

# ANDREA BARBERIO

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## Objective

Seeking a challenging position to work on projects that can have high positive impact on human life. I particularly enjoy to work on projects that can be open-source first, and that I can publicly talk about.

## Skills

- Teamwork and mentoring
- Systems engineering
- Software design and development
- Network programming and troubleshooting
- Large scale systems design
- Reverse engineering
- System security
- Computer forensics

## Experience

### Production Engineer, Facebook

19 October 2015 – Current, Dublin, IE

I work as Production Engineer in Facebook's European headquarter. Production engineers are responsible for reliability, scalability, security and performance of Facebook's infrastructure and products. I worked in different areas of the infrastructure:

- the DNS infrastructure (operations, redesign, development, scaling, performance)
- automation of the lifecycle of datacenter clusters
- automation of the bare-metal server provisioning. Particular focus on network services and protocols, and system firmware
- open source system firmware (LinuxBoot, OCP Open System Firmware, coreboot, u-root, systemboot): design, development, validation, release, testing, public speaking (see below).

I currently work on LinuxBoot, an open source system firmware (sometimes erroneously called "BIOS") with the objective of replacing opaque binary blobs from various platforms (servers, switches, cellular towers, laptops, etc).

There are multiple benefits from this: openness, transparency, control over what runs our

hardware, speed, flexibility, ease of customization, and more. My personal objective is to bring this to as many accessible platforms as possible - not just OpenCompute hardware, but much more.

LinuxBoot is entirely open source, and is made up by several components: coreboot, Linux, u-root, systemboot, fiano, and spans across multiple open source communities.

LinuxBoot is a shared effort of engineers from multiple companies: Facebook, Google, 9elements, TwoSigma, ITRenew, and various individuals. All the development, roadmap, meetings and coordination is public and accessible to anyone.

### **Software Development Engineer, AWS Networking, Amazon.com**

7 January 2013 – 2 October 2015, Dublin, IE

Worked as Software Development Engineer II, and previously (until April 2015) Systems Engineer II in the Network Monitoring team – AWS Networking. I am part of a large team of software and systems engineers that guarantees real-time monitoring, alerting, forecasting and visualization of the network state and network issues of Amazon's global network.

I'm currently co-leading a project aimed to change the way the network monitoring is done on a massive global scale network.

I review and influence the ongoing design and the development of the active network monitoring systems of Amazon. I develop mainly in Python and C++. My duties also include testing, maintenance, scaling, operations, on-call, and interaction with internal teams across the globe.

I am also technical interviewer, technical mentor on my areas of strength, and internal security certifier.

### **Firmware and Software Architect, Ditron S.r.l.**

12 November 2009 - 15 November 2012, Naples, IT

I worked as Firmware Architect in the Firmware Team, then as Software Architect in the Software Team. As part of a small team, I have led the creation of a platform for the development and the debugging of embedded fiscal systems based on the ARM7 architecture.

Once completed, as Software Architect, I worked on the full stack components of a new embedded system platform. As part of a medium-sized team, I have designed and developed firmware, device drivers, binary formats, system components, custom applications and graphics libraries of an x86 embedded system.

I have developed mainly in C, ASM/x86, ASM/ARM7 and Python.

## **Senior Security Consultant, PosteCom S.p.A.**

1 February 2009 – 30 June 2010, Rome, IT

I worked as computer security consultant in the Security Operations Center of PosteCom, the digital branch of Poste Italiane (Italian national post company). Working in a mid-sized team, I was in charge of the security operations, incident response, vulnerability assessment, penetration testing and digital forensics.

## **Teaching instructor, Military, government and public institutions**

January 2008 – October 2012, Naples, IT

Teaching instructor for multiple mid-term technical courses:

Ethical hacking and advanced computer security – Italian Military Aeronautics

Systems and network administration, information security – Italian Ministry of Justice

Systems and network administration, information security – Italian State Police

System and network administration – City Council of Naples, IT

## **Software Architect, Abstract S.r.l.**

January 2011– November 2011

As part of a two persons team with split responsibilities, I have designed and developed a web framework and, on top of this, a social network for an Italian Banking group. The project was developed entirely in Python, using the WSGI interface.

## **Education**

### **M.Sc. Digital Investigations and Computer Forensics, University College Dublin (IE)**

September 2014 – December 2016

Part-time student, graduated in 2016, grade A.

### **B.Sc. Telecommunications Engineering, University of Naples Federico II (IT)**

September 2001 – June 2007

Completed 90% of exams, interrupted because of full-time employment.

## **Open Source projects**

Below a list of projects that I either created, maintain, or heavily contribute to.

- Dublin Traceroute, a NAT-aware multipath traceroute tool, <https://dublin-traceroute.net>
- LinuxBoot, an open source system firmware replacement, <https://linuxboot.org>

- Systemboot, a set of components for u-root to implement a bootloader on top of LinuxBoot, <https://systemboot.org>
- u-root, an open source initramfs written in Go
- fiano, a library for UEFI firmware extraction and manipulation, <https://github.com/linuxboot/fiano>
- go-dhcp, a Go library with full DHCPv6 and DHCPv4 protocol, client and server support, used by Facebook for their DHCP infrastructure, and by various other projects, <https://github.com/insomniacslk/dhcp>

## Public talks

More info, slides and videos of my talks at <https://insomniac.slackware.it>.

- “Make Your System Firmware Faster, More Flexible and Reliable with LinuxBoot”, at LISA 2018 (2018-10-31)
- “Turning Linux Engineers into Firmware Engineers”, at OCP Regional Summit (2018-10-02)
- “Open Source Firmware @ Facebook”, at OSFC Open Source Firmware Conference (2018-09-13)
- “Introduction to Dublin Traceroute”, at MOCA Metro Olografix Camp 2016 (August 2016)
- Practical computer security, workshop, Linux Day Napoli, Naples, IT (2008)
- Introduction to the IT security, with examples of real-life attacks, Linux Day Napoli, Naples, IT (2008)
- Secure Systems with the Opensource and the GPL, CNR (National Research Council), Pisa, IT (2005)
- Wi-Fi Security: from theory to applications, MOCA 2004 (Hacker camp), Pescara, IT (2004)

## Publications

### Technical writer, Linux&C., Edizioni Vinco

Author of several technical articles for the leading Italian Linux magazine in Italian language.

My publications:

High-performances Python: when you must resort to C, Linux&C. (unpublished)

Wi-Fi Protected Setup: the weak link, Linux&C., year 13, issue 76

High-performances Python: how to optimize the code, Linux&C., year 13, issue 76

High-performances Python: code profiling, Linux&C., year 12, issue 75

Review of Slackware 11, Linux&C., year 8, issue 55

Skype: calling online, the network protocol, Linux&C., year 6, issue 46

Review of Xandros OCE, Linux&C., year 6, issue 46

Netfilter: creation of kernel modules for packet filtering, Linux&C., year 6, issue 37

- **Certifications**

**Forensics Computer Examiner, Accademia Internazionale di Scienze Forensi**

Documentation available upon request.

- **Languages**

Italian: ILR: native or bilingual proficiency

English: CEFR: level B2. Business English Certificate (BEC) Vantage, Cambridge

French: ILR: limited working proficiency

- **Personal information**

Italian citizen (EU)

Resident in Ireland

Additional contacts: [a.barberio@oltrelinux.com](mailto:a.barberio@oltrelinux.com)

Home page: <https://insomniac.slackware.it>