MARWAN ABU-AMARA

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SUMMARY OF QUALIFICATIONS

- Experience with **security** encryption techniques, protocols, and components such as AES, RSA, SHA, SSH, SSL/TLS, IPSec, IDS, IPS, and Firewalls.
- Experience with **networking** protocols, technologies, and architectures such as TCP/IP, DNS, DHCP, SMTP, FTP, TELNET, VPN, ICMP, NAT, RIP, OSPF, BGP, P2P, Ethernet, and LAN and WAN.
- Propose, implement, and manage **security** and **networking** funded projects.
- Eight years of industrial experience with **Nortel Networks, Richardson, Texas, USA** as a *system design architect* and as a *senior technical advisor* responsible for designing, deploying, testing, and optimizing data & voice networks for commercial customers.
- Conduct research in the areas of **security** and **networking** including *Cloud Computing* and *IoT*.
- Publish three patents and twenty journal and conference papers in the areas of **security** and **networking**.

EDUCATION

1992 - 1995	**Texas A&M University**	College Station, Texas, USA

Doctor of Philosophy (Ph.D.), *Electrical and Computer Engineering*

1989 - 1991	**Texas A&M University**	College Station, Texas, USA

Master of Science (M.S.), *Electrical and Computer Engineering*

1984 - 1989	**Kuwait University**	Kuwait City, Kuwait

Bachelor of Science (B.S.), *Computer Engineering (Honor's List)*

PROFESSIONAL EXPERIENCE

2003 – Present	**King Fahd University of Petroleum & Minerals**	Dhahran, KSA

Associate Professor, Computer Engineering Department

- Propose, implement, and manage **security** and **networking** funded projects.
- Supervise graduate students research in the areas of **security** and **networking** including *Cloud Computing* and *IoT*.
- *Courses taught:* Data Security and Encryption, Computer and Network Security, Computer Networks, Computer Network Design, Internetwork Design and Management, Network Management, and Data and Computer Communications.

1998 – 2003	**Nortel Networks**	Richardson, Texas, USA

Senior Technical Advisor, Wireless Network Engineering

- Led a team that successfully designed, deployed, and tested several data & voice networks for commercial customers.
- Worked closely with the sales team and project management to address needs and requirements of the commercial customers.
- Used Perl to develop scripts to collect data, monitor, and troubleshoot customers' commercial data & voice networks.
- Conducted several workshops related to designing, planning, and optimization of data & voice networks.

1995 – 1997	**Nortel Networks**	Richardson, Texas, USA

Wireless CDMA System Design Architect, Research and Development

- Worked closely with the product line management to develop data & voice networks features for commercial customers.
- Designed the wireless CDMA inter-system soft handoff feature and generated two patents.
- Monitored, tested, and optimized the performance of the customers' commercial data & voice networks.
- Authored guidelines for provisioning wireless data & voice networks.

FUNDED PROJECTS

1. *Modeling and Mitigation of Economic Denial of Sustainability (EDoS) Attacks in Cloud Computing*, **CO-Investigator**, 2012 – 2014.
   - Supervised teams in applying the *AWS* billing model to propose, implement, and evaluate three techniques for mitigating EDoS attacks on cloud networks, namely, EDoS Attack Defense Shell, Enhanced EDoS-Shield, and EDoS Defender.
   - Used C++ to simulate the EDoS Attack Defense Shell technique.
   - Utilized test tools such as **JMeter** to evaluate the Enhanced EDoS-Shield technique.

2. *Internet Access Denial by International Internet Service Providers: Analysis and Counter Measures*, **Primary Investigator**, 2009 – 2011.
   ▪ Led a team that devised four solutions for both application level and routing level Internet access denial problems.
      i. Using peer-to-peer (P2P) networks, a solution was developed to solve the application level problem.
      ii. Three different solutions based on border gateway protocol (BGP) tuning, tunneling protocols, and network address translation (NAT) routers were proposed to solve the routing level problem.
   ▪ The BGP tuning-based solution and the tunneling protocol-based solution were tested and evaluated using experimental prototypes that used ***Cisco*** routers and switches.
3. *Saudi Honeynet Project*, **CO- Investigator**, 2009 – 2011.
   ▪ Supervised team members in designing and implementing the first Honeynet Project network in the Kingdom of Saudi Arabia that provides information surrounding active security threats and vulnerabilities currently active.
   ▪ Coordinated with Saudi-CERT to convey findings and provide periodic suspicious activity reports.
   ▪ Proposed and developed new techniques for the analysis of the Honeynet traffic that use entropy to evaluate different applicant features to classify the different malicious activities or anomalies seen in Honeynets.

AWARDS
- University Award for the category of Patents, 2010-2011, and 2013-2014, *King Fahd Univ. of Petroleum & Minerals*
- Distinguished Innovation Project, 2006, *King Fahd Univ. of Petroleum & Minerals*
- President and CEO's Top Talent Award, 2000 and 2001, *Nortel Networks*
- Circle of Excellence - Sales Support Award, 1999, *Nortel Networks*
- Wireless Networks President's Award of Excellence in Technology, 1998, *Nortel Networks*
- Award of Merit - CDMA Product Positioning, 1998, *Nortel Networks*

PATENTS
1. M. Abu-Amara, F. Abdulhameed, F. Azzedin, A. Mahmoud, and M. Sqalli, "*Dynamic Round-Robin Peer-to-Peer (P2P) Domain Name System (DNS),*" *US Patent # 8,612,618*, 2013.
2. M. Abu-Amara, "*Reducing the Rate of Registration in CDMA-based Mobile Networks,*" *US Patent # 7,769,380*, 2010.
3. M. Abu-Amara, S. Sides, A. Jalali, J. Boppana, S. Doctor, "*CDMA Inter-Mobile Switching Center Soft Hand-Off,*" *US Patent # 6,173,183*, 2001, *US Patent # 5,930,714*, 1999, *European Patent Office # WO/1998/018282*, 1998.

SAMPLE PUBLICATIONS
1. A. Shawahna, M. Abu-Amara, A. Mahmoud, and Y. Osais, "*EDoS-ADS: An Enhanced Mitigation Technique against Economic Denial of Sustainability (EDoS) Attacks,*" **IEEE Transactions on Cloud Computing**, Feb. 2018, Accepted.
2. M. Elrabaa, M. Al-Asli, and M. Abu-Amara, "*Secure Computing Enclaves Using FPGAs,*" **IEEE Transactions on Dependable and Secure Computing**, Jan. 2018, Submitted.
3. A. Mahmoud, A. Abo Naser, M. Abu-Amara, T. Sheltami, and N. Nasser, "*Software Defined Networking Approach for Enhanced Evolved Packet Core Network,*" **International Journal of Communication Systems**, Vol. 1, Issue 1, Jan. 2018.
4. M. Al-Asli, M. Elrabaa, and M. Abu-Amara, "*A Protection and Pay-Per-Use Licensing Scheme for On-Cloud FPGA Circuit IPs,*" **IEEE Transactions on Information Forensics & Security**, Sep. 2017, Submitted.
5. M. Al-Asli, M. Elrabaa, and M. Abu-Amara, "*FPGA-Based Symmetric Re-Encryption Scheme to Secure Data Processing for Cloud-Integrated Internet of Things,*" **IEEE Transactions on Dependable and Secure Computing**, Jul. 2017, Submitted.
6. M. Sqalli, S. Alsowail, M. Abu-Amara, Z. Baig, and K. Salah, "*An Experimental Evaluation of the EDoS-Shield Mitigation Technique for Securing the Cloud,*" **Arabian Journal for Science and Engineering**, pp. 1–11, 2016.
7. M. Abu-Amara, "*A Combined Solution for the Internet Access Denial Caused by Malicious ISPs,*" **Journal of Security and Communication Networks**, Vol. 7, Issue 11, pp. 2078–2095, Oct. 2014.
8. M. Sqalli, S. Firdous, K. Salah, and M. Abu-Amara, "*Classifying Malicious Activities in Honeynets using Entropy and Volume-based Thresholds,*" **Journal of Security and Communication Networks**, Vol. 6, Issue 5, pp. 567–583, May 2013.
9. M. Abu-Amara, A. Al-Baiz, A. Mahmoud, M. Sqalli, and F. Azzedin, "*A Scalable NAT-Based Solution to Internet Access Denial by Higher-tier ISPs,*" **Journal of Security and Communication Networks**, Vol. 6, Issue 2, pp. 194–209, Feb. 2013.

PROGRAMMING LANGUAGES
Python, C++, C, Perl, MATLAB, and assembly language for several microprocessors/microcontrollers.

CITIZENSHIP
USA

REFERENCES
Available upon request