.

Gabriel's laptop was connected to the nearby wireless repeater, a device to spread the specialized digital signals across campus so that all students with a wireless-enabled laptop could instantly log on to the Internet. All computers connecting to the repeater were added to a pool of networked computer, which all accessed the Internet via a central gateway. This was entirely automatic, and so the average student wasn't aware of all the technology that made this seemingly magical Internet access possible. This also meant that they were quite unaware of the extent to which their computer was made vulnerable by subscribing to such an open network.

Gabriel didn't need any specialized programs to explore the hard drives of the computers that had connected to the network. All from his seat at the pub, he could explore dozens of computers at will, logging into them much in the same way as a legitimate user. Gabriel's seemingly limitless access was based on the fact that most computer owners did not bother to set an Administrator password. Such an oversight made these machines extremely vulnerable to takeover, especially when connected to a local network like the one in the pub. To people like Gabriel, the contents of these machines were as good as his.

Poking around the hard drives of various machines, Gabriel soon found something of interest.

"This guy's interesting. Looks like a prof's slides for a class."

Seth was now looking over Gabriel's shoulder. Looking towards Seth, he asked,

"Shall I?"

Sometime in the next month, a professor was giving a lecture in one of the university's many halls. His carefully prepared slides were projected to the front. The professor spoke to his students.

"...and so the biota in these sedimentary rocks can serve to identify the local conditions in the environment of deposition."

With these words, he moved to the next slide. The class of 400 students erupted in laughter. Puzzled, the professor looked back at the projected slide. Instead of the images of microscopic life he had prepared, there was a single repeating video clip of a bug-eyed hamster giving a very human-like look of surprise. Beneath the video was a short caption: "Brought to you by the Digital Losers."

The Digital Losers was the name that both Seth and Gabriel had given themselves to mark their pranking exploits. It had served them well since the duo had come up with the name in their second year of university. The two also maintained a website where they regularly published their latest exploits, often accompanied with audio clips or video footage.

The professor hurried to his nearby terminal to look at his slides, and drew a quiet sigh of relief upon seeing that all his slides remained intact. This rogue slide had somehow been inserted amongst the legitimate content, but none of the real slides had been affected.



Back at the pub, both Seth and Gabriel were still working on finishing their beers.

"I'm tempted to start university all over just so I can stay here," said Seth.

"Get a master's."

"I could..." Seth went on, "but as weird as this sounds, its the social experience of getting raped in my first year classes that I miss most."

"Yeah, that is weird."

"Thanks... oh hey, I got a guy here."

Seth, who was also doing his own sleuthing, had stumbled on another professor's computer. He looked around the computer's various files, and discovered some slides dated to be presented in the coming week.

Taking a look at the file containing the slides, Seth saw that it began with a pie chart presenting the break down of the last midterm. In this calculus class, forty-three percent of students had failed their examination, and the professor was ensuring that they all knew it. Editing the text in pie chart from his laptop, Seth changed the wording from "Failed Midterm" to "Sucked Ass."

As Seth was editing the slides, he continued to speak with Gabriel.

"I have been giving this second degree a lot of thought. Biochem was not the major I should have taken. I want to go into computer engineering."

"How many more classes would you have to take now if you wanted to make the jump? How many have you not taken?"

"I'd still have two more years to do."

Gabriel gulped down the remainder of his beer. Looking at the empty state of Seth's own drink, he asked, "Want another one?"

"Sure," came the reply.

FOUR

Kerstin

It was Friday morning. Seth lay in his bed, the low rumble of his snoring emanating from his throat. Suddenly, the cellphone by the alarm clock to his side started to vibrate in loud intermittent bursts.

The snoring stopped, replaced by a loud sigh. Seth blindly grabbed the phone, and putting the screen to his squinting eyes checked to see who was calling. He pressed a button on the cell, and in a tired voice said,

“Hey mom, how are ya?”

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As Seth went to his classes that day, he was unable to shake the thoughts of Kerstin out of his mind. He wanted to know more about her, but there was nothing to go by. They had no common friends with which to approach, and searching her name online had yielded nothing.

Later, as he walked down the bustling halls of the university with Gabriel, Seth stated,

“I think I’m going to ask her out.”

“Who? Kerstin?”

“Yeah. But whatever chance I had I think I killed it by staring at her for an hour straight without realizing it.”

Gabriel paused for a second, and remembering of an even that was to take place the upcoming weekend, said,

"So how about this: I'll invite her to the Saturday hackfest."

"She'll say no," was the quick reply.

"If it's you asking her, then maybe. Or okay, most probably. But I bailed her out with her on that microcontroller project. We've worked together a few times. Who knows, she might say yes."

"Mmm." was the resilient half-reply from Seth.

Gabriel stopped walking and looked straight at Seth.

"C'mon. You have nothing to lose. Want me to ask her in class?"

Seth conceded.

"Sure."

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Seth had installed himself in one of the rear seats of the computer lab. The professor was at the front, preparing the slides on his computer. Kerstin was at her usual seat at the front, with Gabriel at the workstation to her side.

From his position at the back, Seth could see Gabriel leaning towards Kerstin. He couldn't hear what he was saying, but he could see Kerstin turning her head towards his and saying something back. Gabriel then leaned back into place.

Quickly typing into his open terminal window, Seth sent an instant message to Gabriel.

"What did she say?" he wrote.

"She can't make it. Some family affair." Gabriel wrote back.

Gabriel could then be seen typing something else in his own terminal window. Gabriel stopped, and Seth received another message.

"Sorry bud," it said.



Seth's disappointment was further compounded by the fact that he had to work that evening – something he didn't particularly look forward to doing on this day. Still, he thought, work was money. So like the other students that were employed at this university coffee joint, he donned the green apron and concentrated on feeding the caffeine addicts their overpriced lattes.

Coming home that night, Seth opened his townhouse door to see his roommate playing a game in the living room. Glancing back at Seth removing his shoes in the doorway, he asked,

“You ask her out?”

“Yes,” Seth produced, with a sigh.

“That bad eh?”

Seth smiled back at him, but said nothing.

“Want to play a bit?” his roommate asked.

“Sure.”

Seth approached the console, and the two began to play together. Within seconds, Seth's preoccupation with Kerstin had faded into the flashy colours of his television.

FIVE

Weekend Fun

The morning sun was shining in Seth's room, and for the first time in what felt like an eternity, his alarm buzzer had no need to go off. Substituting the potential shriek of the alarm, however, was the sound of a chainsaw as a man trimmed a tree in the greenery behind his home down to size.

Seth lay in bed, the pillows squashed against his ears. Various scenarios of gruesome deaths for the worker quickly filled his mind.



Seth spent the day doing the small things he had usually lacked time doing during his busy weeks. He went and did his groceries, he washed the pile of clothes hidden behind his door, and he read up some pages from his text books.

Late that afternoon, he biked over to Eric's place. The twenty-four year old lived in his parent's single-storey home, in a nearby residential neighbourhood. Seth had first met Eric through one of the local hacker meetings that took place every month, but over the years they had become good friends.

Walking through the house's unlocked side door, Seth proceeded down the nearby steps. He could hear the discussion and the laughs emanating from the basement. "Hey guys!" he announced walking down.

Gabriel, Jinks, Eric, and a few others were in the basement. Laptops were strewn on the floor. Looking up at the new arrival, Gabriel said, "Hey! We're just watching the tail end of the new Binary Phunksters episode."

Eric's basement was a true computer enthusiast's den. Old system motherboards were hung on the walls as decoration. A disheveled desk was nearby, with an open monitor and computer parts laying on its surface. By one wall was Eric's true pride and glory: a six-foot tall mainframe server. This behemoth was considered obsolete by the data center to which it was previously home, and yet, it still sported more memory and parallel processing power than any modern desktop. Eric had managed to snatch this monolith for a mere two thousand dollars.

The guys, some sprawled on the couches, some gazing at their laptops, were all facing the projection on the wall. Eric was playing hacker shows being broadcast over the Internet. Seth sat down to join them. Taking a beer from the reserve in his bag, he flicked the imported aluminum can open, and looked up to the animated wall.

In this episode of *Binary Phunksters*, its hosts, Flow and i0, were detailing a prominent security flaw with the design of certain cellphones. As a demonstration, the duo walked down the fashion district of their native Toronto. Stopping on front of a store, they were able to turn the cellphone of an unwitting client inside into a virtual eavesdropping device. With a few keystrokes of their laptop, the voice of the client was heard over the machine's speakers. The victim was speaking with a strong lisp, discussing the importance of tie colours with a clerk. Flow and i0 finished the show by recommending basic security measures to avoid falling prey to the same kind of digital

hijacking. They then signed off and a quick bout of end credits ensued.

The projector screen turned to black, and the synthesized voice of a female came on. "Next on rootTV," it said, "Hacker Jeopardy."

"I'll get another beer," said someone.

The introduction to *Hacker Jeopardy* began. The sequence showed footage of the various sights of downtown San Jose, part of the American Silicon Valley where the show was based.

The doorbell rang. Puzzled gazes appeared on the faces of the young men. Eric spoke out "Anyone invite someone else?" There was silence.

"No," said Seth. "I'll go check it out."

"I'll pause the show," replied Eric.

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Seth walked up the stairs to the side door. He opened it. It was Kerstin. She wasn't wearing the neat clothes she wore in school – this looked more casual. More artsy.

"Kerstin?"

"Hey... you!" she said in an uncomfortable voice. She went on, "Apparently there's a bit of a comp fest going on here tonight?"

"Yeah..." Seth replied meekly. "Yeah!" he affirmed, as if the stun of this surprise had subsided into ecstasy. Inviting her in with his hands, he exclaimed "Come on down!"

Descending the stairs, Seth spoke. "Gabriel told me you were invited, but I thought he said you had something tonight."

"My birthday party," she replied.

“Oh.”

Walking down the final steps, Seth looked at the curious cocked heads. “Hey guys,” he said, “this is Kerstin. She skipped her own birthday party to be here.”

“You skipped your own birthday party to hang out with strangers?” asked Eric. “Harsh. Happy birthday.”

“Yeah, happy birthday,” said Jinks.

“Thanks but it's next week,” retorted Kerstin.

Seth glanced at the people around the room. Extending his hands towards Gabriel, he said, “Okay, well this is Gabriel, who you already know.” He went on, “We also call him Riscphree.” Turning to Eric, he said, “This is Eric, who also goes by the name of colonel_panic.” Looking at Jinks, he said, “This is Jinks... Also known as Jinks – he doesn't like us calling him by his real name. Then there's Dave, aka. Hacknslash, Pat, aka. rm-rf, and Greg, aka. Nirvana.” Finally, Seth said, “I'm Seth, or ion, if you catch me online.”

“Are we ready?” asked Eric.

“I think so,” replied Seth.

Kerstin and Seth both sat down. Kerstin took her laptop out of her bag, and set it up on front of her.

“Beer?” asked Dave, presenting her with a can.

“Sure,” she replied.

Eric pressed a button on his computer, and the *Hacker Jeopardy* introduction resumed. It was a quiz show, much in the same vein as those seen on network television. The host of the game show was a man in his mid thirties with already graying hair. He presented the audience with his three contestants. Two were university computer science students, and one worked as a freelance IT security specialist.

The show began, and the first contestant was asked to pick a category from a pool displayed on a very large screen. The contestant, a thin teenager wearing glasses and a stylish blouse, had chosen the *Vulnerabilities* category.

The host provided the first question, "OpenBSD is widely considered to be one the most secure operating systems ever released. Name one of the critical vulnerabilities that have been documented on the platform in the last two years." Shouts were heard from within Eric's basement as everyone tried to answer. "There was none! It's a trick question!" "No, no, there was one... what was it?" "The fake one? Does the OpenSSH hash salting problem they had count?"

The sound of a buzzer interrupted the discussion. One of the contestants had an answer. It was the security expert. "What is the DNS Bind cache poisoning vulnerability?" he asked. Answers in the game had to be formulated as questions.

"Judges?" replied the host, looking off to his side.

Following a brief pause, the host looked back at the contestant.

"No, I'm sorry, that's not among them."

The other contestant buzzed in. It was the other student, a young Asian wearing a suit. "What is the lprm exploit?" he said.

"That is correct," announced the host.

As the student had the correct answer, he was next to choose the category of the next question. He chose *Famous Books*.

"The R in K&R is the father of the C Programming language," the host began by saying. "The two also wrote the bible on the matter, often referred to by computer science teachers and students alike as the 'white book.' What does K&R stand for?"

"Kernighan and Ritchie," voiced Eric, before taking a sip out of his beer.

A buzzer went off. "Who is Kerry and Ritchie," sputtered the Asian contestant.

"No, I'm sorry," replied the host.

"Who is Kendell and Ritchie?" said the security expert.

"That isn't it either." the host said.

There was a pause. The host finally said "The answer was Kernighan and Ritchie."

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The evening wore on. The shows were still playing on the wall in the background, but the volume had been reduced to such a point that it was no longer audible. The beer flowed freely, and the evidence of its use littered the floor. The youngsters, having lost all awareness of the noise level of their own voices, were speaking with great excitement on all subject matters. Those that weren't actively engaging in the discussions were transfixed by the glow of their laptops. Eric was going off speaking about the hidden wonders of JavaScript to Kerstin.

Dave, meanwhile, was off in his own tangent. "You know how there's six degrees of separation? Well with the active hacking/phreaking community it's like there's two degrees of separation – we all know pretty much everyone, and if we don't know them, then we know someone who does."

Pat and Seth sat by his side. Pat said, "You think so? I don't know. I don't know anyone from the Computer Chaos Club. Or anyone that knows them."

Dave quickly replied, "Okay but that's like Europe. Think of this continent though. We kinda know almost everyone - you know what I mean? I'm sure its like that in the demo scene too. Or the open source community."

"Yeah, I guess," Pat answered.

Greg came by Dave, Seth and Pat. "We're going outside for a bit of 420," Greg said, "want to join?"

"Yeah sure. Guys?" Seth replied, looking to Kerstin and Eric,

"I don't smoke marijuana, but I will go out with you guys," responded Kerstin. Eric was already putting on a jacket to go outside.

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The guys were out on the back deck of Eric's house. Muffled music was emanating from within the house. A lone porch light lit up the scene. Seth, Eric and Dave were huddled together in the cool night, smoking a joint.

The trio were passing the joint around. Dave took a deep puff, and passed the smoke to Seth. Seth breathed the air out of his lungs, and inhaled with the joint at his lips. He was already buzzed from the beer, and it was doubtful that the drug could do anything more. Yet it did. He took another puff before passing it on to his right. He coughed a bit.

Seth, beer in hand, walked off to where Gabriel and Kerstin were talking. The two were leaning over the wooden railing of the porch.

Seeing Seth arrive, Gabriel said "Kerstin was just telling me why she came to Ottawa U."

"So anyways," Kerstin continued by saying, "their IT department got all crazy and started to blame me for everything that went wrong with their network. Greater latency? They were saying I was causing it. Some server crashed? They'd blame me for it too. It was so stupid. They were telling me that they were going to expel me. They called the police."

Seth was blinking his eyes, trying to maintain his focus. Kerstin drank from her beer and went on, "My dad is a diplomat here. He got me to transfer out of the university in Berlin and worked hard so that I could start here."

"So what's with the deal of you skipping your b-day party?" asked Seth.

The three were now resting their shoulders over the railing. Kerstin looked towards Seth. "I love my dad. I hate his Canadian wife. No offense."

"Shit," responded Seth, grabbing another swig from his beer.

"So Kerstin, does that mean you can root a box then?" The voice came from from Jinks, who had just installed himself on the railing as well.

"Whoa. I didn't even see you there," said Gabriel, looking over his shoulder.

"What kind of question is that?" asked Seth.

Playfully, Kerstin replied, "What, are you saying I couldn't?"

"No, no," retracted Seth.

"Are you saying girls can't hack?" continued Kerstin, with a big smile.

"Would you like me to be saying that?" returned Seth, with an equally large grin.

"Is that a challenge?" replied Kerstin, taking another drink from her beer.

"It could be if you wanted it to be," toyed Seth.

"Fine. Name your terms," she returned. She was enjoying this.

"If I win, we go on a date."

Still smiling, Kerstin said "Two problems with that. One – it's kind of creepy. Two – I'm not a whore."

Hurt, but still donning a cheery voice, Seth replied, "Okay, name your terms there."

"If I win -"

This sentence fragment was the last thing that Seth would remember hearing that night. He slipped out of consciousness, and into the black hole of alcohol over consumption.

SIX

The Challenge

Seth awoke into consciousness. It was day, and he was sitting cross-legged on the corner of a busy street intersection. He had no idea where he was. Thankfully, he wasn't feeling any after effects from the alcohol. Glancing at his watch, Seth saw that it was just after eight o'clock.

He checked the pocket in his pants for his phone. It was there, but his bus pass was not. He searched his other pockets. Everything was there, except for his bus pass. The money in his wallet was also curiously absent.

Seth grabbed the phone. There were three missed calls. He called up Gabriel.

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Gabriel was on the carpet floor of Eric's place, in a deep snooze. The phone in his shirt pocket started to vibrate and glow through the cloth as it rang.

"He..llo?" answered Gabriel, in a tired voice.

"Gab, what happened last night?" returned Seth who was by this point fully awake.

"Spiked drinks," Gabriel retorted. "Oh, and you and Kerstin are doing a competition of sorts."

"For real?" came Seth's reply.

"Yea. What time is it?" asked Gabriel.

"8:12 AM"

“Call me later and we’ll talk about it.”

Gabriel did not wait for Seth's reply. He fumbled his fingers around his phone and shut it. Seth meanwhile looked all around him. He truly had no idea of where he was. He started walking down the main road, hoping to see some sign of something that would help him to place himself.

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Seth, Gabriel, Kerstin and Eric sat outside, around the small table of a student-run coffee shop near campus. It was a beautiful Sunday afternoon. The sky was a clear blue, and the unusually warm weather was punctuated with a refreshing breeze.

“Are you guys still in?” asked Gabriel to both Seth and Kerstin.

“Yes,” replied Kerstin.

Looking at Kerstin, Seth's reply followed, “Yeah, yeah.”

“So here's the deal,” Eric began saying. “You each will perform some kind of technically challenging social feat. The winner will get bragging rights, but as you so enthusiastically agreed to last night Seth, the loser will have to wear a dress for a day. A school day.”

“Did I really agree to this?” asked Seth.

“Yep,” was the cacophonous reply from the others.

“That's not particularly fair is it?” Seth retorted. “Her being a girl and all.”

Gabriel was the one to speak. “You chose the terms Seth, not us. You can still back out if you want.”

“No, its all right. I'll do it,” replied Seth, unconvinced.

“Awesome,” Gabriel said, “Eric and I will be the judges.”

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Seth was standing on the grass by a parking lot of the *Wülmürt Megastore*, holding his open laptop on his arm. The massive building was home to everything from everyday housewares, to groceries and electronics. Kerstin and Eric stood beside him. Gabriel was inside the store, pretending to shop. He sent a message to Seth's cellphone. "Ready," it said.

It was time to execute the plan. Seth used his laptop to connect to a local unprotected wireless router. This gave him access to the Internet from his position in the parking lot. He then launched a program that gave him access to the telephone network via the Internet, allowing him to make calls from his laptop. The calls were not free, he paid for the service using a prepaid credit card he had purchased at a convenience store. However, this meant that he was able to place calls with complete anonymity.

Seth looked up the phone number for another *Wülmürt* store on an online directory, and called it up. He was greeted with a recording, "Welcome to *Wülmürt Megastore*." There was a pause. "For cookware, please press one. For electronics, please press two. For hardware please press three."

Seth pressed the three key on his laptop. A multi-frequency tone was heard over his speakers, followed by ring tones.

"Hardware," came the reply from the other end of the line.

"Hey – I'm James with electronics?" said Seth.

"Yeah, whats up James," replied the voice.

"Well uh – you see I gotta make an announcement over the intercom about a sale. Manager's not here though – do you know what it is we have to press to get on the PA?"

"Star four seven," answered the voice.

"Thanks."

With that, Seth hung up. He then looked up the number for the store on front of him. He called it up on his laptop. Upon hearing the recording, he pressed the star four seven keys. There was a click. He was now on the air.

Seth began to speak into the microphone built into his computer. With a particularly artificial cheery voice, he said “To all shoppers in store at this time, listen up! We have Mango portable media players to give away to the first four customers that reach Isle 5! These players are valued at over \$400, so get down there now! No strings attached!”

Meanwhile, Gabriel was in isle five. It was in the grocery part of the store, and he was glancing at the dairy products that line the refrigerated racks. Seth's announcement had just been aired on the intercom. Gabriel stood up, and looked at either end of the desolate isle.

The faint ruckus of clanking shopping carts could be heard. It was getting louder. Much, much louder.

Back outside the store, Seth received a second message from Gabriel on his cellular phone. “Success!” Kerstin smirked.

“A nice prank, but overdone,” she said.



Seth was running down a sidewalk in the concrete jungle of car shops and laundromats. It was Kerstin's turn, and he didn't want to miss it. She had told him and the others to meet that evening at a small pizzeria in the west part of town. By this point, he was almost there. He could see the sign of the pizza place glowing in the distance.

Seth almost stumbled as he entered the restaurant. It was a small joint, with a single long table manned with bar seats facing the large windows. Facing opposite was the serving counter, with a single cash register. The place didn't look particularly clean, or popular.

Seth found Kerstin waiting inside with both Gabriel and Eric. She was wearing an orange-coloured reflective jacket, akin to that worn by construction workers.

"Sorry guys," Seth said, still hyperventilating. "I took the wrong bus."

"It's okay," Kerstin replied. "We just got here five minutes ago. Here, take this."

Kerstin pulled a blank clipboard out of her bag, and passed it to Seth. He stared at it.

"You'll see," she said, as if to appease his curiosity. Looking at the other two, she proclaimed, "Okay, well, let's go."

They walked out the front door and onto the sidewalk of the adjacent roadway. The road was a major artery of the city, feeding the east-west line. It was also usually very busy, although on this Sunday evening it was all but dead. The group walked down the sidewalk for a bit, chatting, before Kerstin went towards the road and stopped.

She was standing by a large mobile electronic construction sign, the type that informs oncoming traffic of temporary lane closures and construction work. She looked around.

"We're too many," she said. Pointing to Gabriel and Eric, she said, "Can you guys go over there by the post? I'll work here with Seth."

"Yeah no probs," Eric returned.

The two walked off, leaving Kerstin and Seth together. He now understood the purpose of the clipboard and reflective jacket - they were both a ruse to fake a sense of legitimacy. He smiled at this realization. He looked towards her, as she prepared her gear. She truly was the most incredible girl he'd ever met, he thought.

Kerstin unfolded a small leather satchel. Within it was a collection of neatly organized thin metal instruments. Seth recognized them as the standard tools in a beginner's lock picking kit. Pulling out two small metal tools, she started to attack the padlock that kept the large orange control box underneath the electronic display shut.

"I'm having trouble with the lock," said Kerstin, after minutes of unsuccessful fidgeting. Seth looked around, and could see both Eric and Gabriel off talking in the distance.

"No problem," he said, turning back to Kerstin. He moved towards her, and grabbed the tensor from her left hand. The tensor was a thin L-shaped piece of metal that was crucial in the process of lock picking. She then passed him the other small metal tool that she had been handling. This one was a little thinner than the tensor, and had a thin curved tip. Using the two in concert, he was able to produce within thirty seconds the definitive click of an unlocked padlock.

"Thanks," she told him.

"Don't worry. As far as I'm concerned, you opened that," Seth replied.

Kerstin grabbed the manual from inside the control box. After reading for a few seconds, she grabbed the antiquated keyboard that was stored to its side and plugged it in. She started to type.

From a distance, Eric and Gabriel saw the sign change from *'Highway closed August 15-17'* to *'Live Nudes, Exit 122'* Seth let out a chuckle.

Seth and Kerstin both walked back to Eric and Gabriel.

"Not bad, not bad," said Gabriel.

"I like it," said Eric.

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The next day, the four pranksters collected between classes on a bench by the university library. Seth was on his laptop, holding the one side of some headphones to his ear. He pressed a few keystrokes.

"Okay," he said, "it's almost ready."

He unplugged the headphones from the machine, and stared at the motionless screen. All they could see was that Seth was again using his laptop as a telephone.

"What is it we're waiting for?" asked Gabriel.

"You'll see," was the cool reply.

The group stared at the screen. Suddenly, a double beep was heard from the computer speakers. Seth placed a single finger to his lips, motioning the others to keep quiet. Speaking in a style akin to that heard on a recording, he began to talk.

"Hi and welcome to Radeon theaters. For movie listings, please press one. For -"

A single tone from the other end of the line interrupted Seth.

"I'm sorry, but the tone did not register. Please press harder," he replied. After a brief pause, the same short multifrequency tone was renewed from the other end. "No, press *harder*," emphasized Seth.

The tone was heard again, but this time it lasted a few seconds. Seth raised his voice.

"PRESS HARDER DAMNIT!"

The caller replied with a six second long beep. Seth resumed his calm demeanor. "Thank you. Unfortunately, all our recordings are busy at the moment playing the theater times to other customers. Please hang up and call back later."

A double beep followed. The caller had hung up. Looking back at the others, Seth explained. "I took over the phone system for the Radeon theater out in the east end."

"How?" asked Eric.

"I just called up the telephone company and pretended to be the manager. It was easy. I ordered call forwarding on their line and got them to reroute all the calls they would normally get to this friendly conference number," replied Seth.

Another double beep emanated from the laptop's speakers. Someone else had called the theater. The others grinned in anticipation.

Instead, of repeating the seemingly pre-recorded introduction, Seth spoke naturally.

"Hello, Radeon Theaters."

There was no reply. Seth spoke again.

"Hello?" he said.

"Oh hi there. I was expecting a recording," came the middle-aged female voice on the other end.

"Yeah, the system is down for today. Is there anything we can help you with?"

"Well, I just wanted the times for your movies today?" replied the lady.

“Sure thing. We have *Bush Hour*, playing at 4:45, 6:30, and 8:15. Then there's *Free My Willy*, playing at 5:15, 7:10, and 9:20. There's also *Saving Ryan's Privates*, playing at 5:00, 6:45, and 8:30. *Good Will Hunting* is on as well.”

“Got anything with kids?”

“Do we ever!” interjected Eric.

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It wouldn't be until two weeks later that Seth and the others would convene once more to witness Kerstin's much anticipated grand finale. They were told to meet outside of the *Nekôtel* building downtown, an average fourteen story tall office tower that nary stood out in the high-rise laden surroundings.

Seth waited by the night sky with Gabriel. Eric walked up.

“Hey guys! Seen Kerstin?” Eric asked.

“Nope,” replied Seth.

They waited. Seth exhaled slowly against his hand to see if he could produce any condensation. Finally, Kerstin came out with a business-like strut from the building's front entrance, brandishing the clipboard.

“Hey you! So where's this big finale?” jested Seth.

“Oh, you'll see,” she returned, smiling. “Follow me.”

The men followed her to the other side of the building. They crossed the street, and stopped facing the back of the office tower.

“Look up,” she said.

The group looked up. Eric was the first to speak out.

“Oh my god.”

“That's frickin' epic,” said Gabriel.

Kerstin had transformed the outside of the building into a large digital billboard. The office lights had been turned on and off to produce the shape of a giant heart. The group stared on, in awe.

Seth looked back down at the prodigious girl.

“How did you...”

Kerstin did not immediately reply, but instead smiled back at Seth in a manner he had never really seen her do. The bright office lights shone off of her cheek.

“It took a week to get to this point,” she said, looking back up.

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The next day, the group met on the roof of one of the city's many downtown buildings. They were on a well groomed public terrace located at the top of a large unassuming shopping center.

From his vantage point, Seth could see down to the tattoo parlors and smoke shops that populated the bottom. He turned back to face Kerstin, Eric, and Gabriel. Dave and Pat had also decided to join along for the event.

Eric was by his open laptop. He clicked a few buttons, and the machine started to produce the steady sound of a drum roll. Eric held up his hand as if it held the name of the winners.

“And the winner is...” he began.

The pause in his speech was sustained by the persevering sound of the drums. The percussions concluded with a loud reverberating clash of the cymbals. Eric took a deep breath.

“Neither of you. Or both of you if you want to think it like that. Its a tie.”

Kerstin was the first to speak out, “Oh come on, you guys suck!”

“Now, now,” Eric replied, “you guys were both good. Kerstin with the Nekōtel stunt and Seth with the accumulating of 2,530 university login credentials and counting.”

“So you're just going to leave us hanging?” asked Seth.

“Do you *want* to wear a skirt?” retorted Eric.

“Fair enough – I'm convinced. Do you guys want to go get hammered?” replied Seth. The faces nodded in approval.

“Sounds good to me,” said Gabriel.

The group packed up their bags and walked back inside the building.

SEVEN

Rice Tea

It was a beautiful afternoon, and Seth was in the backyard of his townhouse, enjoying a beer as he poured over his school notes. His laptop was open on the table to his side.

His focus on the ink-laden papers was interrupted by the squeaking of the house's opening screen door. Seth's roommate walked out, hamburger patties in hand.

"I'm going to cook some burgers. Want anything on the barbecue?"

"Yeah sure. I'm going to go get some of my dogs."

Seth put his beer and notebook down and disappeared in the house. He came back out with two large wieners held in a paper towel. He lay them to the side of the soot-stained barbecue.

"So how's university going for you now?" asked Seth.

"Same as usual. Raping me up the ass," replied the roommate.

Seth grabbed his beer and took down a gulp. "Heh – same here," he said. "Seen your exam schedule yet?"

"No, didn't even know it was out," said the roommate, as he lay his hand over top of the barbecue's burner to ensure that it was indeed on.

"Yeah, they put it out two days ago," informed Seth.

The sound of three harmonious bells emanated from Seth's laptop. Seth had setup his instant messaging program to produce such a soft audible alert whenever Kerstin logged on to the communication network. He walked towards the laptop.

"Just a sec," he told his roommate.



Kerstin rested back in her room's computer chair, scrutinizing the ceiling's imperfections as her leg rocked her seat from side to side. Her eyes made no contact with the blank word processor document that adorned her monitor.

Her computer produced a chime, and a new window opened on her monitor. It was Seth. He had sent her an instant message.

"Hey K," he wrote.

Kerstin looked back at the monitor, and typed in a message back.

"Hey"

"Are you a big fan of rice tea?"

"Rice tea?" she returned.

"We're all meeting at the *Tea Foundry* tomorrow for a bit of wireless mischief. You in?"

"Sure."

Seth smiled and looked back at his roommate.

"Looks like I'm seeing her again tomorrow!"



It was a cloudy day, and the threat of rain loomed above as Seth navigated down the city's large open market. Produce sellers and ethnic food stalls lined the streets. Finally, he reached the small joint that was the *Tea Foundry*. It was one of many such outlets in the large barn-like complex that was at the heart of the market.

Kerstin and Gabriel were waiting inside, enjoying some of the *Foundry's* imported specialties. Seth spotted them and walked towards them.

"Hey guys! Been waiting long?" he asked as he sat down.

"No, no. We just got here. Eric can't make it today, he had to cover for someone at work," Gabriel replied.

"That's too bad," Seth returned. Looking at Kerstin, he said, "So did Gabriel tell you what we were doing today?"

"Not yet, no," she replied.

Seth took out the laptop from his bag and opened its cover. He pressed the power button, and returned his attention to Kerstin.

"Okay, well here's the deal. We're right now in lunch-time central. This is where all the government people take their breaks, chat it up with buddies, whatever. There's also more laptops here per square kilometer than anywhere else in the city. As such, wireless Internet here is a must. Now guess how many wireless access points are within range."

Kerstin shrugged. With a big grin, Seth raised two fingers.

"Two?" she stated.

"Two," Seth confirmed.

"Actually, there's about twenty access points within range here. But they're all either encrypted or require you to pay something ridiculous," Gabriel clarified.

Seth continued. "So all these people that are out here during their lunch hour can only connect to these two routers if they want free Internet access. What we then do is that we connect to one of these, and perform a little ARP cache poisoning. You know what that is?"

"It's for man in the middle attacks on networks," Kerstin said.

"Have you done this before?" asked Gabriel.

"I tried it once on a Windows box, but couldn't get it to work," she answered.

"You'll see its easy," Gabriel said. "What we do is that we use that attack vector to essentially reroute all of the traffic here through our laptops. And that's where we have a bit of fun."

Seth picked up for Gabriel. "Because these people have their traffic rerouted through us, we can intercept and manipulate their data packets. Mess with their Internet connection a bit."

Seth looked at his laptop. "So I have a guy here for instance." He swiveled the computer on the table so that it faced her. Raw data from someone's connection to the router was being displayed on his screen. Seth continued to speak. "As you can see, he's surfing right now on an online store. Nothing too special, but if we wanted, we could do anything from replace the pictures on the websites he visits, to spoof SSL certificates and nab his credit card info."

"But we don't touch credit cards, or anything like that," clarified Gabriel.

"Speaking of which, I think I have a real contender here," said Gabriel, as he looked at his own laptop screen. "This guy is surfing the profiles of fourteen year old girls on a photo album website."

"Oh-ho. Sleazy. I like it," replied Seth, grinning.

"I have the perfect idea for this one." Gabriel typed adamantly at his keyboard. "I'm going to write a little filter so that the next time he visits a page, it gives him a little surprise."

Kerstin turned to Seth. "You guys are unbelievable."

"I know," replied Seth. "Isn't it great?"

"Awful. Absolutely awful. Which packages are you using to do this?" Kerstin asked, smiling. Seth moved towards her and her idle notebook computer.

"Here, I'll show you," he said.

The sound of a woman in mid orgasmic groan erupted from the patio of the Indian food restaurant to their side. Seth looked out, and saw a man quickly clasp his laptop shut. It ceased the loud embarrassing sound. Gabriel was laughing.

“Your doing I presume?” Seth asked.

“I just couldn't resist. The guy was looking up pics of fifteen year olds. I mean c'mon!”

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The trio worked at their laptops for the next hour. Seth helped Kerstin get set up, and within minutes she too was manipulating the network connections. Gabriel meanwhile was enjoying tormenting a man who was chatting with his girlfriend. Reading the man's emails revealed that he had in fact many, many, other girlfriends that this current love interest didn't know about. Gabriel couldn't help but smile as he replaced the words in the adulterer's instant messages with his own. No matter what the confused man wrote, Gabriel would only replace it with snippets of the emails that the man had sent to his other victims. Pure carnage unfolded on his screen.

“Oh this is neat,” Kerstin said, looking at her laptop. “Someone is accessing a computer via SSH.”

SSH was short for *Secure Shell*, an encrypted means of communication that allowed for users to log into computers remotely. With it, a system administrator could directly access a faltering work server from home, and attempt to fix it. Seth often used it to check up on his own home server from school.

“Let's see what's in it,” Seth said.

“But it's encrypted,” she replied.

“Yeah, that's true. But there's a way to intercept the encryption keys. Sending our own public keys instead of the server's to the client or something,” responded Seth.

“Let's do it,” Kerstin said.

Seth smiled. "I like your thinking. I got some guys I can ask around for some help."

"Alright," Kerstin responded, "I'll see if I can find anything online."

While Kerstin and Seth worked on finding out how to usurp the integrity of the secure communication, Gabriel had moved on to a new victim. This new target was surfing websites that spouted hate messages against the gay community. Gabriel proceeded to rectify the situation by replacing all the images on the websites that the homophobic man visited with pictures of the most perverted gay porn he could find. Right before the bigot so abruptly disconnected from the network, Gabriel could of sworn he heard a yelp from outside.

Kerstin sat back, stretching her arms.

"I found how to do it," she said, in the middle of a yawn.

"Great," replied Seth. He moved his seat to her side.

"I'm about to do it now. I'm sending the guy a bunch of reset packets so that he's forced to do the exchange of encryption keys."

Kerstin typed a few keystrokes on her computer, and stopped. She just stared at the screen, along side Seth.

"His connection was reset," she said. "Now we wait. He might not reinitialize the session. If he doesn't, we won't be able to get anything."

Kerstin had three terminal windows open on her screen, each monitoring a different aspect of her attack. The screen stood idle. The duo looked on intently to the motionless monitor. Then suddenly, one of the terminal windows started to update with a flurry of activity. The other windows followed.

"He went for it!" she exclaimed. "I'm dumping the output into a file."

They had managed to usurp the encryption. Yet, as the moments passed, something seemed to be amiss.

"He doesn't appear to be doing anything with the connection," said Kerstin.

"This is surprisingly boring," noted Seth, his face leaning on his palm as he looked at the static image of the monitor.

"Yes it is. How about we just leave the capture running and move on," she proposed.

"Sounds good," replied Seth, getting up to shake his blood-deprived legs.

The pranksters spent a few more hours at the *Tea Foundry*. While Gabriel continued to pick on the bigoted, Seth and Kerstin shifted to work on a programming assignment for school. Finally, with the sun beginning to set down, the three decided to call it a night.



It was the evening, and Seth was back in his room, reading a book on Geospatial Information Systems for a course he was taking in university. The cellphone on the table on his bedside began to vibrate and ring.

Seth leaned over and grabbed it. Gabriel was calling.

"Yo Gab, what's up?"

"VNC into my box."

VNC stood for *Virtual Network Computing*, and it allowed Gabriel to send the contents of his monitor in compressed form directly to Seth. For Seth, he could now see what Gabriel was doing at his computer as if he were at his side.

"Now dude? I've got a hundred pages to read for class tomorrow."

"Remember that SSH traffic you intercepted today with Kerstin?" Gabriel asked.

"Yeah?" replied Seth.

"Well she sent it to me because she wasn't gonna get a chance to look at it tonight. Anyways, I went through it. Right after you guys stopped paying attention to it things got a whole lot interesting."

"Okay, hold on, I'm gonna log in."

Seth moved to his computer nearby. It was already on. He started a program, and within seconds was logged into Gabriel's machine. The contents of Gabriel's monitor filled his own screen.

"Okay I'm in," Seth said.

"Yeah, I can see that," responded Gabriel. "Okay, look at this. What does this look like to you?"

Gabriel had opened the contents of the SSH session that had been captured earlier that day. It was pages and pages of text, much of it garbled, but Gabriel had one particular part highlighted.

"IRC conver- ... no... commands to a botnet?" wondered Seth.

"I did a bit of research online. These commands follow the syntax of the Météo botnet. He also sent these computers some kind of executable. One of the commands made them download it from some compromised corporate server. I grabbed it and sent it off to Eric. He's good with that stuff."

Botnets were the modern scourge of the Internet. Computers from all over the world were being infected with viruses and worms so that they could be made into mindless *bots* at the control of a malicious central authority. The machines were then used as instruments to send spam, attack legitimate websites,

and partake in other nefarious activities. The more *bots* were in a botnet, the more powerful it became.

“Shit on me. How many clients are in this one?” asked Seth.

“I counted seventy-five infected machines,” replied Gabriel.

“So it's a small botnet.”

“That's where it gets even more interesting. Check the name of the bots. I'm highlighting them for you now,” said Gabriel.

“test001, test002... what the? This is a test setup or something?” wondered Seth.

“Yeah, I bet you anything that the guy has a larger botnet somewhere and that this is to test the executable. I think it's an update file,” Gabriel mused.

“We should do a write up on it. A basic overview of what happened. Put it on the *Digital Losers* website.”

“Solid idea,” Gabriel said. “Let's meet tomorrow and see what else we can dig up about this.”

“For sure. Isn't this insane?”

“No kidding. I'll call Eric up for tomorrow. You'll see Kerstin in class, right?”

“Yeah I will. I'll talk to her there. Good night,” Seth replied.

“Night,” concluded Gabriel.

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Seth lay in bed. It was past two in the morning, and only the glow from his laptop screen remained to illuminate the room. Seth looked on to the computer at his side, and at the article he had just written for their website. He had titled it '*The Botnet Chronicles*'. With a look of satisfaction, he clasped the device shut.

EIGHT

Return of the Black Hat

While Seth slept with his laptop at his side, the cogs of the Internet spun. Not too long after the article was posted, it was discovered by one of the many technical-minded individuals that frequented the *Digital Losers* website. Believing that the content would appeal to others, the web surfer submitted the article to the *Dotslash* technology news outlet.

These news websites depended entirely on the contribution of users for their content, and articles on the elusive botnets always made a good read. Within an hour, the article was accepted and made the front page of the site. Within another sixty minutes, more sites picked up on the story.

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In the basement of his home, the black hat hacker sat staring at his monitor. A pool of empty aluminum cans surrounded his keyboard. A clock on the bottom of his screen indicated that it was just shy of 5AM.

Tired of discussing conspiracy theories with scriptkiddies, he closed his chatting application. He let out a deep breath, and opened another can of cola. The familiar sound of its escaping pressurized contents filled the room. With the can in one hand and the computer mouse in the other, the bored hacker launched his web browser. He navigated to a computer hardware review site.

Stories on the latest processors and video cards consumed this hacker's screen. However, it was the word 'Météo' on the side of the window that grabbed his immediate attention. It was an automated news feed circulating the top stories of the hour. He clicked on the feed's link. The contents of the following page nearly made him spit out the carbonated contents of his mouth.

The article was about the botnet he had been working on that very day. This group, the *Digital Losers* as they called themselves, had somehow managed to intercept the interaction between him and his remote computer. How this was done was not clear, but the *Digital Losers* were promising more details the following day.

Panicking and unsure of this had even happened, the black hat immediately extracted his laptop from his briefcase and scanned it for any suspicious activity. He wanted to make sure that his machine had not somehow been infected. Perhaps, he thought, these guys had sneaked keylogger or other malicious program on his portable computer.

Finally, after half-an-hour of tearing through his machine, the hacker sat back in his chair. He had determined that his computer was not compromised. Still, he thought, he had a big problem on his hands. He had been discovered. This was not good.

The hacker looked back up at the monitor on his desk. There stood the article that Seth had written. Bringing up a terminal window, he ran the WHOIS command against the *Digital Losers* website. The WHOIS command looked up the various databases on the Internet to display contact information about a particular website's owner.

However, the WHOIS data for the *Digital Losers* site was useless. They had hired the services of a company to act as an information middle man, with their own contact information substituted for that of the company's. It was a popular strategy amongst website owners to minimize the risk of spammers obtaining their valid contact information.

Unphased, the hacker then looked up past WHOIS records for the website. Though the contact information was now hidden, he thought, perhaps it wasn't always so. His persistence paid off. Within seconds, he was presented with Seth's full name, address, and phone number.

"You're going down," he muttered to himself.

NINE

Chaos

Seth lay sprawled in bed. His snores echoed throughout the room. The phone on his bedside began to vibrate, each burst moving it closer to the table's edge. Finally, the bursts stopped.

A few moments later, Seth's desktop computer turned itself on. A voice chatting program started on its own. Within a few short seconds, Gabriel's voice emanated through the speakers of Seth's computer, "Seth SETH Seth SEEEETH WAKE UP."

Seth's groggy voice responded from behind the protection of a pillow. He did little to hide his annoyance.

"Whaaaaat..."

"You have to see this," said Gabriel.

"Later dude."

"No, this is serious. Get up now."

"Fuck. Fine," said Seth, getting up from bed.

Walking over to his computer, he saw that Gabriel had already opened a bunch of websites for him. His squinted eyes turned wide open.

"What.... the... fuck," said Seth.

Seth was looking at a *DotSlash* article, with the headline '*Digital Losers behind Météo botnet?*' He quickly read the opening paragraph.

Claiming to have intercepted an update yesterday, it appears that audiences were duped by the Digital Losers hacker gang in following the wrong lead. As evidence

shows, this was a ruse in pointing the audiences away from the true authors of the nefarious worm – themselves.

“I didn't write this. What the hell,” retorted Seth.

“Did you read the user comments on the article?” Gabriel replied. “They generally think that it's actually us. I checked it out. There are fake forum posts Seth, with our handles on them. There are IRC logs of conversations we apparently had. All of it points to us. They're saying that we were the ones to control the botnet and release the update.”

“What the fuck! We were the ones to tell people about this,” shouted Seth.

“I know,” responded a calm Gabriel.

Seth glanced at one of the other articles that Gabriel had put on his computer.

“Ah shit,” he said. “There's even IP addresses pointing to us?”

“Pointing towards Ottawa. They assume its us.”

Seth continued frantically to read through the articles.

“It gets worse,” continued Gabriel.

“What?”

“A new update was released overnight on the botnet.”

“The one we intercepted?” asked Seth.

“That's what's fucked up,” Gabriel said. “Someone disassembled it and found more evidence pointing to us too.”

“We're being pinned for this botnet?” responded Seth.

“Yes. Yes, we are. I talked to Eric. From what he saw, the version of the update we intercepted doesn't have all that stuff that incriminates us,” replied Gabriel.

“These articles are implicating Kerstin too,” said Seth as he got his bag ready. “We have to tell her.”

Seth walked through the side door of Eric's house. Gabriel was there to greet him inside.

"It's worse now," he said to Seth. "I thought they were blaming us for a small Météo-based botnet. Pinning us as copycats controlling a few hundred machines. I mean that's what I thought we had found right? Being involved with a small botnet like that is still serious shit, but that I can deal with."

"What did you find out Gabriel," said Seth.

Gabriel was having trouble keeping his composure. His voice was trembling.

"What did you find out," said Seth again, who started to share Gabriel's sense of panic.

"They're pinning us for *the* botnet. The main botnet – the one with three million bots."

"You're fucking with me," responded Seth.

"No man," said Gabriel, "I'm not. Not about this. Not about this."

"What was the evidence in the update pointing to us?"

Eric walked up the stairs, to the entrance where Seth and Gabriel had been standing.

"There's an MD5 hash in a string in the code," Eric said in answer. "Someone passed it by a rainbow table and got '*digi_l0serz*' out of it. As in the Digital Losers. You guys."

"Wait – let me get this straight," replied Seth. "You're telling me that somewhere in that botnet code, there's our names written in there?"

"Yes," said Eric.

"How would they even get that string of text from the MD5 hash in the first place? I don't know of any public rainbow tables databases that could accommodate that many characters. And no one could generate it on their own, it would take forever. Not

overnight like that.”

“That’s what we thought too,” answered Gabriel. “Whoever supposedly decoded that MD5 hash is in on it too. Just like whoever sent that update. Or maybe they’re the same person. I don’t know, and at this point, I don’t fucking care. Whoever it is, they’re framing us.”

“The MD5 string,” asked Seth, “what is it for?”

“I don’t know,” replied Eric. “I didn’t analyze that version of the update.”

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The trio sat in the couches of Eric’s basement. Seth spoke.

“So we’re being framed for creating the single biggest network of infected computers in modern history. Don’t these machines send like twenty billion spam emails a day?”

“Yeah. I checked it up. It’s behind of a fifth of all the spam out there,” said Eric.

“This is bullshit,” Seth replied, shaking his head.

Gabriel turned to them from Eric’s computer. “Guys, I can’t even access our site anymore.”

Seth’s pocket vibrated. He picked the phone. There were nine missed calls. His phone showed the phone number of the incoming caller to be 000-000-0000. He answered.

“Hello?”

A low voice replied. “Fucking spammer I’m going to find out where you live and kill you. Oh wait - I already know where you live.”

Seth clasped his phone shut, his face was pale.

“Who was that?” asked Gabriel.

“A death threat,” he replied meekly.

“Are you fucking kidding me?” Gabriel retorted.

Eric stood silent, helpless, looking at the pair.

“What if this doesn't stop?” asked Seth. “What if one of these guys actually goes after me?”

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Inside a building past its architectural prime, walked a bespectacled man. Corporal Graham DuHamel was in his early thirties, with unkempt hair that defied the neatness of his general attire. He stopped on front of one of the doors in the institutional halls, and took out his keys. He swiped a thick plastic card by a black device attached to the wall at the door's side. The action reciprocated a beep, and the man walked through the door.

The room that Graham entered was compact, lined with five strategically placed oversized cubicles that sported top of the line computers. He was in the High-Tech Crime Unit of the RCMP, the Royal Canadian Mounted Police, based in London, Ontario. He made his way to the cubicle at the back, where a man sat preoccupied by the contents of the screen before him.

“Hey Kevin, did you see this?” Graham asked him.

“Hold on a sec,” replied Kevin. After a few more seconds of observing his screen, he looked up to the man and said, “Okay, what?”

Graham held up a sheet printed out from his computer. It was one of the online news article about the Météo botnet. “Apparently the people behind the worm screwed up and gave away their identities,” he said.

“Good stuff,” Kevin responded, returning his attention to the monitor on his desk. News of this nature wasn't anything noteworthy. The identities of the unsavoury types that filled the annals of the Internet were regularly being uncovered. Identifying them wasn't the issue. The problem, rather, was bringing these people to justice, especially when they resided in countries not friendly to Western authorities. Though inroads

had been made in the last few years, prosecutions remained a rarity. That's why Graham knew that what he was then about to say would make all the difference.

"They're Canadian," Graham said. Kevin's eyes immediately locked themselves on his.

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Eric was going on a tirade. "Don't you see? Every time the RCMP or FBI want to bust these fuckers, they always hit a brick wall. The evidence ends up pointing to some server in the Ukraine, the hosting company refuses to give them any logs or IPs, and they're stuck. Now here you are – Canadians. And the evidence is presented to them on a silver platter. The RCMP is going to be all over you."

"So we come clean," Seth suggested. "Tell the RCMP everything."

"Are you shitting me?" replied Eric. "They don't care if you did it or not. If it suits them to think that you did it, they will fuck you up until the only real option is for you to plead guilty. That's what they did to me, and that's what they did to Nate. You know that."

"What makes you think they'll come?" asked Seth.

"What makes you think they won't?" was Eric's instantaneous reply.

"Because," Seth said, "the only thing pointing to us right now are some forum posts and some code. It's bullshit!"

"It doesn't matter. The whole intertubes thinks you're guilty. Plus look at what you write about on your site - stories of computers you dicked around with, phone systems you jacked. What do you think they'll see that as?"

"Fuck what they think," retorted Seth.

Eric was livid. "Fuck that? Fuck *that*? Fuck the RCMP?"

Gabriel had quietly watched the exchange between the two. He spoke out.

“Who guys... just...”

He didn't know what to say. He was himself in deep personal turmoil.

“...just stop it alright? Kerstin's going to be here any second, we better figure out what we're going to tell her.”

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At the RCMP offices, things were moving forward. Kevin and Graham were sitting together in an office. Opposite to them was their Master Sergeant, an imposing figure and twenty year veteran investigator for the force.

“I got a call from media relations,” the Master Sergeant said. “A reporter from the *Globe* phoned them this morning. They're wanting news about these Canadian hackers. Media gave them a generic response, but we have to figure out what we're going to do here.”

Graham spoke. “It looks pretty clear cut. We'll just get a search warrant, clone their drives, and get the evidence we need. We're in, we're out, it's done.”

“I did a quick search on these guys,” Kevin said. “They did a video presentation at a hacker conference on how *not* to get caught. As in how not to get caught breaking into computers. I don't think we'll have any problems getting that warrant passed legal.”

“Good,” said the Master Sergeant. “Keep up the pace. The last thing we need is for them to be tipped off and have those hard drives end up in the river.”

“Understood sir,” Graham replied.

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A car screeched into the entrance of Eric's driveway. Jules, Seth and Eric stood outside the doorway, and looked on as Kerstin got out slamming shut her vehicle door. She did not wait to be at their side to shout.

"Why did you have to mention me on your site. Why?!"

"I'm sorry! We didn't know this would happen." Seth replied. After looking at her for a brief second, he said "I didn't know."

"You fucking asshole!" she screamed.

"I'm sorry! What more do you want me to say? I'm not bullshitting you here – I'm really sorry."

"Well fuck you," she retorted.

Eric interjected. "Look guys the RCMP won't sit on their asses."

"I still think they won't come. I think we're taking this a little too far. Don't you think that that's being a little paranoid?"

Gabriel spoke up. "An hour ago you got a death threat and you think we'll be okay?"

"Because of some idiot with Internet access. So what? I bet you anything the police don't know jack shit about this. I say we go home, sleep on it, and within a few days this will all be a distant memory."

Eric looked up to Seth. "Fine, but I don't want you here."

Seth looked at Eric in the eyes, unsure of what to make of that statement. The uncomfortable pause was interrupted by Seth's vibrating cellphones. He took it out of his pocket and looked at its screen. It was his roommate. He put it to his ear.

"There's a car with tinted windows across the street. It's been taking a bunch of photos of our place for minutes. Dude, did you do something? Seth? Hello?"

Seth pressed the button to end the call. Meekly, he said, "They're by my house taking photos."

"It's so they can get a description of the place for the warrant. Dude they're going to bust you. It might be tomorrow, it might

be next week, but they're going to bust you."

"They really *are* after us," Seth replied, speaking slowly. His face had turned pale.

"Turn off your cell," Eric told him. "They'll be able to triangulate you. You guys need to go, now. They'll come here next."

"I should SSH into my box now." Seth responded, his voice barely audible. "Delete everything. Send a command to write over the sectors over and over till there's no real data in the hard drive."

"Then they'll assume you're covering your tracks," Eric replied, in a commanding tone. "Just leave it there. Let them find out for themselves you're not part of this. But you guys need to be on the move. *Now*."

"You guys can come in my car for now. Let's leave," Kerstin said.

"I'll just get my bag," said Seth, meekly.

He walked in the house and down in the basement where his bag was waiting. Gabriel followed suit behind him.

"You.. you alright man?" Gabriel asked him.

"Yeah... I'm fine...." Seth replied, his words barely audible. He didn't really mean what he was saying, but the words left his tongue before he could give them any thought.

The two heard muffled sound of Kerstin's engine starting. Seth put his laptop in his backpack, and the two walked back up and left the house. Eric stood outside.

"Guys... You probably shouldn't contact me," he said.

"Yeah Eric, sure," replied Gabriel.

"Good luck," Eric finished by saying.

Seth and Gabriel got in the car. Kerstin was waiting in the driver's seat.

"Where are we going?" she asked.

"I don't know," replied Seth, his voice still soft and shaking.
"Anywhere I guess."

"I know a spot we can go," said Gabriel.

"Good enough," Kerstin responded. She backed out and drove off.

T E N

The Plan

Kerstin was driving the car out of Eric's neighbourhood.

"So what do we do?" she asked.

"I don't know. Seth?" Gabriel replied. There was no reply. He turned to face him. "Seth?" he asked again.

Seth had his eyes wide open. He had become very pale again.

"They're going to put us in jail. They're going to put us in jail. They're going to put us in jail."

Seth was hyperventilating. His breaths were deep and getting more frequent. "Stop the car," he mustered.

"We're still too close to Eric's place!" Kerstin shouted back.

"Stop it now," Seth said again, in between breaths.

"I think I'd do it if I were you," Gabriel indicated.

The car stopped. Seth got out, and was making gagging motions with his mouth. Finally, it all came out. Gabriel stood by his side, rubbing his back. Seth felt emptied, as if he were a shell of a body. Warm tears flowed down his face.

"I'm... I'm better," he said. "It's over."

"We should keep moving," Gabriel quietly informed him.

Seth nodded, and the two reentered the car.

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Kerstin's car pulled under one of the city's numerous interprovincial bridges. The three were about a five minute drive from Eric's, but the suburban landscape had already given way to a peaceful natural environment. Even the constant hum of the

vehicles traveling on the bridge overhead seemed to blend in with the birds chirping and the rustling of the water. As he got out of the car, Gabriel asked Seth,

“You feeling better Seth?”

“Yeah, much. Thanks. Kerstin?”

Kerstin ignored them. She sat down on the grass nearby. They were alone, this spot only used by locals later in the season to launch boats. Seth and Gabriel sat at her side. They looked on, to the slow moving river ahead.

“We need to think about what we should do,” said Gabriel.

“Well we could turn ourselves in,” suggested Seth. “But I don't trust the RCMP to believe us.”

“Neither do I, but we can't run away,” replied Gabriel.

Silence overtook as the trio kept looking on to the river. Kerstin spoke out

“It's not running away if we're gone for a legit reason – like a camping trip.”

“They won't fall for that,” said Gabriel. “Even if they did, and we were gone for three days, we'd still be on square one at the end.”

“Not if we prove *for* them that we're not behind this botnet,” replied Seth.

“But there's so much there planted to make it seem like it's us,” said Kerstin. “Forums posts, the update logs...”

“Exactly. Remember that entry on the *AntiOffline* discussion board?” asked Seth.

“No,” she answered.

“Kay. Well, someone wrote on the boards there pretending to be us. An admin there said that the IP of the person came from here in Ottawa. They were using that as proof that it was us.”

“So you think its that the guy we intercepted that's doing all of this?” postulated Gabriel.

“Who else?” came Seth's reply. “We intercepted this guy in Ottawa, whose somehow related to the botnet. Next thing we know, someone from Ottawa is trying to frame us for the same botnet.”

“Or the guys behind the real botnet might just have read the article you wrote and use that opportunity to blame us. Proxies aren't hard to come by.” returned Gabriel.

“Do you know if there's wireless Internet here?” asked Seth.

“Yeah.”

“Well I know of one thing we could try.”

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Gabriel and Kerstin were on either side of Seth as he typed away at his laptop keyboard.

“Okay,” said Seth, “so here we have the botnet update that we intercepted yesterday. And here's the new update that circulated on the real Météo botnet last night, courtesy of your local honeypot project. Now if I compare the two...”

Seth typed some more in the terminal window. The computer reciprocated the action by displaying a rudimentary chart, made up of blocks of blues and reds.

“...and there we go. The blue represents what's the same between the two updates. The red is what's different. It's pretty much all blue...except for this one block here.”

There was one red block that stood out in the sea of blue. Seth pressed a key, and the program shifted modes from displaying multicoloured blocks to presenting hexadecimal numbers. It was a hex editor, displaying the raw data that made up files. Seth was using it to navigate through the machine code that made up the botnet update. He landed on a highlighted portion. It was the red block. Scrolling through the raw data that made up that segment, Seth recognized a part as being part of the evidence planted against them.

"You know," he said, "I wasn't sure this would work. But that's it. That's the MD5 hash that links us to this worm."

"You lost me," said Kerstin.

"It means that fake evidence aside, the two updates are the same," explained Seth. "The one that is right now on all those infected computers, and the one which we intercepted yesterday. They're the same. Our guy had access to that update before it even came out. He's got to be somehow related to the core botnet."

"So you're thinking he's the one behind all of this," said Gabriel.

"Yes, yes I do," answered Seth.

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Kevin and Graham were in the parking lot of the RCMP building. They were loading on their forensics equipment, readying for the seven hour drive up to Ottawa.

"Did you hear?" asked Graham.

"What?" responded Kevin.

"The Ottawa Police just executed the warrants. All three homes, simultaneously."

"Jesus that was fast," Kevin noted.

"Yeah, well this botnet is a pretty big deal eh? They're just waiting for us to collect the goods. Legal was actually able to get us to seize the equipment too."

"Were the kids there?"

"Doesn't seem like it," answered Graham. "They weren't on site. Master Searg got a unit on tracking them now. Did you know that the girl was a diplomat's daughter?"

"That'll make us popular," remarked Kevin, sarcastically.

"No kidding, eh?" replied Graham.

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Seth, Kerstin and Gabriel were laying on the grass, looking at the unusually rapid flow of the river. Spring melt had always made the river go faster like this.

“Okay, so what do we have on this guy?” asked Seth.

“Well, we were at a public venue, which makes his local IP address useless,” stipulated Gabriel. “We do have the Internet address and credentials to the box he logged into from the tea shop.”

Kerstin was typing away at her laptop. She was trying to access the same machine that they had intercepted hacker accessing the day before. It wasn't working.

“I'm trying to log in but he must have erased his account,” she said. “It doesn't work anymore.”

“The box still up though?” asked Seth.

“Yeah, its just that I can't login via SSH” she replied.

Gabriel was looking straight at his laptop screen. “It's a web server,” he said.

“What?” said Seth.

“It's a web server,” he repeated. “I just port scanned it, and lo-and-behold, port 80 was responding. It hosts the website for *The Law Offices of Jordon, Gilmore and McNealy*,”

“He compromised a web server?” Kerstin asked.

“Or maybe he's their web designer and has or had legit access,” suggested Gabriel. “Looks like this law office is in Halifax.”

“Well that's great,” Kerstin stated facetiously. “We have nothing. All that we know from this guy is that he connected to a non-existent account, from an untraceable spot. Yeah, that's going to sure convince the RCMP.” She rested back on the grass. Seth and Gabriel followed suit.

“We are fucked aren't we,” Seth noted.

“Yeah, I'd say so,” concluded Gabriel.

Seth looked at his watch. Every minute seemed to take an eternity to pass. He looked up at the trees and at the shape of the clouds. His heart had started pounding against his chest. The stress, the fear, the uncertainty, were all taking their toll. He glanced at the others. The fear shared between them was unsaid, but he could see it in their eyes, in their mannerisms.

"The logs," said Gabriel.

"Mmmm?" responded Seth.

"The server's auth logs. It'll have all the IPs that he connected from when he was using the machine."

The *auth* logs were the server's authorization logs. It kept track of all logins and attempts to do so on the computer, as well as whenever someone took action as *root*, the administrator account for the machine.

"He could have erased them," declared Seth. "He did have the foresight to delete his account."

"Well let's at least try," rebutted Kerstin. "We have nothing else to go with."

"So we're going to try to break in?" asked Seth.

"Why not?" responded Gabriel.

Seth paused for a moment as he looked at Gabriel. "Yeah, you're right. Why the fuck not. I'll see if I can use some XSS or MySQL injection attacks against the web server." he replied.

"I'll fingerprint the server," Gabriel said, "see if I can see what version of the OS its running. Get some ports down, see if any of that shit is vulnerable to something that's come out"

"Well, I guess then that I'll go for the web apps," said Kerstin. "I'll check to see if there's any vulnerabilities there. I'll reverse DNS and see if they're collocating, maybe try to get at the other sites too. What about social engineering the login credentials out of the hosting place?"

"We can't afford to screw up with that," responded Seth. "For the same reason we can't brute force passwords. If they get suspicious and take that server down or warn anyone, then we're going to lose the only thing we have going for us."

Seth looked down on his machine, and began clicking and typing away. The others followed suit. For over an hour, they each used their individual skill sets to try to gain unauthorized access to the server. The effort, however, was proving fruitless. The dated operating system had been patched, and was well protected against all forms of external compromise. Progress was equally stagnant with the other attack vectors devised by the group. Gabriel was the first to speak out,

"My laptop's almost out of power."

"Mine too," responded Seth.

"I got nothing guys," added Kerstin.

"Let's go find a place to plug-in," suggested Seth.

"Why?" asked Gabriel. "We won't get anywhere. Let's be realistic here."

"Then let's retrieve those files manually," replied Seth.

"What do you mean?" said Kerstin.

"Well," Seth said, "the WHOIS records show that the server is being managed by a hosting company in Toronto. Let's just go there."

"And do what?" asked Gabriel. "Ask for the files? I'm sorry. I don't see it happening."

"We'll figure out something," replied Seth.

"I'm sorry guys, but enough is enough," declared Gabriel. "I'm going home."

"But the logs was your idea," pleaded Seth. "And it was a good one."

"Look. Had this worked, I would of gone on. Maybe. But Toronto? I'm not going to go ahead with that dude, its just not in me. I don't have it in me to run. I'm not a criminal."

Seth's just stared on at Gabriel. He seemed so determined now. The fear had left from his eyes. Seth didn't know what to say.

"I'll give you a lift back to a transit station. You'll be able to take a bus from there," said Kerstin.

"Alright. Thanks," returned Gabriel.

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Kerstin was driving the car back through suburbia. The two others had sit silently in their seats.

"Gab man... I can't do this without you," said Seth.

"If you want to go, that's up to you," responded Gabriel. "But running away from the RCMP? What's that gonna do?"

"Kerstin, what about you?" asked Seth.

"If I'm caught like this, they'll send me back to Germany. The embassy might send my dad back too. I'll be fucked. At least if we do this Toronto thing, I have a chance at proving that I didn't do this."

"If you guys are gonna go," Gabriel began to say, "you might want to ditch this car. If they're looking for us, they'll be looking for this too. Leave it in a parking lot or something."

Finally, after an uneasy drive, Kerstin arrived at the parking lot of the local shopping center. The transit station was nearby. They all got out of the car.

"I don't know what to say man," Seth said to Gabriel.

"What is there to say. This is a shitty situation," Gabriel replied.

"Let's at least walk to the bus stop together," proposed Seth.

As they walked to the transit station, Seth looked at Gabriel and asked,

"You sure you want to do this?"

"No," said Gabriel. "You?"

“Not at all. But I just can't go on like this. With all this shit piled up against us and nothing to say otherwise.”

“We have the packet dump,” replied Gabriel.

“Yeah,” began saying Seth, “but they could say that we faked it. That we created that packet dump. Nothing exists to validate it, to prove that its real. And I don't trust some Luddite seventy year old judge that can't even write an email to make the right call.”

Finally, they arrived at the bus stop. The city's red and white buses were passing by at incredible speeds.

“Well this is it,” Gabriel said. “See you guys.”

“See ya,” said Seth. He put his arms around Gabriel, and they gave each other a long hug.

“Good luck,” Gabriel told Kerstin, and shook her hands.

“Bye,” she replied softly.

Gabriel would say no more. He got on the next proper bus, and made his way home. On his street, he could see the van with tinted windows waiting a few houses down. He ignored it, and got to his place. He went directly to his ransacked room, put his headphones on, and turned the music of his MP3 Player way up. His computer had gone. Soon, he would be too. Tears flowed down his cheeks.

He was right. Within the next few hours, a few more vans would come down the residential street. Finally, the police broke through his front door. He could hear them use tactical terms as they searched the house room by room. He closed his eyes, and heard them as they kicked his door open. A flurry of footsteps entered his room, and no sooner had they stopped that a voice boomed out,

“Gabriel Fillion?”

“No, I’m his brother,” he said. He opened his eyes, rose up from the comfort of his chair, and walked away. The perplexed officers did not follow him. He produced a half-smile on his tearful face, before sitting down on the living room couch. This would be the last time he would be able to joke in a long time, he thought.

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Seth and Kerstin were standing on front of a low-rise apartment building. They had left their car at the parking lot of a nearby pharmacy. They walked inside.

“You sure this is a good idea?” asked Kerstin, as Seth pushed the door leading to the stairs.

“I just don’t know who else we could get a car from,” he replied.

A bell announced the arrival of the elevator. They went up to the third floor, and Kerstin followed Seth as he approached a door at the end of the hall. He knocked.

“I hope he’s there,” Seth noted.

“Who is this again?” asked Kerstin.

An elderly woman opened the door. She did not look particularly cheerful.

“Hi, is Christopher home?” Seth asked.

“Just wait...” she said, in a thick Eastern European accent. Turning around, she yelled, “Chris? Chriiis?!”

“What ma?” came the voice from the other room.

She yelled something back at him in her native tongue. The lady turned back to face the pair and said,

“He will come.”

The elderly lady walked back in, leaving Seth and Kerstin at the door. Rummaging could be heard from within the apartment.

Finally, a figure emerged from inside. It was Jinks. A smile immediately emerged on his face.

“Seth! Or should I call you *ion*? I read the story on Dotslash dude. Three million infected computers. I knew you were real hackers. That's fucking awesome man.”

“Jinks,” said Seth, “we need your car for a day.”

“Sure man, anything!” replied Jinks. “Hey ma! MA! I'm taking the car!”

Jinks did not wait for her response. He grabbed the keys from the bowl on the table by the front entrance and walked off into the hall. He shut the door behind him.

ELEVEN

Exit Strategy

Kerstin took the wheel of Jinks' car, and looked at the other two. Jinks was in the back seat, and Seth was at her side.

"Are we ready?" she asked.

"Yes," answered Seth.

She drove the car from the lot to the building's side. Immediately, Jinks began to speak.

"Oh man this is so cool! You guys really are elite! I mean I was doubting you there for a while – the Jinks man thought you were all hype and no skills. But damn! Word from Eric is that your place got busted too? Fucking Eh!"

Both Seth and Kerstin looked visibly irritated. They were the furthest thing away from being in a situation worth lauding. This praise only seemed to raise their ire, and Jinks wouldn't stop with his jabber. Finally, Jinks said,

"But do I have to be in the back seat? I want to be up there with the hot haxor chick!"

Kerstin's patience ran out. Not even five minutes from Jinks' place, she floored the brakes. The car screeched to a halt.

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Kerstin waved at Seth in the bus terminal. He saw her and waved back. The two walked towards each other.

"You know," Kerstin said, "maybe we should have just endured Jinks and taken the ride."

"He was a liability," replied Seth. "Don't feel bad about it. So you got cash from the bank?"

"Yea, I got \$300. Its the most I could take out."

"Good," he said. "I called up some buddies in Toronto. We'll have a place to stay."

"Who?" she asked.

"Flow and i0."

"From Binary Phunksters?"

"Yeah," Seth told her. "I used to chat with Flow all the time when the show first started, before i0 even became part of the team. I did some video work for them too."

"And they're okay with us just showing up there?" Kerstin asked.

"Mmmm," came the ambiguous reply.

Seth approached a teller, and used the cash he had taken from the bank to buy two tickets to Toronto. The two went to the designated gate and sat in the seats waiting for their bus to arrive.

The two didn't have to wait long. Within an hour, their Toronto bound bus had arrived and was loading passengers. Seth carried on with him a muffin he had purchased at the bus terminal's little eatery.

They sat down near the back of the bus, and put their bags in the carriage on top of their heads.

"So how do we get the data out of the servers? Gabriel's right - we can't just ask them," Kerstin said.

"I saw pictures of inside their facility while checking the website for the hosting company," Seth replied. "They're just regular desktops set up in rows. That should be easy to take over - find out which one hosts our site, put in a CD with a *live distro* on it, hope to hell that it boots from it, and we should be able to

take over the computer. Then we just grab the files we need.”

“They won't just let you walk in there.”

“I know. We'll have to figure out something.”

Seemingly too tired to be dissatisfied with the answer, Kerstin asked Seth one last thing.

“How long is it from here to Toronto?”

“Five hours.”

“I'm exhausted.”

“Yeah, me too,” he said.

Seth put his seat back, laying his head against the chair. Finally, he thought, a bit of rest. He turned to face Kerstin. She too seemed to be relaxing.

“Kerstin?” he said.

“Mmmm?”

“How is it you're so calm?” asked Seth. “They're all after us – and you're just taking it.”

“I'm terrified,” she said, in a calm voice that indicated otherwise. “I'm really, really scared.”

“You don't show it,” he remarked.

“If you were to take my pulse right now, you'd see its anything but calm. What about you? You're not freaking out either.”

“I don't know,” Seth told her. “It's like up until that panic attack in the car I was scared. Didn't know what to do. But that's like a release for me. I know I should be worried, but I'm just not. I just care about making it to tomorrow. And tomorrow, I'll just worry about making it through that day.”

“Heh,” she said.

“Seeing it like that just makes it easier to take,” Seth finished by saying. With that, he rested his head back against the chair once more and shut his eyes.

Kevin and Graham arrived in Ottawa with their large white police van. They drove up to the RCMP buildings in the city's east end. Waiting in the parking lot was a man leaning on a car hood. He saw them arrive and waved at them. Kevin waved back and parked his vehicle.

"Hope you weren't waiting there too long," Kevin told him.

"Nah not too bad. We have some good news and some not so good news."

"Let's hear it," said Kevin.

"The good news is that one of the hackers was apprehended at his home. On a less positive note, it's suspected that the other two have gone under. Large withdrawals were also made with both their debit cards, and they haven't surfaced since. Their cellphones are off too."

"That's not good," Graham noted, having grabbed his briefcase from inside the vehicle.

The man continued to speak. "On the upshot we have another lead. A kid named Eric Ducharme. He was one of the last calls on the hacker's cellphone. The kid has a record for computer crime. It's thought that they might have gone to him before they fled to Montreal. We're sending someone to him right now."

Looking at both Graham and Kevin waiting on front of him, the man said, "So do you guys want to take a look at the seized equipment?"

TWELVE

Unwanted

The CN Tower could be seen in the distance as the bus approached Toronto. Seth prodded Kerstin.

“Hey,” he said softly, “we're almost there.”

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Kevin was at a cubicle in the RCMP building that had been set up for the pair. They were located in one of the unassuming music buildings, their usual temporary office having been allocated to another team sent in from Winnipeg.

Various forensic equipment was strewn across the surface of their desk. In the mess was a hard drive, in the form of a small metallic box about the size of Kevin's hand. Cables connected it to a computer on the floor. The data stored on its spinning magnetic platters was a duplicate, a clone, of that which had been stored on Seth's own hard drive. It allowed investigators to analyze the contents of the storage medium without modifying the original. Such precautions prevented the possibility of having the court throw out the evidence on the basis of it having been tainted by the investigators.

Graham arrived behind him, coffee in hand.

“How's the coffee here?” Kevin asked, looking up.

“Pretty passable. Any success?” asked Graham.

“Well, the kid is using encryption. How many times have you seen that?”

"Mmmm...." mused Graham. "In the four or five hundred cases I've done, I've seen it used maybe three times? It was always something trivial though. Some wannabe big shot using a joke of a shareware program to hide a few incriminating files."

"Yeah. I've seen it once, and it was the same deal. In my case it was a pedophile thinking he could hide a stash of photos," replied Kevin. "We eventually got him. But I've been looking up on what this guy here has, and its pretty solid. I'm doing some research now to see how I can run some dictionary attacks against the encrypted volume."

"That's it so far?" asked Graham.

"He runs some form Linux, and he has a non-encrypted porn collection bigger than most consumer hard drives. Wanna get started on this other box?"

Kevin was pointing towards Gabriel's computer. It was beside a pile of boxes full of equipment that had been taken by the police from Gabriel's home. Graham moved towards it.

"I talked to Taggart by the way," Graham said, putting his coffee down and looking at the paper tag that the RCMP officers had stuck on the machine. "The kid who owns this machine is the one they busted this morning. Turns out that he's not cooperating at all. He insists on a lawyer, and he's not budging."

"I guess he's smarter than your average university student."

Graham raised his eye brows in agreement. Screwdriver in hand, he began to dismantle Gabriel's computer.

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Seth and Kerstin were in Toronto's Union Station. The terminal was the city's principle transportation junction. Trains, buses, and the subway all passed by this building in the heart of city's financial district.

The pair navigated the grand halls of the building. Seth was careful to avoid eye contact with the cameras overhead. Their presence was making him feel nauseous.

“Where are we going?” asked Kerstin.

“The subway. It's down on front,” answered Seth, hastily descending a set of stairs.

Seth approached a machine against the wall, and used the cash from his pockets to buy a number of subway tokens. He passed Kerstin half of what the machine spat out, and the two hurried towards the revolving gates.



It was now late in the evening, and Seth and Kerstin were walking down a quiet street of a Toronto neighbourhood. They had just come off the bus, the low rumble of its diesel engines still audible in the distance.

“This is it,” Seth said, pointing to a row house on their right. They walked up to the front, and Seth gave three solid knocks on the door. Footsteps were heard from within. i0 opened the door.

“Oh no-” said i0.

“Yeah, I know,” said Seth. “But we have nowhere to go. It's not like I can go to a hostel and stay the night.”

Flow was now at the door as well.

“Dude, we don't want to go to jail,” he said.

“You won't,” replied Seth. “No one knows we're on the run except for us. If, and that's a big if, the cops somehow show up, you can just claim ignorance.”

“I'm sorry man,” said i0, “but I can't let you in the house.”

Kerstin spoke out. “Please,” she said.

“I'm sorry.”

i0 closed the door. Seth stood still, in a daze, staring at the wood of the door that was before his nose. After a moment, he turned around and sat down on the cold concrete of the entranceway steps. He looked around at the desolate street, Kerstin sat to his side.

"I'm not leaving until you let us in!" he shouted.

Seth turned his head and looked at Kerstin. An expression of faint sadness was visible on her face. Perhaps he was just seeing in her what he himself was feeling.

"I'll yell like this all night if I have to!" shouted Seth once more.

Steps could be heard from within the confines of the house. The pair could hear indistinguishable voices engaged in a heated discussion.

"Maybe we should just give up," said Seth.

"I don't know," came the voice from his side.

The two waited on the steps. Finally, the door behind them opened. It was i0.

"We'll help you," i0 said, "but under one condition."

"What's that?" asked Seth.

"That you're out of here in two days. We can't risk any longer."

"You have my word," said Seth.

i0 motioned them to enter. Flow walked from a room to the side. "We have some left over rice from tonight," he said. "Do you want some?"

Kerstin looked to Seth with a smile.

Seth and Kerstin were sitting in a room that they recognized as being the set seen on many *Binary Phunksters* episodes. A banner sporting the logo for the show was on the wall, and a number of construction lights were standing in the corner of the room. Flow and i0 sat by the tall table they had hand built for the purpose of the show.

“We need to get physical access to those servers,” said Kerstin.

“How do you plan on doing it?” asked Flow.

“We don't know,” replied Seth.

“Do you know where it is?” said Flow.

“Yeah, the address is on the hosting company's website.”

“Well let's check it out.”

THIRTEEN

Toronto

It was night, and the four hackers were in a slow moving sedan in one of Toronto's many business parks.

"4101... 4103...4111..." enumerated i0, looking at the large numbers displayed on the buildings to their right. Flow was at his side, driving the vehicle.

"There it is - 4121," loudly whispered Seth.

Flow stopped the vehicle and parked it opposite to the two storey tall building. He cut the ignition. The street lights partially illuminated the suspended banner for "*Tyrrel Web Hosting Solutions.*"

"It looks empty," noted Kerstin.

"Yeah it does," said Seth. "I'm tempted just to break in."

"For sure there'll be an alarm. Or a security guard," i0 said.

"Speaking of which, there he is," said Flow.

At that moment, a security guard was seen approaching the front glass-clad door of the establishment from the interior. He glanced at the street around him. The guard turned around and went back in. Flow started the car and drove off.



It was morning. Seth woke up to the sound of muffled voices coming from another room. He was on the floor of the Binary Phunksters home, his bag having been used as a makeshift pillow. To his side was his laptop, listening to multiple conversations on the security and hacker related channels of the

Internet relay chat (IRC) networks.

Seth got up and walked towards the source of the voices. It brought him into the kitchen, where he found Flow, i0, and Kerstin. Flow was sipping from a cup of tea.

"What's up guys?" Seth said, stretching.

"Hey," said Kerstin.

"We're thinking that staking out the building all day is a good call. Figure out exactly whose there that you'll have to deal with."

"Sounds good. I'll do it," said Seth. "Can I?" he asked, pointing towards the warm kettle. Flow nodded, and Seth poured himself some hot water.

"I guess I'll just walk around the area all day, take notes," said Seth, putting a tea bag in his cup.

"We have one better," replied i0. "You'll be the guy that records traffic activity at a nearby intersection."

"We got some big shades that'll fit over your glasses and clipboard for you to use. Make you look legit," affirmed Flow.

"So I'm there all day?" asked Seth.

"Until sunset we figure," answered Flow. "Then we'll come by and check the place out in more detail. You agree?"

"Yeah, yeah I do," said Seth, sipping from his tea. He looked up at the gang. "Thanks by the way," he continued to say, "for everything. The food, the stay, everything."

"No worries," said i0. "Just give us the exclusive when all this is over."

"Deal," replied Seth, with a smile.

"It's almost eight," noted Flow. "We should go and drop you off. i0 and I both called in sick today so we can help you out on this."

"Thanks."

"Don't mention it."



Flow slowed down the car by the intersection in the business park. Seth got out, and extracted a folding chair from the trunk. He went back to the front of the car, opened the door, and grabbed his clipboard and iO's MP3 player from the seat. Flow spoke out from the driver's seat.

"It's funny how people always think you're there on official business when you're armed with a clipboard."

"Yeah it is, isn't it," Seth said.

"We'll be back at around seven. You got everything?"

"Yep. See ya tonight."

"See ya."

With that, Flow drove off. Seth set the chair up by the intersection, put on a hat two sizes too big, and placed a pair of equally awkward sunglasses on top of his own. He looked around. The area was completely devoid of animal life. In its place was an incessant stream of buildings that didn't quite seem to fit with each other. Their only shared trait was their utilitarian style, the buildings barely more than large square brick structures.

Clipboard in hand, Seth began taking notes. First about the layout of the area, but then about what software he'd like to include in the CD they'd use to take over the server. The distant sound of a car door closing shut distracted him. He checked his watch. It was eight fifty five in the morning, and he could see two people getting out of a car on front of the hosting company's building.

The two employees walked towards the building's front entrance. One took a key to the door, and could be heard unlocking it. They disappeared inside. A few minutes later, the

guard they had seen the night before walked out. Long shift, Seth thought. The guard got in his car and drove off.

Seth checked his watch. Barely fifteen minutes had gone by. He groaned at the slow passage of time, and placed headphones to his ears. He fiddled with i0's MP3 player, finally managing to turn it on.

The music stored on the player was a mix of movie soundtracks and instrumental new age. Unable to endure the tracks for any more than he already had, Seth toyed with the device for some more, and activated the built-in radio. He tuned in to a Toronto talk radio station and listened on.

At around noon, a car pulled up. It was Flow again. Seth went to his window. Flow passed him a chicken sandwich and a small pack of doughnuts he had purchased from the local *Tim Horton's*.

"We figured you'd be hungry," Flow said.

"Thanks," replied a reinvigorated Seth.

"I think we figured out a way in. Tell you later. Anything interesting so far?"

"Well, it looks like only twelve people work in there. At least today," indicated Seth.

"Perfect. See you later."

"Yeah," said Seth, "and thanks for the food!"

Flow drove off. Seth immediately began chowing down the sandwich. Activity had started to increase in the area. Workers were all leaving the vicinity for lunch hour.

A pedestrian stopped by Seth at the intersection. Seth was still eating his sandwich.

"Whatcha doin'?" asked the pedestrian.

Seth looked up. He quickly finished chewing and swallowed the sandwich piece. He replied, "I'm taking traffic readings for the city."

"Oh yea?" said the man. "Finding out much?"

"No, no, not much. Not many cars here!" kidded Seth.

"Well you have a good day," said the gentleman, seeing that his crosswalk sign had come on.

"You too," said Seth.

Once the man had left his field of vision, Seth's artificial smile disappeared. He looked down to his hands. They were still trembling.



It was about five in the evening, and the spring sun had begun to descend. Seth was busying himself by writing a letter to his mom. Almost all the handwritten text on the page before him had been scribbled out.

"Oh mom, if only you could understand all of this," he quietly said to himself.

He looked up. People inside the building had started to walk out. Within a few minutes, there was no one left in the building. The last person, a man in his early fifties, locked the door behind him with the key.

It wasn't until two hours later that anyone else presented themselves at the building. It was the rent-a-cop. Seth looked at his watch. It was six after seven. He wondered when the others would show up. They had said that they would be there at seven, he thought.

At seven thirty-five, Flow returned with his car. Kerstin, and i0 had come with him for the ride. He parked his car in the lot of a printing company.

Seth walked to the car, folded chair in hand.

“So what did you guys get up to?” he asked, placing the chair in the trunk.

“We got a live distro configured and ready. It's on a DVD. Just put it in the server and we should be able to connect to it from the outside,” answered Kerstin.

“Kerstin also came up with a genius idea,” said i0. “The server does not just host the website for those lawyers. If we put our DVD up, then at least fifty websites will go down, and we incur the risk of attracting unwanted attention.”

“We'll be out of there fast enough anyways,” said Seth.

“True. But why risk it right? So what we did is that we have all those websites hosted *from the DVD!* Kerstin mirrored them all and set up Apache to do it.” explained an excited i0. “It won't do dynamic content, but it means that on the outset all these sites won't go down.”

“Smart,” replied Seth.

“But that DVD won't be any good if you can't get physical access to those servers. So we took care of that too. We figured out how we'll get you in the building,” said Flow.

“Yeah, you were saying that. How?”

“We'll fake a phone outage.”

“O- okay,” said Seth as he tried to wrap his head around how that would exactly work. “How?”

Flow pointed towards a five foot tall metal box on the lawn down the road. “See that brown box over there?”

Seth recognized the dull-colored box as belonging to the telephone company. It's where all the neighbourhood telephone lines joined together to connect to the telephone network. Seth was not an expert with the phone system, a true *phreak*, by any

stretch. However, he knew enough to know that inside that box were several hundred if not thousands of individual wires.

"That's how you're going to cut service?" said Seth. "But there's a million wires in there. Do you know which pairs belong to the hosting company?" Seth was referring to the specific numbered copper wires inside the structure that connected the company's office telephones to the network.

"Yeah. We called the MLAC and pretended to work for the telephone company."

"The what?" said Seth.

"The place linemen call when they need to do what we're doing but for a legitimate reason. It was easy – I called them up, gave them the address, and they gave me the pairs I needed."

"Just like that?" asked Seth.

"Just like that," affirmed Flow.

"So their phone system goes on the fritz," said i0, "and you come in to save the day."

"So we're all ready for this," said Seth. "We have the live distro. We have our way in. Once the DVD is in the server –"

"I'll connect to it from wherever I can catch a signal for wireless Internet, grab the data, and we're done" Kerstin filled in.

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The group was back in the Binary Phunksters home. They were on the floor, surrounded by Chinese food. Seth was the one speaking, chopstick in hand.

"We should hit the place in the middle of the night, when the guard can't call anyone to validate our presence."

"I agree. i0 and I have a bunch of telephone company memorabilia that we've been collecting over the years. I got an old AT&T shirt from the eighties," said Flow. "i0 has a white hard hat too."

"So when should we go?" asked Kerstin. "1 AM?"

"That sound reasonable to you guys?" asked Flow. Seth nodded, as did i0.

"The only thing that worries me is that you guys saw the picture of the server room of this place right? There's tons of computers in there. How will I find which one is the one hosting our site?"

"You'll figure it out," said Flow. "Servers usually have some identifier written on the box. Either the domain name will be written right on there, or they'll have a binder somewhere with all the names."

Seth did not appear entirely convinced. "So... what are we going to do until one?" he asked.

"Movie?" suggested i0.

"Yeah, I could go with that. It's not like I can sleep right now anyways," concluded Seth.

"Same," said Kerstin.

The guys put on *The Gibson*, a Hollywood movie from the mid-nineties about a group of high schoolers fighting a corrupt computer company. Seth and the others laughed at the film's over the top portrayal of operating systems, filled with large buttons and psychedelic colour schemes.

"I wonder how Gab is doing," said Seth to Kerstin.

"Gab?" asked i0.

"Riscphree. His real name is Gabriel."

"Oh. Yeah. Hope he's alright."

Flow checked his watch.

"Okay guys, its half past midnight," he said.

The guys got up from their seats. The movie was still playing. i0 picked up the remote control and paused it. Kerstin got her laptop, and Flow put on his shirt from AT&T.

"Where's the live distro?" asked Seth.

"I got it," answered Kerstin, coming back from the other room.

Seth got his trusty clipboard, and armed with the hard hat that i0 passed him headed for the car. He had also put on some of Flow's old paint-stained jeans to lend a greater credence to his presenting himself as a blue collar worker. They got in the car. Flow pulled out and started to drive off when he said,

"Shit. Hold on—"

Flow put the car in park, got out of the driver's seat and ran back into the home. He returned a short moment later holding a pair of FRS radios. He entered the sedan and passed one to both Seth and Kerstin.

"You'll need this Seth to let Kerstin know when she can access the system. We could use two more of these so that we all stay in touch."

"Do you have more of them?"

"No. But we can buy them at Wülmürt. There's one here that's open 24/7."

"If you pass me your cellphone i0," said Kerstin, "then at least we have three way communication. You won't need to talk to us i0 for what you do, right?"

i0 shook his head.

"That works too. Okay, let's go," said Flow.

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Flow's car slowly crept up the lit streets of the business park. The glow from Kerstin's laptop screen could be seen from outside the vehicle.

"I got a signal," said Kerstin, looking down at her machine.

"This is close enough. We'll park here," said Flow. They were about a block down from the hosting company's building. "Does it work fine?"

"Wait," she said. "Yes. I have full Internet access."

"Good," Flow returned, cutting the ignition. "Okay, so stay here, and we'll go do this."

Seth, Flow, and i0 went to the brown junction box they had seen earlier that day. i0 took out large bolt cutters, and cut off the lock that protected the telephone company's property. i0 opened up the now unlocked hatch on the box, and peered inside. He used his cellphone's bright screen as a makeshift flashlight. He passed it down the neatly organized rows of wires and located the pairs beside the numbers that the MLAC had given them. He pulled out the wires.

"That's it," said i0. "They should be down."

He closed up the box. Seth and Flow walked up to the hosting company's building, leaving i0 behind. Seth donned the hard hat. He made a very audible yawn as Flow knocked loudly on the glass door. Within a few seconds, the guard had arrived at the door. It was an elderly East-Indian man.

"Hey," said Flow, unable to contain his own yawn. "We're here to repair the phone line?"

"What?" asked the guard. "No one told me about this."

"Check it yourself. Apparently its been intermittent all day."

"Please wait here," he said.

The guard disappeared inside. He was not long. Within a minute, the he was back at the front entrance where the duo had been waiting.

"Funny, they did not tell me," said the guard. "Somewhat late now isn't it?"

"Yeah, they said you'd be here. Otherwise, you'll have to wait until at least next Tuesday for a day crew to show up. They didn't sound too pleased to wait until then either."

"Ahh."

“Yeah.”

The guard poked his head out of the door. Flow quickly put his foot in the door. He didn't want the guard to realize that there was no company vehicle present.

“Shall we?”

“Yes, yes.”

The guard let them enter.

“What kind of operation do you run here?” asked Flow.

“It is a website company,” answered the elderly man. “They have a studio upstairs, and this first floor is full of computers. Where do you need to go to effectuate the repairs?” he asked.

“Most likely in the back,” answered Flow, “where the phone lines enter the building.”

As they walked down the halls, Seth saw it – the server room. It was just like the photos he had seen posted on the company's website. They kept walking down the hall.

“Ah crap,” said Seth abruptly. “You're probably going to need someone to test the wire on the other side aren't ya?”

“Yeah, that would help,” said Flow, catching on to the ruse.

Seth turned around and headed back for the front door.

“Where is he going?” asked the guard.

“The problem could be in here or out there. We need to run tests on both sides to see what's affected. I will need your help though with what I'm doing.”

The guard appeared reticent.

“I understand that its not in your job description,” said Flow, “but if this takes too long I'll have to get the crew Tuesday to finish off the work, and you guys will have these telephone problems until then.”

Seth tested the door of the server room. It was unlocked. He opened it slowly, looking around for motion detectors. Confident that none were present, he quickly entered the room and softly shut the door behind his back. He mobilized towards the servers. Dozens upon dozens of machines were present.

The servers were all encased in nondescript white boxes, about forty centimeters tall, placed side by side on metal shelves. Neat wiring located behind the machines fed them power and a connection to the Internet. Each machine had a cryptic label placed on the top its case. The sticker on one machine said "WWW-032", while the next was labeled "WWW-033", and so forth.

There was no way for Seth to identify which of these machines was the one that the hacker had compromised and contained the logs they were seeking. He went to the computer on a desk nearby. Perhaps there was a list or something on there that could tell him which computer had been running the website for the law firm. The machine was password protected. Seth tried a few popular combinations of user names and password, but to no avail.

Limited for time, Seth gave up on the computer and checked the contents of the desk for anything that could be of use. Nothing. He looked around the room for any paperwork that could aid him, but there was nothing.

"Shit... What am I going to do," he said.

Seth got on the radio.

"Kerstin," he said, whispering loudly.

"Are you done?" came the ear piercing reply. Seth immediately reduced the volume of his unit. He listened, making sure that the

guard had not been alerted to the loud outburst.

“No... We have a problem. There's all these servers here, but I don't know which one is ours.”

“Fuck,” she said.

“Yes, I know.” said Seth.

Seth looked at the computers that surrounded him. He noticed something – all the servers on the rack were connected together by a single network switch. He pondered about this for a bit, and got on the radio. He had an idea. He was going to figure out which computer was their server by process of elimination.

“Listen I want you to continuously ping the server. I'm going to take these servers here down progressively, and I want you to let me know when the server stops responding to your pings. Okay?”

“Okay,” answered Kerstin. “Now?”

“Now.”

Ping was a popular tool among the computer savvy. It sent a small query, a *ping*, to a remote computer and awaited for the computer to respond. Amongst its multiple uses, it could identify whether a computer was still online.

Seth went ahead, and disconnected the switch on the first rack in the room. All the computers on that rack were suddenly devoid of a connection to the Internet.

“Is it offline now?” he asked.

“Nope,” came the reply on the radio.

“Okay,” he said, plugging the switch back in. He knew that his server was not on this rack. He went to the next device, and pulled its cable. “Now?”

“No.”

Again, Seth went to the next switch, and repeated the procedure.

"What about now?"

"No... wait... yes. It's off now."

Seth plugged the cable back in.

"Tell me when its back online."

"It's back," she said, momentarily later.

Twenty computers connected to that single switch. Their server had to be one of them. Seth unplugged the first five network cables on the device.

"What about now?" he asked.

"Still online," came Kerstin's response.

He plugged the cables back in, and disconnected the next five.

"It's off," she said.

"Okay, I'm plugging them back in now. Let me know when its online again."

He plugged the cables back in, one by one. After each one was plugged in, he would pause, and ask her if the computer had come back online. Kerstin would say no. After the fourth cable going back in, she finally responded,

"Yes, its on again."

Seth knew that that was it. That cable connected to their computer. Their server was taken offline when he disconnected its cable, and came back on when he plugged that one cable back in. He followed the network cable back from the switch to the server. It was about halfway down the isle, on the upper shelf.

Seth took the DVD from his side, and inserted it into the computer. He then restarted the machine by triggering a small

switch on the front of the case.

"It's done," he told her on the radio.

"Ten-four," she said.

Seth stayed by the server's side until he got the all clear from Kerstin. It was possible that the company employed basic measures to protect their computers from this type of meddling. Without a screen on the computer, he couldn't tell. Still, she would need his help if that was the case. After two minutes, Kerstin's voice came back onto his radio,

"I'm in," she said. "I've mounted the drive and am getting the log files."

The DVD had done its job. Seth took his clipboard and moved out from the server room, carefully closing the door behind him. He walked through the halls of the building as quietly as he could. He looked at his watch. Twenty minutes had passed. He wasn't quite sure how Flow had handled the guard, but he had greater concerns at that point in time. He needed to get out of the building. He drew a large breath of relief when he finally exited through the glass doors.

Seth hurried to i0, who had been waiting by the brown box.

"You can reconnect the pairs," Seth said.

i0 obliged, and closed the hatch on the box shut. They then ran over to Kerstin. She called Flow. In under thirty seconds he was out of the door as well, the guard waving him goodbye.

"Where's your truck?" they heard the guard say from across.

"Around the corner," answered a sharp Flow.

Flow walked around to the back of the web hosting building. He emerged a few minutes later from the side of another complex. He ran to the car, and got in.

"A few more minutes," he said, "and I would have run out of things for that guard to do. Did you get the logs Kerstin?"

"I'm going through them now," she said. "So I grepped the auth logs for the user name the hacker used when he was logged in from the Tea Foundry. We got a match! He didn't wipe the logs after all!"

Kerstin looked around her. Her sense of amazement appeared to be lost on the trio. Perhaps they were just tired. Her smile faded, and she spoke once more.

"There are three IP addresses that keep coming up. One I recognize as being the Tea Foundry. I don't know about the other two."

After a brief pause, Seth responded. "We can reverse DNS them when we get back. Let's get out of here. I'm kinda getting worried about someone seeing us here."

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Flow was driving down through Toronto's city core. Kerstin looked at the towering skyline in awe. She had never been here before. Massive multicoloured displays shined against the car. The streets were empty, save for a few drunken students just out of the clubs.

"You know, a lot could have gone wrong tonight," said Flow, as he drove up Toronto's iconic Yonge Street. "We were lucky."

"Yes," agreed Kerstin.

"Yeah," affirmed Seth.

They got to the home of the Binary Phunksters. Kerstin sat on their sofa and turned on her laptop. Seth produced another vocal yawn.

"You guys want some coffee?" asked i0.

"I would love some," answered Seth.

"Kerstin?" asked i0.

"No thank you," she said softly.

"Well I'll make a pot," said i0. "It'll be there if you want it."

Kerstin had before her the three Internet addresses that the hacker had used to access the compromised server. By themselves, IP addresses revealed little due to their obscure numerical nature. A reverse DNS lookup was a handy means to reveal more about such an address, often giving insights as to which organization it belonged.

"Okay," said Kerstin, "I did a reverse DNS search on the one of the mystery IPs. It traces back to the Ottawa Community College. We're on the right path. Now for the other--"

She paused, typing at her screen. "There's no records. I'll do a traceroute," she said, referring to another technique used to scope out more information from an IP address. She typed a few more commands at her computer. "It's a residential IP based somewhere in Ottawa. I think this one is from his home."

"Now we have the guy's IP," said Flow, "but the question is how to we get his physical address."

"We could wardrive and figure out which neighbourhoods got assigned a particular IP class by an ISP," proposed i0.

"We don't have that kind of time," said Seth. "Plus I don't even know if that would work. No, I think we'll have to social engineer it out of the hacker's ISP. But I've never done that before. I'll ask around online."

"Okay, well I'm about ready to hit the sack," said Flow.

"Yeah, come to think of it, me too," said i0.

"You guys go to bed," Seth told them. "We can work on this tomorrow. God knows we did enough today."

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While Seth and the group had been hard at work infiltrating the web hosting company in Toronto, the cogs continued to turn

at the RCMP. What began as a single media request soon spurn out of control. It was as if all the media outlets had seemingly decided in unison that this story would be front page news.

To Kevin, it was understandable. The story was already a big hit on the Internet, the main competitor to traditional news networks. Whereas the Internet was filled with rumours of busts, the media had nothing. Plus, this was a story about *Canadian* bad guys. That was always a hit with the ratings. Like the saying went, "if it bleeds, it leads."

The media relations department pressured the High-Tech Crime Unit to hold a press conference. They agreed. It would take place the following morning.

FOURTEEN

The Stakes Rise

It was morning. Kevin and Graham were in the hall to the side of the press conference chamber. Kevin glanced to the side. He could see the Master Sergeant settled in a seat by a long table on stage. The reporters were coming inside the room, taking their seats and preparing their digital voice recorders. A slew of television cameras were in the front of the middle isle, prepared to take the right sound bite.

“Are you ready for this?” asked Graham.

“No. Shall we?” said Kevin, smiling.

“Let's do it.”

The two walked into the room and on stage to join the other RCMP officials.

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Seth woke up. He looked to the laptop with which he shared the floor. It was still monitoring the IRC channels. He sifted through the conversations it had logged. There was talk about the Digital Losers. Some believed he was responsible. A few, including the Floridan hacker that operated the chat server, believed him to be innocent. They were quoting news sources online. Seth had no interest in reading them. It would only make him angry.

Seth went to Kerstin and gently touched her shoulder.

“Wake up,” he said softly.

Flow and i0 were still asleep. He couldn't blame them. They had had a long night. A long day. They needed the rest. He did too.

Kerstin slowly got up.

"I know someone who can help us get the address for the hacker," he whispered to her.

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Kerstin and Seth huddled around his laptop. She was sipping on some tea. Seth dialed a long-distance telephone number from his computer. A cheery male voice came on,

"Hello and welcome to Kobar's PBX. Operator, this line does not accept collect calls. If you're a telemarketer, press *one* now to disconnect. If you're family or your name is Rob, also press *one*. To listen to past episodes of the *Phreaks 'n Geeks* podcast, please press *two*. For a text-to-speech rendition of today's Dotslash news, please press *three*. To join the conference, please press *four*. If you wish to connect to my direct line, please press *pound* followed by the three digit code. For all other inquiries, please hang up and call someone who'll care."

Seth pressed the pound key on the phone, and then entered three numbers. He had obtained the code from an old acquaintance that was on one of the chats. According to Seth's contact, Kobar was an excellent social engineer. He knew how to play telephone companies to get whatever kind of information he wanted out of its workers. This was precisely the kind of person he needed, Seth thought.

■ □ □ □ ■

Kobar was sleeping soundly in his bed. The man, in his late twenties, was still in a business suit. A few pills and a half-full bottle of beer were on his bedside table. On the wall opposite to

the bed hung a vintage nineties era payphone. Kobar had even managed to snag a matching sign with the symbol of a telephone that he mounted on top of the device. The payphone began to ring.

Kobar emitted a grunt. He grabbed the cordless phone to his bedside, careful not to knock the bottle of beer over.

"Hello?" he said.

"Is this Kobar?" It was Seth's voice.

"Who the fuck is this? You know is like 6AM?"

"Yeah, I know. This is ion from the Digital Losers."

"Who?"

"I'm one of the guys they're pinning the Météo botnet on."

Kobar sat up, bright awake.

"Where are you calling me from?" he asked.

"Not from my home numbers. Don't worry."

"I need to know," retorted Kobar. "Pay-as-you-go cellphone? VoIP? I need to know. What are you using?"

"VoIP," answered Seth, referring to the technology he was using to use his computer as a virtual telephone. "Paid for with a disposable credit card and never used from my home."

Kobar's shoulders relaxed a little bit. Still, he wanted no part of this mess. He looked down at the carpet flooring, and with a deep breath asked,

"Give me one good reason why I shouldn't hang up on you."

"I need your help," answered Seth. There was a pause.

"What?" asked Kobar.

"I need to get the address of someone based on their IP."

"Social engineer the ISP?"

"Yeah. But I don't know how to approach it. I've conned small third party guys and stores before, but this is new territory for me. I've never hit a big organization like this."

"It's pretty easy to do. I've done it many times. Just figure out what they call their departments, such as 'tech support', 'customer relations', or whatever. Then use that to play one department against the other. Call up their tech department, and say something like *'Hey this is Jim from billing. I've been having problems getting this account to show up through their phone number and address. They don't speak English well and I think they're giving me the wrong information. If I give you the IP address, can you pull up the account for me?'* And then you get them to give you the details."

"Mmm," replied Seth.

"As long as you sound convincing, they'll work with you. Why do you want this anyways? Don't you have bigger worries right now?"

"We found the guy that released the Météo botnet. Or at least the one who framed us. He's in on the botnet. Anyways we have his IP address. We just need his location."

Kobar let out a deep breath.

"Listen," he said. "You want me to do it?"

"If you're willing," Seth told him, "then that would be great. But I'm not going to make you."

"Just hold a sec."

Kobar scrounged around for a piece of paper. With a pen in hand, he asked,

"Okay. What's the ISP?"

"TekkWorld," answered Seth.

"And the IP?"

"One seven two, dot two three, dot two one one, dot five three."

"And when did he last use that IP?"

"The twenty-... five days ago," answered Seth.

"I'll call you back in five."

Kobar hung the phone.

Seth lay his head on Kerstin.

"I hope this works," he told her.

"Are i0 and Flow still sleeping?"

"I think so, but its only eight something though."

"I'll go make us some toast," she said. She got up and headed towards the kitchen. Seth turned on the television. He flipped a few channels. He skipped the 24/7 news channel, but something drew his attention in the half second it was on. He went back down to the channel. His eyes drew wide open.

"Ker- Kerstin get in here now."

She came right back in.

"Look," he said, pointing to the television.

The two watched as the RCMP conducted a live press conference about two fugitive hackers in the country. Them. A photo of Seth was posted on the television. The RCMP had chosen to use the least complimentary photo ever taken of Seth – his passport photo. He looked downright menacing. As for Kerstin, they had used her university identification photo.

"Oh my God," said Seth.

The policemen were using words such as 'cyberterrorist' to describe the pair and claimed that they were part of a large organized crime network. Footage of Seth's presentation at one of the hacker conferences was shown.

Seth was speechless. The female news anchor cut from the live press footage to give a general overview of the situation. They were pinning himself, Gabriel, and Kerstin for the theft of twenty million through fraud and for producing three trillion spam emails. Gabriel had been apprehended, but the other two were still on the large, the news anchor stated. She then began to

describe Kerstin's car, and warned her audience to be on the lookout.

A telephone ringing sound emanated from the speakers of Seth's laptop. Seth subconsciously pressed a key on his machine, and Kobar's voice came on the air.

"I got it," said Kobar. "Your guy is named Darren Simcoe. He lives on 2107 Elvina street in Ottawa. You got that?"

Still in shock from the news, a distracted Seth responded, "Darren Simcoe, 2107 Elvina street. Thanks."

"No problem. But this is the most I can do for you okay? Don't call me back."

The two could hear the handset hanging up through the speakers. Seth looked towards Kerstin.

"We can't go out like this. We'll be too recognizable."

An exhausted Flow stumbled into the room.

"Hey guys," he said.

"We got the hacker's address. Um... how good are you at cutting hair?"

Flow was still adjusting his eyes to the bright morning light of the living room. He didn't quite know how to process Seth's request.

■ ■ ■ ■ ■

In the newly expanded temporary office set up in Ottawa, reports were flooding the RCMP. A young man approached Graham, and passed him a bulky folder.

"We have numerous sightings in Ottawa, but we have a few in Toronto and Montreal that match up as well."

"Thank you," said Graham.

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Seth was in the bathroom trying to bleach his hair. i0 was at his side, reading the instructions on how to do so. Kerstin was in the kitchen where Flow was giving her a crew cut. Flow turned off the electric razor. Looking down, she could see the clumps of hair that had collected on the brown garbage bag placed beneath her chair.

"Thanks," Kerstin related unenthusiastically to her amateur barber.

Within an hour, they were ready to leave for Ottawa. Seth hadn't told Flow or i0 about their appearance on the news, nor did he have any inclination to do so.

"Is there a bus station that isn't as busy as Union station or has all those cameras?" he asked.

"Yes there is," responded Flow. "It's not even that far away. Maybe twenty minutes by car."

"Perfect. Then that's what we'll do. Can we stop by a convenience store on the way too?"

"Yeah, why not," said Flow.

"I'll get my bag and I'm ready. Cool?"

"Cool."

"Is that okay?" Seth asked Kerstin.

"Yes," she replied.

Seth and Kerstin grabbed their stuff and jumped in Flow's car. Seth removed his prescription lenses and put on a pair of i0's nicer sunglasses. About half way to the bus terminal, Flow spotted a small strip mall.

Flow pulled the car over, and Seth got out along with Kerstin. They entered the convenience shop. Seth went to the ATM inside the store, and pulled out the maximum allowed two hundred dollars from his debit card. His vision impaired, the machine's

screen was a big blur to Seth. Still, he had used those machines enough times to know what it was asking him to do.

“Pull out as much as you can,” he told Kerstin.

He used some of the money to buy some bread and boxes of cookies while she complied. Returning to the car, Seth pulled out his cellphone and turned it on. Flow got out of the car.

“Are you crazy?” he said. “They’ll know you’re here!”

“Exactly. I want them to think we’re here, and not back in Ottawa.”

Seth had dialed Eric’s number. Eric answered, and without missing a beat began to talk.

“Before you speak: what do Abbie Hoffman and the Cheshire Catalyst have in common? Think zine wise.”

Seth knew the answer. It was the TAP Magazine, a long-defunct publication that had its place in the hacker history books. Eric was trying to say that his line was being tapped. Seth hung up without saying a word. He had accomplished what he had set out to do.

“That’s it?” asked Flow.

“That’s all I needed,” replied Seth. He turned his phone off once more.

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Flow stopped the car two blocks from the bus terminal. They all got out.

“Thank you,” said Kerstin. “For everything.”

With that, she gave both Flow and i0 a big hug. Seth shook their hands, and looking at the two digital phunksters, said,

“This wouldn’t of happened without you. Thank you.”

"Don't mention it," replied Flow. "Better move on before anyone sees ya."

"Yeah," agreed Seth.

Seth and Kerstin turned around and headed towards the bus terminal. Seth looked back, and saw that their saviors had already gotten in the car. He gave a single wave goodbye.

"Adios," he said to himself.

The two entered the bus station.

"We should have asked i0 or Flow to have bought the tickets for us," noted Kerstin.

"Yeah, that would have been a good idea. Shit. Stay here, I'll buy the tickets."

Seth approached the teller. He was much more nervous than when he had purchased the bus tickets to go to Toronto.

"Two bus tickets to Ottawa please."

"Are you a student?" she asked.

"Um... yes," answered Seth, not thinking.

"Do you have an ISIC or student card with you?"

Seth froze. He did not want to give her any identification.

"Ahh you know what? No I don't," he bluffed.

"That's okay. I'll just charge you the student rate anyways."

"Thank... thank you," returned Seth.

Seth paid the teller the money and returned to Kerstin with the tickets. She had moved on to the small convenience shop located inside the building.

"The next bus is in twenty minutes," he informed her.

The pair went to sit down in the waiting lounge. Seth looked up at the large flat screen television. It was a cable news channel.

"Oh no," he said. "Let's go to the café instead."

The two walked towards the small coffee shop to the back of the terminal. Seth bought Kerstin and himself a hot chocolate.

"Sorry, I should of asked if you liked this."

"I do," she responded.

The two sipped on their drinks. Within ten minutes, it came time to board the bus. They got on, and like before, installed themselves towards the back of the vehicle.

"So we have the address," said Kerstin. "What now?"

"I don't know. He's got to have a wireless router. Who doesn't these days? We could crack the encryption and try to get his files."

"If he runs Windows," noted Kerstin. "He was SSH-ing into a box. That's not really something you see with Windows."

"Yeah, but if he's doing development of a botnet that runs on specifically on that operating system, you'd think he'd have a computer running it somewhere... unless it's a virtual machine."

"That's a lot of 'ifs'", Kerstin told him.

"So how about we hack the router, poison his ARP tables, and sniff and capture all the traffic? Like how we used to do it at the Tea Foundry?"

"Okay," said Kerstin, "let's say we do that and get nothing. Then what? We're fucked. We can't just sit there sniffing for five days and hope that no one notices us. Or that he'll actually send in clear text a written confession claiming responsibility for framing us. And you know what, who knows? The address Kobar gave us might be wrong."

"Maybe it is. I don't know. We'll worry about it then. What we need now is to get ourselves a car. Something we can access his wireless network without being right there on the sidewalk."

"And just where would we get that?" asked Kerstin.

"Jinks."



Kevin was swiveling in his seat, looking at the ceiling of his RCMP office. He let out a deep breath.

"This is a nightmare," he said to Graham, sitting in the cubicle behind him. "Have you seen the reports? It's a joke. Eric is the reputed hacker of the bunch, but he won't talk and we have no entitlement to keep him here. Gabriel *is* talking on the other hand, but only through a lawyer. No progress. And the sightings? I shit you not, we had one call from an Australian gentleman claiming he had beers with them last week. We have nothing."

"Their computers have been pretty useful so far," said Graham.

"Well that's true. That's the only thing we have going for us."

"Don't worry. They'll come out. I give it a week, tops."

At that point, another officer entered the room.

"Hey Kevin, Graham, did you watch the news?"

"No, what's up?"

"The fugitive hackers. They made an announcement last night on the bulletin board of a computer security website. They said that unless we stop chasing them, they're going to release a new update to the botnet. Worse than before. The news media is having a field day with this. Word is that it's not a hoax - the IP of the poster resolves to some library in Ottawa."

"You have to be kidding me," said Kevin.



"Well worse comes to worse, we wait until the guy is at work and we steal his computer," Seth told Kerstin.

"But then we just tampered with the only evidence that proves we're innocent," responded Kerstin.

"That's very true. Okay, so sniffing his wireless traffic it is."

Kerstin did not say anything in return. She just lay her head back against the seat. Closing her eyes, she said,

“I really don't like this. I don't like that all we have on this guy is an address. For all we know there could be no house there.”

“Then we'll be no worse off than had we not left for Toronto.”

“Except that now we're considered fugitives.”

Hours passed. Both Kerstin and Seth had fallen asleep. The lack of rest from the previous night had caught up with them. It was the jagged motion of the bus braking that woke them up. The bus had stopped at an eatery en route.

The duo got off the bus. They walked off to the side of the building, away from the passengers. Seth looked around at the desolate landscape.

“What got you into hacking?” he asked her.

“Sorry?”

“What got you interested in hacking?”

“Oh.”

Kerstin pondered the answer for a bit. For this brief moment in time, the pressures of what they had to do in Ottawa seemed to fade away.

“Well,” she said, “when I was nine, my father got us a computer for the home. Back then I thought television was boring, so I spent all my free time playing on it. I liked it. I remember trying to make it more efficient by deleting files I thought were useless. That didn't work out so well.”

“What did your father say?” asked Seth.

“He wasn't around for that. When the computer crashed, I told my mother that it was because of a virus. I guess I've liked computers ever since. What about you? Have you always played pranks?”

“No. I was in the warez scene before. I joined an FXP group in high school. My job was to scan IP ranges to find corporate FTP servers. If I found one, I'd try to gain full access. Sometimes I succeeded, and we would take over the server.”

“So you were a scriptkiddy,” noted Kerstin.

“Yes, but things are different in the warez world. Anyways, shortly after I was introduced to real hacking. Pushing computers to their limits, making them do things they were never designed to do. I liked that a lot too, and so I got into the hacking scene. I did both for a while, and eventually retired from the FXP group.”

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“Come again?” said Graham.

“They're in Toronto,” said the investigator. “Their debit card got used this morning.”

“The IP address we got places them in Ottawa just before then. How does that work?”

“I don't know sir. Maybe a proxy?”

“Have you seen Kevin around?”

“I think he's in a meeting with Jim.”

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Seth and Kerstin got off at the bus station and walked towards the exit. The crowded nature of the place made them both feel especially uncomfortable. Suddenly, a booming voice came from the other side of the hall,

“SETH! SETH THIESSEN!”

Seth froze. He looked to the source of the voice – it was a classmate from university. This was not good, he thought. Still, if he ignored the man, his name might be shouted a few more times. Seth approached him.

"Hey buddy, how ya doing?" asked the man as Seth got close.

"Pretty good Alex. Where are you going?"

"Montreal," said Alex. "My uncle passed away."

"Oh, I'm sorry to hear that. Are you alright?"

"Yeah," said the young man.

"Good. Listen Alex, we really got to go. The cab's waiting for us outside."

"Okay buddy. See ya soon."

"Sure thing."

Seth turned around to leave. Kerstin was waiting for him up against the wall. They went and left the building as quick as they could.

FIFTEEN

Jinks Redux

Seth stood on front of Jinks' apartment. They were in his high-rise once more. Kerstin gave a few solid knocks. It was Jinks who answered.

"Hey Jinks," said Seth.

"What guys?"

"Can we use your car?"

"Are you fucking stupid? Half the country is looking for you. Gab is in jail. Eric is under twenty-four hour police surveillance. And you left me out!"

"We didn't want you to get caught," lied Kerstin.

"Fuck hat. Do you think I'm an idiot? You're just using me. You know, it's not like I wasn't aware that you treated me like shit. But I let it happen because I thought maybe you'd eventually see me just like you see Eric or the others. That maybe I could be part of the Digital Losers. But you never did. And now that you're in trouble you want to be all friendly?"

"I'm sorry Jinks," said Seth.

"Yeah," said Jinks, nodding.

"Look, we're almost done this," Seth told him. "We could really use your help. *I* could really use your help. You want to be part of this? Now's your chance."

"I don't think so," said Jinks.

"Fair enough."

Seth turned to Kerstin.

"Let's go."

Jinks closed the door. He rested up against the door, and looked up. Abruptly, he opened the door once more and looked down the hall where Seth and Kerstin were walking.

“Hold on guys. You can use it. Here are the keys.”

“You're not coming?” asked Seth.

“Nah dude – I won't impose myself.”

“Jinks, I'm no going to force you to come with us. But if you want to come, I'd be glad to have you with us. Do you want to come?”

“Yes, very much so,” replied Jinks.

“Then bring your laptop. And while I'm at it - do you have a live distro anywhere?”

“Yeah... Well, sorta. I have one loaded on my thumb drive.”

“Perfect. Bring it.”

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Jinks drove the car down a residential neighbourhood.

“Is it this street coming up?” he asked.

Seth was looking at the map of the area on his laptop.

“Yep. Turn right,” he said. “Picking up anything yet Kerstin?”

“Oh yes. Tons of wireless networks. Everywhere.”

“We're looking for 2107,” said Seth.

“I see it,” said Jinks. “There it is. On the left.”

Jinks stopped the car.

“I'm detecting three wireless networks in this area,” said Kerstin. “Two of them with encryption, one of them with none. I'm connecting to the unencrypted one now.”

She typed a few keys on her laptop. There was a pause.

“Done. No, this is not our guy. This network is connecting to the Internet through a different ISP than the hacker.”

“Okay,” said Seth, “let's connect to the other two networks. I'll take one if you take the other?”

“Sounds good,” she replied.

Seth turned to Jinks.

“Want to see you crack the encryption of a wireless network in under two minutes?”

“Yeah!” responded Jinks.

Seth closed the mapping software on his laptop. He opened a new, blank, terminal window and began typing. He spoke to Jinks as he worked on the machine.

“The problem with this form of encryption, which is called WEP, is that not all of the data that is sent is well encrypted. Some data packets are sent using what are known as weak initialization vectors. Listen in on enough of these, and you can figure out the encryption key. You have that, and well, the network is as good as yours.”

“So what if there's no traffic to listen in on?” wondered Jinks.

“Well then what we do is something called a replay attack. You do it too if there's too little traffic being sent over the airwaves. Long story short, you send bogus data on the network to bluff the computers in there to respond with even more data. More traffic equals more weakly protected packets, and badabing, badaboom, I've just cracked the encryption.”

Jinks appeared to be caught off guard.

“Wait, what? Just now?”

“Just now,” said Seth, looking up to Jinks. “That's how little time it takes to break the encryption. Kerstin, you in yours yet?”

“Almost,” she replied.

“So now I'm in the network,” Seth told Jinks, his eyes fixated on the laptop screen. “And- Okay, he's using the same ISP as our hacker, but the hostnames here don't match what we saw the hacker use. There's a Windows machine here. Let's check it out.”

Seth opened another window, and typed a few keys. He was now surfing the contents of the remote computer's hard drive.

"I'm now going through the computer's files. The system's password wasn't even changed from the default. This is probably not his. I don't know any self-professed hacker that would allow such an insecure mess to coexist with them in their house."

Seth continued going through the contents of the computer. Flipping through the documents stored on the machine, Seth stumbled on some tax returns for the previous year. He quickly read through its contents.

"Yeah, this is some other family's computer. Not our guy. How's it going for you Kerstin?"

"Better now. I had to clone my MAC address, but I'm in now."

"MAC address?" asked Jinks.

Seth was the one to answer. "It's a unique identifier tied to your network card. Theoretically, it's never supposed to change. People use them to prevent outsiders from joining their network. They just set up a list of approved computers on their router, and if some other computer tries to join in, it gets booted off."

"Seth says in theory because you *can* change your MAC address," clarified Kerstin. "I just changed mine to mirror that of a computer that's already approved to be on the network."

"I see," responded Jinks. "How do you know all of this?"

"Experience," she replied.

"So you guys can break through any encryption?" asked Jinks.

"Pretty much," said Seth. "WPA is supposed to be the new standard to encrypt networks, but no one uses it. It fixes what makes the current protocol so vulnerable, but give it a few months and it'll be cracked too."

"This is not our hacker," said Kerstin. "This network is using the wrong ISP."

"Shit," was Seth's response.

Seth looked across the street.

"I guess we have to break in the house. I mean if there's no wireless network running in there."

"What? Are you kidding me?" yelled Kerstin.

"What else are we going to do?" said Seth.

"I don't see a car," said Jinks. "Want me to knock just in case?"

"Sure."

Jinks left the car and approached the house. Seth looked to Kerstin.

"Do you see Jinks' thumb drive anywhere?"

Kerstin looked around her.

"No, I don't," she said. "Are you seriously going to do this?"

"I don't know what else to do. We're so close."

"We're not even sure it's his house."

"I know. I know."

Jinks arrived at the front door, and knocked. There was no response. He waited, and after a minute motioned to Seth with a thumbs up.

"Stay here to be the lookout," said Seth. "Can I borrow your hair pin?"

Kerstin obliged. She did not ask any questions.

"Thanks," said Seth.

Seth got out and walked to the front door. He took out his keys, and removed one of the key rings. He then unfolded it to make a pin, keeping it slightly bent at the end. He then took Kerstin's hair pin, and bent it in an 'L' shape. He jabbed the two into the door's lock, and began to pick it. Jinks looked around nervously.

"Don't look," said Seth. "Make it seem like we're waiting for someone to answer the door."

"Got it," said Seth. He used the combined pressure of the metal tools against the lock to open it. He opened the door.

Two single beeps were heard. Seth looked to his left, at the source of the sound. It was the control panel for the home alarm system. He approached it. The screen on the panel was counting down from thirty seconds.

"Oh shit," said Seth.

"Can you hack *that*?" asked Jinks.

"No. We gotta move now. Find that computer!"

Seth got out of the house. Kerstin was still in the car waiting. He pointed towards her. He saw her look over, and then vigorously waved his hands for her to leave. She got the message. Kerstin jumped from the passenger seat into the driver's. She started the car and drove off. Seth returned inside the house, closing the front door behind him. He moved from room to room, trying to find the hacker's computer. He could hear Jinks searching through the other rooms.

"You find it?" he yelled out to Jinks.

"No, not yet!" was the response.

The alarm started. It was an ear shattering wail. Seth was sure the neighbours could hear it. The phone inside the home began to ring. Seth ignored it.

"Found it!" yelled Jinks.

"Where are you?!"

"Downstairs!"

Seth moved through the halls of the house.

"Where are the stairs?" he shouted to Jinks, looking around.

"By the kitchen!"

Seth moved to the back of the house, and found the stairs. He went down. The basement was a single large living space, with a room cutting to its side.

“In here!” yelled Jinks.

Seth entered the side room. It was a mess, much unlike the rest of the house. Clothes were strewn everywhere, a filthy bed remained unmade. Seth moved towards the desk to the side, where the computer was located. As he made his way, he glanced at the books that adorned the room's floor. They were on subjects such as assembly programming and shell coding. Topics that would be of interest to but the most hardened of computer enthusiasts.

“This is our guy!” shouted Seth over the alarm. “See if you can find his laptop anywhere!”

Seth reached the desk and turned on the two monitors that were there. His action was immediately rewarded with the picture of a naked eighteen year old girl spread across the two screens. An open window on the right screen indicated that the computer was busy downloading a pirated movie. The machine was running the *OpenBSD* operating system.

“Do you have the thumb drive? I need it!” yelled Seth to Jinks, who was looking for the laptop under the bed.

“Oh shit - it's in the car! I'll get it!”

“Fuck! Just forget it and keep looking for that laptop!”

This was not good. Without that thumb drive, Seth had nothing to which he could offload the data he copied from the hacker's computer. He also needed the live distro that was on the thumb drive to bypass much of the computer's security. Seth opened a terminal window on the machine.

He issued a command to gather all the files he could from the hacker's personal directory. That's about the most he could touch without the extra access the live distro would have afforded him. Seth initiated a command to log into one of the high-speed corporate FTP servers that he knew would still be working after all these years. His terminal window filled with cryptic writing. The server had let him in.

Seth began uploading the files. The program estimated that the transfer would take an hour. He could not wait for that long. The computer would have to continue to do the upload after he had left the premises.

Seth issued a command to hide the transfer from sight. If the hacker came back before the upload was complete, there'd be no visual cues present to let him know of the computer's subversive assignment. Seth finished off by deleting the logs that had recorded all the commands he had issued to the computer.

"We're done. Let's go!" shouted Seth. Jinks wasn't there.

"Jinks!" he yelled again, leaving the hacker's lair.

"Yeah!" Jinks replied back, from upstairs.

"We're leaving!"

Seth ran out. He could hear the police sirens. Jinks was already walking down the street. Seth closed the door behind him and looked around. Kerstin was nowhere to be seen. Suddenly, a car screeched around the corner. It was Kerstin. She stopped the car on front of a running Seth, who jumped in. She then drove by Jinks further down the street. He got in. She floored the gas.

"Slow down!" yelled Seth, looking around for the police.

Kerstin got out onto the main street, and began driving away from the suburb. The police sirens faded in the background.

"Was it the right house?" she asked.

“Yeah, it was. We found the hacker's computer, but not his laptop. Right Jinks?”

“I didn't see it anywhere,” he said.

“We forgot the thumb drive in the car. I copied what I could off of his computer, but that's about all I could do.”

“If you didn't have the thumb drive, where did you put all the data?” asked Kerstin. “Did you burn it onto a DVD?”

“I uploaded it to a fast FTP server I know.”

Kerstin passed one of the suburb's malls.

“Where to now?” she asked them.

“I don't know where,” said Seth. “We need some peace and quiet to do this – and I need somewhere where I can download the data off of the FTP server. Yet we can't go in public. Nor can we go to my house, or yours, or Eric's, or Gabriel's, or anyone we know.”

“We could go back to under the bridge. It was quiet there and there's Internet access,” proposed Kerstin.

“That's true. But we ran out of power last time,” said Seth.

“You guys could come to my place?” said Jinks.

“Your place would be a bad idea. The cops have hit Gab and Eric. You'd be next.”

“No I wouldn't,” maintained Jinks.

“Haven't the RCMP called you or anything?” asked Seth.

“Nope. You guys have never talked about me online... or off for that matter. What is there to link us? We go to school together, and that's it.”

“And I've never called you either,” noted Seth. “You're right.”

Kerstin entered into a parking lot to her right. She turned the vehicle around and exited the lot, returning to the road heading the opposite way.

“I'm convinced,” she said.

SIXTEEN

All Coming Together

Seth and Kerstin entered Jinks' home. Statues and art objects collected from foreign countries decorated the place.

"Nice apartment," said Seth. "I like the art."

"You guys have never been here, eh?"

"Jinks, I'm sorry I never got to know you any better," said Seth.

"Ah dude, you don't have to say that now," replied Jinks.

"No, really. I'm sorry."

"Thanks," said Jinks.

They entered Jinks' room. They were greeted by half a dozen movie posters plastered to the walls. An outdated computer occupied the small desk to the corner. Jinks sat on the bed.

"Now I don't know about you guys," he said, "but I'm famished. I can't work when I'm hungry like this."

"I'm pretty hungry too," said Kerstin.

"I still have money left," indicated Seth. "How about we order some takeout? My treat."

"Nah dude, you don't have to do that," Jinks retorted.

"I want to. Let's do it."

Jinks conceded. "Can't argue with free."



The black hat hacker returned to his home. The security company had called his workplace, informing him of the breach. As he approached the house, he saw a single police officer present, waiting by his car.

"Hi," said the hacker.

“Hi,” replied the officer. “Want to check it out?”

The black hat walked to the front door. It was unlocked.

“Was that you?” he asked the police officer.

“No, but I did enter the home. Your neighbour came out and said she heard a car screeching down right after the alarm. Do you want to see if anything is missing?” he asked the hacker.

The hacker entered the home. It was just as he left it that morning. He ran to the basement, where his computer was stationed. He turned on its monitors – the movie was still downloading. Returning upstairs, he took a quick look around at the home. The television was still there. So was the stereo. He got out to meet the police officer.

“Seems to all be here,” he told the officer.

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Open Chinese food containers populated Jinks' room. Seth was chowing down on some chicken fried rice as he downloaded the hacker's personal files from the corporate FTP server.

“It's done,” he said with a mouthful of food.

Seth grabbed Jinks' thumb drive and copied the freshly downloaded data onto it. He then tossed the device over to Kerstin, who was busy eating through her Won Ton soup.

“Those are the files?” she asked, looking up.

“Yes m'am.”

Seth sifted through the data on his own laptop, but he found no trace of the black hat's worm. The update that had caused them so much grief was nowhere to be seen. Neither was the worm's source code, nor any copies of the worm itself.

“I'm not seeing the worm anywhere,” declared Seth.

"It makes sense though doesn't it?" said Kerstin. "You said earlier that the guy was running BSD. The worm was designed to run on Windows."

"He could have still compiled it on BSD. Do you think it could all be on his laptop?" asked Seth. Kerstin shrugged.

Seth placed his hands to his head. "This is a nightmare," he concluded. He returned to the computer to sift through more of the hacker's files. Perhaps he would find them yet, he thought.

"I got something," said Kerstin. "It's his emails."

"Oh?" said Jinks, who was now dumping the downloaded files onto his own computer.

"Yeah, I'm extracting it all now. Check out this one here though – it's a receipt for a digital gold payment."

"I've never heard of that before," said Jinks.

"That's because only spammers and phishers use it. Think of it as a 'Western Union' for computer criminals. Transfer money, leave no trace."

"He' selling the worm for money?" said Jinks.

"I don't know," answered Kerstin. "It just says that some guy named null_cool transferred him five thousand dollars. I'll keep looking."



Seth and Kerstin had continued to sift through the files. Reams of paper filled the room as Kerstin printed off any email message she deemed potentially useful. An excited Jinks interrupted them.

"Hey guys, I got something!" he said. "Check this out."

Seth sat on the bed beside Jinks, who was stationed at his computer. Kerstin followed suit, looking over Jinks' shoulder.

“Okay, so the payment to our hacker was sent by a guy named null_cool right? So I did an Internet search for 'null_cool', and guess what – the guy posted an ad on a freelance job site under the same alias.”

“Okay,” said Seth.

Jinks continued. “So I looked up the profile for the account that posted the ad on the job website. He has a bunch of contact details listed there - his email, his instant messenger user names, and so forth. So I looked them all up.”

Jinks turned to face his computer. “I got nothing when I looked up his email address and his other contact information, but when I did a search for one of his instant messenger user names, I got this.”

Jinks pointed towards his screen. He had his Internet browser open on the website for Porsche enthusiasts. It was an online forum, where fans of the cars could congregate and discuss.

“It was in Russian originally, so I translated it online. Guess what? Mr. null_cool owns a Porsche. He says on the site that he's a software engineer. How many engineers in the computer business do you know that can afford a Porsche? Especially in Russia?”

“Good find Jinks,” responded Seth. “What was job on the freelancer site for?”

Jinks clicked his mouse a few times, and navigated back to the freelancer website where the job had been posted. The ad read,

I want to do forum posting up to 3000 as per the target keywords. Priority to the Higher Review and Low price. If you are in GAF then you can do but i will pay after completion of project..No escrow til you will not finish....

“It's under the 'web promotions' category,” said Jinks.

“You know what that ad really is for?” said Seth.

“Spam?” answered Jinks.

“Yeah. Freelancer sites like that one are how spammers outsource their work. They push a product, and they get other people to do their dirty work for them.”

“So the black hat was paid by a spammer?” asked Jinks.

“Looks like it. Maybe he uses the botnet to spam people.”

Jinks returned his attention to his computer. Seth and Kerstin went back to their own laptops to search through more of the hacker's files. No more than a minute had passed when Jinks spoke out once more.

“Hey,” he said, “have you guys ever heard of *avnews.ns*?”

Both Seth and Kerstin shook their heads.

“I was looking through the other ads this guy had posted on the freelancer website,” clarified Jinks. “The new ads don't say what he spams for, but the older ones do. It's for this anti-virus news website.”

Seth went onto the *avnews* website. The site, which Seth translated from Russian, discussed the latest in anti-virus news. The website appeared to be operated by one man – Dmitri Tarasov. Seth clicked on the link leading to the man's biography. According to the page, Dmitri was the chief software engineer for the Russian company *Avalanche Anti-Virus*.

“Oh, shit” stated Seth. “So this null_cool guy isn't just any spammer or software engineer. He happens to be the chief programmer for an anti-virus company. That can't be good.”

Kerstin had also quickly read over the biography.

“An anti-virus company that pays to get first dibs on one of the most prolific computer worms of this era,” noted Kerstin. “It's not like this is the first time that this would have happened.”

“Let me see if I can dig up more on this,” said Seth.

Seth searched online for *Avalanche Anti-Virus*. He found many web pages, but they all agreed: the company was a fraud, and their line of anti-virus products a scam. By this point, he had seen enough.

“Guys,” he said, “I don't think that our hacker is being paid to give an anti-virus company the worm. I think it's the other way around. I think they're paying him so that they can use the botnet to distribute *this*.”

Seth turned his laptop to face Kerstin and Jinks. It was a picture of the desktop on someone's computer. On the bottom right portion of his screen, there was a little window indicating that a virus had been detected on their computer. Seth continued on.

“It's a fake warning saying that there's a virus on the computer. It then recommends the purchase of *Avalanche Anti-Virus* to wipe it off the system.”

Seth closed his laptop shut. He turned to Kerstin and Jinks.

“There is no anti-virus program,” he said. “At least not a real one. This is all one big scam. They're getting the botnet to put these messages on thousands of computers. That's what this is all about. They're counting on that one percent of victims to actually fall for it and pay them money for a product that isn't real. Imagine, you infect 100,000 computers, and out of those, the one percent pays up \$60. That's sixty times a thousand – sixty thousand dollars! For nothing!”

“Do we know that for sure?” asked Kerstin.

“Okay, you're right. Let's think this through. We know for sure that this *Avalanche Anti-Virus* company is a scam. We know that they need infected computers in order to put those fake virus warnings up. We know that a botnet is the best way to get junk like that into a system. We also know that this company paid a guy, our hacker, who is related to a very large botnet. Yeah, I think we're good on that one.”

Kerstin looked outside the window.

“So how do we prove it for the RCMP?”

“We call the hacker up.”

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Graham was sitting at his computer station. For days, he had been sifting through the hard drives of the hackers captured home computers. While he had found some material of interest, he could not find any evidence explicitly linking the hacker trio to the botnet. He looked outside. It was already getting dark. Exhausted, Graham decided to give another go at decoding Seth's encrypted files.

His office telephone rang. It was Kevin.

“Hey Graham. I just got word that our fugitives are calling their good buddy Eric. They're using VoIP for the call – the guys here need us to finish off the trace for the Internet side of things. Can you come on down?”

“Be right there,” answered Graham.

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“So why are you calling?” asked Eric, over the phone.

“Will you just stay on the line for me” responded Seth. “We know who is actually behind the worm. We found out. But we need you to be in on this conversation that there's some legit record. Your line is still giving the beeps right?”

Seth was referring to the distinct audible indicator that informed telephone users under investigation that their conversations were being recorded.

“Yes,” said Eric.

“Then that's all we need. You don't have to do anything.”

Eric produced a loud sigh.

“Fine.”

Seth dialed a ten digit phone number on his computer. He was initiating a three way call between himself, Eric, and this new number. The phone rang twice. There was a click, and a recording came on.

“Operator, we do not accept collect calls.”

There was a pause, and the recording continued.

“Welcome to Nenn's *Phreaking Awesome* PBX! If you already know what you want to do, please enter the two digit extension followed by the *pound* key. Otherwise, press *zero* to listen to your options.”

Seth typed in the two numbers, followed by the pound key.

“Please enter which number you are dialing from,” requested the automated voice.

Seth had dialed into the *Caller ID* section. It allowed him to make his calls appear to come from a different number. Seth could make his calls appear to come from the White House if he so wished. In this case, however, he wanted to make it seem like the call was originating from Russia.

Complying with the request of the recording, Seth entered the number for a random Moscow telephone number he had acquired through a quick search online.

“Please enter which number you would like to call,” asked the recording. Seth placed his hand over the microphone and turned to Jinks.

“Jinks, you always wanted to be an actor right? I can't do a Russian accent. I can't do it for shit. But I know you can. I've heard you do accents before – you're good at it Jinks. I need you to talk to this guy for me Jinks. Talk to him about the worm.”

Jinks mouth opened as if he were to say something, but no words came out. Finally, Jinks blinked multiple times and said,

“Seth, I don't know the first thing about computer worms.”

“You can say anything you want. It doesn't matter. All he has to do is acknowledge it exists. So all we need, is a sentence where he uses the word 'worm', okay? I'm calling his number now Jinks. You can do this.”

“No, I can't,” responded Jinks.

“Yes, you can,” replied Seth.

Seth dialed the number for the black hat's home. He had obtained it by looking up the hacker's address on the directory assistance website. The line rang.

“Hello?” came the voice of a young man on the other end.

“Heallow,” said Jinks, laying on a thick Russian accent.

“Yes?” responded the unimpressed voice.

“This is null_cool. I want to talk botnet, and I-”

“You fucking ASSHOLE! First of all, what the FUCK are you doing calling my home, huh? Do you fucking realize that I'm not the only one living here you Russian shithead? And how did you even get my number? Huh?”

“Well,” responded Jinks.

“No no no no, you shut up until I'm done. You fucked me over hombre. Do you know how much we rent out that botnet for? So imagine my surprise when I see that you loaded up our bots with your cheap ass malware. Because of you, our bots are running slow. So slow, that I have three guys on my ass asking what the fuck is going on, and I have to tell them that its a bug. That I screwed up. No, you're out. And don't fucking ever call me again, or I'll take down your server and the whole fucking Class B that that it's on. Comprende?”

There was a click. The black hat had hung up. Seth took his computer back from Jinks.

"You still there Eric?" asked Seth.

"I'm still here. I got it all," said Eric, still on the line.

"Perfect. Thanks bud."

"I'll see you soon," said Eric, before hanging up.

Seth turned his attention to Jinks.

"Good job Jinks!" said Kerstin, hugging him.

"Awesome stuff guy," added Seth.

"I don't get it," said Jinks. "I didn't say anything."

"He admitted that he's involved with the botnet," said Seth.

"That's it?" asked Jinks.

"That's it. Eric's got it recorded with the police's wiretap, I have it recorded with my computer. We're doing good. For once."

Shouting was heard from outside. Kerstin looked out.

"Guys, I think we have a problem," she said.

Jinks and Seth approached the window. They could see the black van against the night sky. Ottawa Police officers were climbing out. A police car arrived on site, followed by another.

"Oh shit," said Seth, "we gotta get out!"

Kerstin cut the power to her laptop and packed up. Seth and Jinks followed suit. Within seconds, the three were making their way out the apartment door.

"I know a way out. There's a service elevator, in there," said Jinks, bringing them to the back of the floor. He called the oversized elevator up. "There's a tunnel in the basement that brings you to the other apartment building."

Seth and Kerstin descended to the basement, and followed Jinks down the ensuing plaster walls of the underground tunnel.

"Turn left here," said Jinks.

Jinks had brought them to the underground parking of the apartment buildings. They walked down the concrete wall. Jinks opened a second door, and walked up some stairs. The exit was at the top. They opened its brown steel door.

They were now back outside, on the other side of the fence from the two apartment blocks. They could see the flashing blue lights in the distance.

"How did they find us," asked Seth.

"They must have traced the call to Eric," responded Kerstin.

"I never thought they'd had the know-how to do that."

Seth saw the main road nearby. He pointed it out to the two.

"There's the road but its out of the question that we walk by it."

"Let's grab a city bus," suggested Jinks.

"Yeah, okay. Do you guys have some coins? I got \$2."

"I have money still," said Kerstin.

"I got my bus pass on me and some money if you're short some," said Jinks.

The trio waited in the darkness. When they heard the bus approach, they ran up to its designated stop. The bus stopped, and the three got in. As the bus left, it passed Jinks' apartment building. They could see the multiple police cars, the busy officers, all preparing for a bust. The bus continued on.

"All of this is because of that guy, and his fucking botnet," declared Seth.

"Shhh," responded Kerstin. Seth ignored her.

"You know what really pisses me off? The fucker framed us. Imagine if we didn't go to Toronto, if we didn't find out what we

know now. We would have had nothing. Imagine if we went to court like this. We'd be fucked! And for what – money. Money, money, money, fucking money. That fucking piece of shit bastard son of a bitch. I want to fucking kill him.”

“Forget it Seth, we won,” said Kerstin.

“Actually, I don't want to kill him. I want to hurt him. I want cuts all over his body, and then rub alcohol into them. I want him to suffer, to fear, just like we've suffered and feared. I want to take down his botnet.”

“Let it go Seth,” implored Kerstin. “Let's get Flow and i0 the recording with the hacker, all right? We're done. We won Seth. We did. Not him. Us.”

“You're right,” said Seth. “You're right.”

“So what now?” asked Jinks.

“Well, Kerstin's right. Let's get Flow and i0 a copy of the telephone conversation. We'll tell them what's happened since we left them. Then, we go out to drink. This might be the last night I get to do this for a long time.”

“You guys could still stay at my place,” said Jinks.

“No Jinks, I'm handing myself in tomorrow. I'm done.”

Seth looked at Kerstin. She nodded.

“Tomorrow, we'll go to the RCMP,” she said. “But tonight, it's something special. Tonight, we go out and enjoy life!”

SEVENTEEN

The End

Seth, Kerstin, and Jinks walked down the streets of Ottawa's market. This was the drinking hub of the city, filled with row upon row of bars and clubs. Seth no longer made any efforts to conceal his identity. The fear was gone. He accepted his fate. He looked towards Kerstin. She was smiling. Seth looked back on front and smiled.

They walked into the popular Irish pub. Seth liked this one – a network of doors and alley ways connected this pub with many others, creating a very large space through which to roam. The bouncer at the door asked them for their ID. Like the others, Seth obliged. The bouncer then asked to search their bags.

Within a minute, they were inside. They ordered drink after drink. They danced. Seth ran out of cash, and started to use his credit card once more. They drank some more. Seth could feel the buzz, but it wasn't enough. He continued to drink. So did Kerstin. He looked at her. She was so beautiful. So smart. He didn't want to ask her out now, he thought, he didn't want to jeopardize their relationship at this crucial time.

Looking to his other side, he saw that there was an attractive nineteen year old sitting on a sofa with her friend. He approached her and asked if she'd like to dance. She pointed to the man across from her. It was her boyfriend. He didn't seem too pleased. Seth backed off and returned to Kerstin's side, taking in another beer.



The students stumbled out of the pub, thoroughly intoxicated. They walked, uninhibited, on front of the many parked police patrols of the night. The officers ignored them.

“Fuck being messed with,” declared Seth. “Fuck this shit.”

“Huh?” responded Jinks.

“Let's take down the botnet,” said Seth.

“Okay,” replied Kerstin. “Why didn't we think of that earlier? Oh yeah – because pulling it off is impossible. Don't you think it's been tried before?”

Seth grinned.

“Oh come on, where's your sense of fun?”

“Alright,” she conceded, “why not. You in Jinks?”

“Of course.”

The three walked towards an abandoned picnic table. Seth and Kerstin took their laptops out and turned them on. Within a minute, he was scanning the area for any wireless Internet connections he could latch on to. He found an available network.

“We got Internet,” he exclaimed. “Beautiful, sexy, Internet.”

Seth grabbed a beer bottle stashed from the bar in his bag. He uncapped it and took a sip.

“One for on the road, you know?” he said.

“Pass me that,” said Kerstin. She took the bottle from Seth's hand and gulped half of it down, passing the remainder to Jinks.

“You're so hot when you drink that beer,” spurted Seth.

“Right,” replied a slightly less lubricated Kerstin.

Seth began searching the Internet for technology sites that had dissected the vicious computer worm. He found one. From that, he established where the bots were connecting to to obtain their orders. Seth spoke to himself throughout the ordeal.

“They don't connect to a single IP. IPs can be taken down. The bots are connecting to a domain. So when you take a server down, it doesn't matter, because there are other IPs to fall back on. Smart.”

Kerstin was reading up another white paper on the worm's authentication scheme. In order for the hacker to control the infected computers, he needed fulfill two requirements.

“Heh, you recognize this address,” asked Kerstin to Seth.

“That's the domain for the hosting company in Toronto. Why?”

“It's one of the hostnames authorized to access the botnet.”

“What are you guys going on about?” asked Jinks.

“Well, to log in and access the botnet, you need two things – for one, you need to send the bots the right password. But you also need to be on the bot's list of authorized hostnames.”

“Hostnames?” he said.

“Yeah, it's your Internet address,” clarified Kerstin, “with a unique identifier appended to it. That's usually your machine name or your user name. Anyways, if you don't connect to the botnet from the right place, you can't get in.”

“Because only when you connect from the right Internet connection will you have the right Internet address authorized by the bot,” said Jinks.

“You got it!” said Kerstin, giving Jinks a good jab. “So according to this research paper, the list of Internet addresses includes a few places in Australia, five in the Ukraine, and one from the hosting company in Toronto.”

“But he took down the Toronto location when he wiped off his account from the company's web server,” said Seth. “And I really doubt he'd go through them again. He must be connecting through somewhere else now. But where do you think that would be?”

"We can find out. The authorized list is coded in the worm itself" suggested Kerstin. "In that last update – the one he framed us with. The new list must be in there. Do you still have the update saved on your computer?"

"Never thought about deleting it," said Seth. "I'll open it up in the hex editor."

Seth opened his hex editor, a tool that allowed him to look at the raw contents of files. He used the program's search function, and entered one of the authorized hostnames from the Ukraine as the query to look for. Sure enough, the program found where the hostnames were stored.

"Oh, this is funny," he said.

"What?" asked Kerstin.

"Well, you're right. He did change the hostname. The new one he uses to access the bot resolves to his neighbour's wireless router. I remember the address from when we were trying to break into the wireless networks on front of his house. I guess that's all he could find at the time."

"Let's go there," said Jinks.

"Wait," said Kerstin. "We still need the password."

"So? We'll figure it out then," retorted Seth.

Seth approached a pay phone and called for a taxi.

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The taxi cab had dropped the three off at the corner of Elvina street, where the hacker lived. They walked down.

"Okay, I'm connected to the right router," announced Seth.

"So now you need a password, right?" asked Jinks.

"Yeah. I'll try the one he used to connect to the test botnet."

Seth joined the server which operated the botnet, and connected to one of its individual bots. He entered the password that they had intercepted the hacker use when he connected to the test botnet. The bot did not answer.

"It didn't work," said Seth. "Wrong password."

He then tried variations of the password. They all did not work. He tried the password that the hacker had used for his SSH session. The bot responded.

"I'm in! I'm in!" he yelled.

"Shhh," said Kerstin. "Don't wake anyone up!"

What happened afterwards was fuzzy to Seth. There were unsuccessful attempts to shut the botnet down. There was Jinks' vomiting on the ground. There was the running in the woods.

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Seth woke up. It was morning, and he was back in his townhouse. He looked to his side. Kerstin was there, in bed with him. He quietly got up, and walked down the stairs. Jinks was fast asleep on the couch. Somehow, coming back here had seemed like a good idea the previous night.

Seth checked his cellphone. It was on. This was not good, he thought. He turned the mobile off. Seth went to Jinks and nudged him slowly to the side.

"Jinks, we got to get out of here."

There was a knock on the door. Seth looked back at the shut door and ignored it.

"Come on," he said to Jinks, "we have to go now."

There were more knocks. Seth's groggy roommate walked down the steps and opened the door. Seth looked back. He wanted to tell his roommate to stop, but it was too late. The door was open, and there stood an officer with the Ottawa Police. The officer made eye contact with Seth. It was finally over, he thought. He walked up to the door. His roommate was surprised to see him home.

"Hi," said Seth to the officer, "would you like some coffee?"

"No thank you. Are you Seth?" asked the officer.

"Yes," he replied.

"You weren't an easy man to find," replied the officer.

Accompanying the local police was a detachment from the RCMP. They were there to acquire any new computer-related evidence. Graham entered the townhouse for the first time.

"So this is it, huh, the hacker's lair" he said to Kevin, at his side.

"Yep. And that's the kid there," noted Kevin, pointing to Seth.

EPILOGUE

Aftermath

Seth walked out of the court building. Three months had passed since they had been framed for orchestrating the Météo botnet. The media had had a field day with them, but now the cameras were all but gone from the courtroom steps. Turns out that it was better to be silent than wrong.

At first, the RCMP had refused to believe their story. They perverted all evidence to be in favour of their own original viewpoint. They were using Seth's frank discussions with them against him. Twisting his words, and telling him that the others had narced on him.

It was Flow and i0 that saved them. Their latest release of the *Binary Phunksters* video was entirely dedicated to the issue, including a detailed description of the events, culminating with the recording of the telephone conversation between Jinks and the black hat. All the evidence was there.

The new version of events began circulating on the underground technology news sites. It gained popularity. Some mainstream magazines even began picking up the story.

It was at that point that the RCMP shifted gears. Graham was assigned to speak to Seth. Things rolled much more smoothly. An investigation was launched into the activities of the black hat. However, as they soon discovered, it was too late. The black hat had vanished.

The RCMP still filed charges against Seth and the others. Graham had privately apologized to him on the matter. The courts, however, were forgiving. Seth walked out the doors of that court room with but a misdemeanor charge. Kerstin and Gabriel had both received the same sentence. The judge had been sympathetic to their version of events, even going as far as asking the students questions when she didn't quite understand what was being detailed.

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Seth, Gabriel, Kerstin and Jinks sat around a table at a small student-run outdoor café.

“You know,” said Seth, “I used to be scared of the question mark that was coming at the end of this summer. I didn't know what I was going to do once I was done University.”

“And?” replied Gabriel.

“I think I know now what I'll do – I'll join the RCMP.”

“Yeah?” responded Gabriel.

“Yeah. Investigate computer crime.”

Gabriel looked around the table.

“So you're up for hooking up this Saturday? For some 'rice tea' perhaps?”

“You know it,” answered Seth, grinning.

“I've been wanting to try out my new laptop,” added Kerstin.

“I'm in,” said Jinks.

“Perfect,” concluded Gabriel. “See ya then!”

The End.

Glossary

- Black Hat** A morally corrupt hacker who acts for personal gain. This is as compared to the ethical “white hat” hacker.
- Bot** A single infected computer that's part of a *botnet*.
- Botnet** A collection of infected computers, remotely controlled by an illegitimate central authority.
- Forums** Synonymous with online bulletin boards. A website for people to gather and discuss, by creating discussion topics and appending (*'posting'*) replies.
- FTP** File Transfer Protocol. Used to send/receive files from a client to a server.
- IP** Internet Protocol. An IP address refers to the address assigned to each computer connected to an IP-enabled network such as the Internet.
- IRC** Internet Relay Chat. A protocol used by millions worldwide to communicate instantly on the Internet. Also used by bot herders to control infected computers remotely.
- ISP** Internet Service Provider. A company that provides Internet access to individuals and businesses.
- LAN Party** An event where participants use networked computers to play multiplayer video games against each other.
- Live Distro** A portable operating system that runs entirely from a disc or thumb drive, requiring no installation on the host computer. In the context of this book, it allows the protagonists to obtain full access to computers.
- Météo** The name of the fictional botnet at the center of this novel. Inspired by the real-life *Storm* botnet.
- Packet** A single parcel of data sent over a network.

- PBX** Private Branch Exchange. In the context of this book, there are telephony devices handling multiple calls, allowing for services such as conference calls, voice mail, and the playing back of humorous recordings.
- Phreak** An adept amateur of the telephone network.
- RCMP** Royal Canadian Mounted Police. The federal police force in Canada, tasked with handling organized and computer crime.
- Scriptkiddy** “Wannabe hackers.” Youths knowledgeable enough to vandalize computer systems, and little more.
- Social Engineer** The art of conning individuals into providing information to those who shouldn't have them.
- SSH** A encrypted means of communication that allowed for users to log into computers remotely.
- Terminal** A text interface through which to operate certain computer programs.
- Thumb Drive** A portable data storage device. Also known as a *USB stick*, a *thumb stick*, or a *flash drive*.
- VoIP** Voice over IP. Telephone calls using the Internet as a medium. This term includes calls between computers on the Internet and conventional phones.
- Vulnerability** A problem with software that permits it to be exploited by third parties in order to compromise the computer.
- Warez** Pirated intellectual property, such as software.