

# Dr. Ronny L. Bull, Ph.D.

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## Summary of Qualifications

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- Over 15 years of Systems Administration and IT Management experience
- Network and Computer Security Specialist
- Software Engineer
- Full Time and Adjunct College Professor
- Multiple Industry Standard Certifications
- Seasoned Troubleshooter
- Clearance Level: Secret

## Education

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- **Clarkson University** **Potsdam, NY**  
*Computer Science Ph.D.,* *Graduated: Dec, 2016*  
Dissertation Title: *A Critical Analysis of Layer 2 Network Security in Virtualized Environments.*  
Research focus was on vulnerability assessment and exploitation of virtualized networks in multi-tenant environments. Portions of this work have been published and presented at: DerbyCon 4.0, BSides Roc '15, DEF CON 23, & DEF CON 24.
- **ITT Exelis/MVCC** **Rome, NY**  
*EC-Council Certified Ethical Hacker (C|EH) Training Course,* *May 14-18, 2012*  
Earned Certified Ethical Hacker v7 certification.
- **SUNY Institute of Technology** **Utica, NY**  
*Computer Science M.S.,* *Graduated: May, 2012*  
Thesis Title: *Design and Implementation of a Computer Science Virtualized Lab Environment at SUNYIT.*  
Designed and implemented a highly scalable and remotely accessible virtualized laboratory environment based on Xen for the Computer Science and Network Computer Security degree programs. Portions of this work have been published and presented at ACM SIGITE '13 & SUNY ITEC Wizards '14.
- **SUNY Institute of Technology** **Utica, NY**  
*Computer Science B.S.,* *Graduated: Dec, 2010*  
Honors: *President's List, Magna Cum Laude*  
Academic Award: *Outstanding Student Award - B.S. Computer Science*  
Capstone Project: Developed a sensor network solution using Dallas 1-Wire sensors, Gentoo Linux, Apache, Perl, Sendmail, and Cron that polls sensors connected to small embedded Linux systems on a network in order to monitor the environmental parameters of multiple aquariums. The sensors are periodically polled, and the results along with 24 hour statistical graphs are displayed on a web page. Alerts are generated via email if detected values are found to be outside of the desired range. The system was also integrated with Asterisk and the Festival text-to-speech engine in order to be able to retrieve sensor information via dialed extensions over the phone, as well as to provide alerting via auto-dialed phone calls.

- **Herkimer County Community College** **Herkimer, NY**  
*Computer Network Technician A.A.S.,*  
Honors: *President's List* *Graduated: May, 2006*
- **Northeast Technical Institute** **South Portland, ME**  
*Cisco Networking Academy,*  
Earned CCNA certification *2002*
- **Northeast Technical Institute** **South Portland, ME**  
*Microsoft MCSE Training,*  
Earned MCSA and multiple MCP certifications *2001*
- **Northeast Technical Institute** **South Portland, ME**  
*PC Repair Technician,*  
Earned CompTIA A+, Network+, and iNet+ certifications *2000*

## Professional Experience

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- **Utica College** **Utica, NY**  
*Assistant Professor - Computer Science Department* *August 2015–Present*  
- *Advisor to both the Computer Science and Cybersecurity clubs, and Head Coach for the NECCDC team*  
- *Designer and Administrator of the CS Linux Research Network and Virtualized Laboratory Environment*  
  
Course List:  
CSC102 - Computer Science II  
CSC117 - Microcomputers & Application Software  
CSC206 - Cybersecurity Scripting  
CSC207Z - Linux for Security & Forensics (*Compressed/Online*)  
CSC225 - Introduction to the Unix Operating System  
CSC300 - Introduction to C/C++ (*Special Topic*)  
CSC323 - Introduction to Networks  
CSC323Z - Introduction to Networks (*Compressed/Online*)  
CSC432 - Computer & Network Security  
CSC432Z - Computer & Network Security (*Compressed/Online*)
- **SUNY Polytechnic Institute** **Utica, NY**  
*Lecturer - Computer Science Department* *August 2013–August 2015*  
- *Advisor to the Network and Computer Security club, and Coach for the NECCDC team*  
- *Advisor for Undergraduate and Graduate Capstone Projects as well as multiple Master's theses*  
  
Course List:  
IS310 - Hardware & Network Infrastructure  
NCS315 - Networking of Information Systems  
NCS416/TEL500 - Digital & Internet Telephony  
NCS430 - Penetration Testing  
NCS440 - Virtualization  
NCS450 - Network Security  
NCS490 - Network Engineering (*Special Topic*)  
NCS490/TEL590 - Linux Networking (*Special Topic*)  
NCS490/NCS552/TEL590 - VoIP & Multimedia Security (*Special Topic*)  
NCS590 - Advanced Research Topics in Cloud Security (*Special Topic*)  
TEL590 - Research Topics in Virtualization (*Special Topic*)

- **Adirondack IT Solutions, LLC** **Frankfort, NY**  
*Owner & Principal Consultant* *January 2011–Present*  
 Provide IT consulting, networking & security solutions, enterprise VoIP solutions, server virtualization, video surveillance, web design, and application development services for select clientele in Central and Northern NY. Also provide consulting services for multiple high performance computing research projects at the Air Force Research Laboratory in Rome, NY.
  
- **ITT/Exelis Inc.** **Rome, NY**  
*Software Engineer II* *July 2012–April 2015*  
 Software engineering contractor at AFRL in Rome, NY working in the High Performance Computing group on Neuromorphic Perception and Text Recognition projects. My primary role as a software engineer was to develop highly parallelized and efficient code to perform neuromorphic perception and recognition functions on various types of input media utilizing C++, CUDA, and OpenCV as well as various other internally developed libraries. I also developed and maintained makefiles and bash scripts that automate building, deployment, and execution of our software in a highly parallelized environment that utilized a custom message passing solution developed by our team to send data between each process. I also served as a Linux administration consultant to the AFRL High Performance Computing Area Resource Center.
  
- **SUNY Institute of Technology** **Utica, NY**  
*Adjunct Professor - Computer Science Department* *August 2012–June 2013*  
 Course List:  
 NCS416/TEL500 – Digital & Internet Telephony  
 NCS490 – Virtualization Technologies (*Special Topic*)  
 CSC317 – Computer Systems & C/C++ Programming
  
- **M.A. Polce Consulting, Inc.** **Rome, NY**  
*Senior Engineer* *March 2012–July 2012*  
 Developed and implemented new IT solutions, as well as performed on-site and remote support for clients. VoIP and Linux specialist.
  
- **Mohawk Valley Community College** **Utica/Rome, NY**  
*Adjunct Professor - Computer Science Department* *August 2011–August 2013*  
 Course List:  
 IS101 Computer Applications & Concepts  
 CI112 Networking Fundamentals  
 CyberJobs Instructor for Network+ Certification classes
  
- **ESI** **New Hartford, NY**  
*IT Consultant* *August 2010–April 2011*  
 On-site Consultant and Backup Systems Administrator for the Herkimer County Community College Information Services department. Was responsible for the research and deployment of new technologies. Assisted in the management of the existing network infrastructure consisting of over 1200 network nodes. Assisted in the maintenance of RHEL servers running Oracle 10g and system imaging services. Supported and maintained a Windows Server 2003 server farm providing Active Directory, Exchange, DFS, DHCP, DNS and printing services to Windows XP, Vista, and 7 clients. Assisted in the setup of a new iMac/Xserver lab that was integrated into the current active directory environment. Researched and prototyped a streaming media solution using RHEL and Icecast that allows the Radio and TV department to stream their radio broadcast over the internet from the HCCC website. Assisted in the deployment of a new Citrix based lab. Assisted in the virtualization of all servers to a VMWare environment using vSphere and vConsole. Was also responsible for the deployment and maintenance of Sophos AV & Deepfreeze client installations.

- **Ronny L. Bull - IT Consultant** **Glenfield, NY**  
*Owner & Principal Consultant* *January 2002–December 2010*  
*Reformed as Adirondack IT Solutions, LLC in 2011*  
 Provided IT Consulting, networking solutions, enterprise VoIP solutions, server virtualization, video surveillance, web design, and application development services for businesses in Central and Northern NY.
  
- **SUNY Institute of Technology** **Utica, NY**  
*Student Administrator - Computer Science Department Unix Network (DOGNET)* *August 2009–May 2012*  
 Responsible for providing end user support to DOGNET users. Developed scripts using bash and ImageMagick for dynamic image re-sizing on the technical help docs provided by the Computer Science department website. Assisted in the maintenance of network computers, servers, and devices. Setup a Xen virtualization cluster for faculty and student use, as well as implemented a new virtualized VoIP laboratory.
  
- **Nirvana Natural Spring Water** **Forestport, NY**  
*IT Manager* *August 2006–August 2009*  
 Responsible for the administration and maintenance of the computer network infrastructure. Rebuilt the entire network infrastructure from the ground up upon my arrival. Implemented Gentoo Linux servers for the following functions; a custom scripted backup solution using bash, cron and rsync, a network video surveillance system using Zoneminder, a BIND DNS server for the company's external web domains, multiple Apache Web servers for an intranet web site as well as external web sites, a MySQL Database Server for inventory control and truck tracking, an Asterisk VoIP Server used as an intercom solution in production environments, and an OpenVPN server for remote access. Implemented Windows Server 2003 servers for the following functions; Active Directory, Exchange 2003, IIS Server with Exchange Webmail and ActiveSync, DNS/WINS for internal Windows network name resolution, Remote Installation Services, and Terminal Services. Implemented an Endian Linux Firewall solution to provide a robust firewall with proxy services and intrusion detection (snort). Developed and maintained a company intranet website, as well as multiple websites for Nirvana and Nirvana Transport. Also provided end user support, and installed fiber, and copper runs as well as wireless solutions for laptop users and warehouse scanning.
  
- **Herkimer County Community College** **Herkimer, NY**  
*Teacher's Assistant* *August 2005–May 2006*  
 Teacher's assistant to Professor John Cook of HCCC's Computer Network Technician program. Assisted in the deployment and maintenance of PCs, servers, and network devices in the department labs. Setup and deployed an Asterisk VoIP server for classroom demonstration & labs. Prepped student labs for class use.
  
- **Ira D. Conklin and Sons Inc.** **Utica/Syracuse/Newburgh, NY**  
*Information Systems Management Specialist* *August 2002–August 2005*  
 Network Administrator for all sites. Responsible for the deployment and maintenance of all network devices, servers, PC's, and laptops. Maintained a Windows NT active directory environment that was later migrated to a Windows Server 2003 mixed environment. Maintained a Windows NT Exchange mail server with IIS and webmail. Implemented a Cisco VPN Concentrator/Client VPN solution that connected each branch office to the main office in Newburgh as well as provided road warrior support for remote workers. Provided end user support to users in all three offices. Also served as a level 3 technician for C-Store chains all across New York State. Obtained the following industry certifications; Verifone Ruby POS systems installation and maintenance, Gilbarco/VeederRoot TLS Monitoring Systems installation and maintenance, Incon TLS Monitoring Systems installation and maintenance.

## Technical Expertise

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- **Software Development Skills:** Proficient in: C, C++, Python, TeX, Bash, Perl, Java, CUDA, OpenCV, OpenCL, CUBLAS, Thrust, Boost, MPI, ImageMagick, Tesseract, Leptonica, Infiniband Verbs, MySQL, MariaDB, HTML, CSS, Javascript, PHP, XML, PostgreSQL, SVN, CVS, GIT, Mercurial, and some Assembly.
- **Systems Administration Skills:** Proficient in Gentoo Linux, Red Hat Linux, Fedora, CentOS, Debian, Ubuntu, Kali, Oracle Enterprise Linux, Windows 9x/NT/2K/XP/2k3/2k8/2k12/Vista/7/8/10, Active Directory, LDAP, Virtualization (*All platforms*), Asterisk, FreePBX, TCP/IP, UDP, VPN, SSH, Cisco switches and routers, Wireshark, tcpdump, Apache, Postfix, Dovecot, Courier-IMAP, Exchange, Samba, NFS, DNS, NTP, FTP, BIND, MySQL, Wireless Networking, IP Video Surveillance Systems.

## Service

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- **Central New York Hackathon** **Utica, NY**  
*Co-Founder, Organizer, & Member of the Board of Directors* *April 2013–Present*  
A regional intercollegiate offensive/defensive cybersecurity competition held at the end of each Fall and Spring semester designed to improve the state of cybersecurity education and more closely align academia with Central New York industry partners. Problem scenarios either task each team with penetrating a target to take control or defending their systems from attackers to maintain control. Competition design, experiences, and results recently accepted for publication in the National Cybersecurity Institute Journal.

## Peer Reviewed Publications

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- **Bull, R.** & Matthews, J. Critical Analysis of Layer 2 Network Security in Virtualized Environments. *International Journal of Communication Networks and Distributed Systems*, Volume 17, No. 3. 2016.
- **Bull, R.**, Matthews, J., & Trumbull, K (*Undergraduate Collaborator*). VLAN Hopping, ARP Poisoning and Man-in-the-Middle Attacks in Virtualized Environments. *DEF CON '24*, August 7th, 2016.
- Mihevc, J., **Bull, R.**, Merante, N., & Froberg, B. The Central New York Hackathon: A Case Study on the Collaborative Design and Implementation of a Regional Cyber Defense Event. *National Cybersecurity Institute Journal*, Volume 2, No. 2. October 15, 2015.
- Shipman, P (*Undergraduate Collaborator*). **Bull, R.** Lab on a Stick. *SIGITE '15 Proceedings of the 16th Annual Conference on Information Technology Education*, 2015.
- **Bull, R.**, Matthews, J. Exploring Layer 2 Network Security in Virtualized Environments. *DEF CON '23*, August 9th, 2015.
- **Bull, R.** Exploring Layer 2 Network Security in Virtualized Environments. *DerbyCon 4.0 - Family Rootz*, September 27th, 2014.
- **Bull, R.** Migrating a Voice Communications Laboratory to a Virtualized Environment. *SIGITE '13 Proceedings of the 14th annual ACM SIGITE conference on Information Technology education*, 2013.

- Hu, W., Hicks, A., Zhang, L., Dow, E., Soni, V., Jiang, H., **Bull, R.**, Matthews, J. A Quantitative Study of Virtual Machine Live Migration. *CAC '13 Proceedings of the 2013 ACM Cloud and Autonomic Computing Conference*, 2013.

## Invited Talks

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- **Bull, R.**, VLAN hopping, ARP Poisoning and Man-In-The-Middle Attacks in Virtualized Environments. *ANYCon 2017 - Albany, NY*. June 17th, 2017.
- Drzewiecki, S (*Undergraduate Collaborator*). Gudrian, A (*Undergraduate Collaborator*). **Bull, R.**, The Stuffer. *ANYCon 2017 - Albany, NY*. June 17th, 2017.
- **Bull, R.**, How your virtual machines can be hacked in a cloud environment. *HackCon#12 - Oslo, Norway*. Feb. 15th, 2017.
- **Bull, R.**, Penetration Testing - An Overview. *Fordham University at Lincoln Center - Invited Lecture*. May 29th, 2015.
- **Bull, R.** Exploring Layer 2 Network Security in Virtualized Environments - DHCP Attacks. *B-Sides Roc '15*, April 25th, 2015.
- **Bull, R.**, Merante, N., Vandermaas, J (*Undergraduate Collaborator*). Virtualized Lab Environments for Cost-Effective Hands-On Learning. *SUNY ITEC Wizards '14*, November 18th, 2014.