

# ANDREA BARBERIO

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## Summary

Passionate software engineer, capable of leading organization-wide initiatives, with hands-on expertise of development, debugging, and operation of global distributed systems across millions of machines used by billions of users. I have led groups of 15-20 people, and successfully mentored tens of engineers through their growth as tech leaders. I helped align multiple organizations inside and across companies, ensuring that every trade-off was taken into account. I have a north-star approach to strategic planning.

## Experience

### Principal Site Reliability Engineer, NVIDIA

12 February 2024 – now, Turin, IT (full remote)

I work in the Omniverse organization as the global tech lead SRE.

### Staff Production Engineer, Meta (Facebook)

19 October 2015 – 15 November 2023, Dublin, IE, then Turin, IT (full remote)

I work in the Web Foundation team, focusing on the **company-wide incident response** and **web infrastructure development**. I have improved Meta's global web infrastructure's performances and saved millions of dollars a year in infrastructure costs, and introduced a new process for continuous performance analysis. I also lead incident response for multiple billion user services, and reliability/efficiency work to ensure that products like Facebook, Instagram, WhatsApp are some of the most reliable in the world.

In my 8 years at Facebook / Meta I also worked on:

\* **LinuxBoot: open source system firmware for datacenters**: I led a team that co-developed and brought to production LinuxBoot/OpenSystemFirmware to a number of our Open Compute Project datacenter platforms. I personally coordinated with other industry partners (like Google, Microsoft, Intel, AMD and others) to have a common implementation and specification of datacenter system firmware. My work helped improve performance, debuggability, customizability and security of the supported platforms. I am one of the developers of LinuxBoot (<https://linuxboot.org>), OpenSystemFirmware (<https://www.opencompute.org/projects/open-system-firmware>), u-root

(<https://github.com/u-root/u-root>), and the founder of Systemboot (<https://systemboot.org>)

\* I created **ConTest** (<https://github.com/facebookincubator/contest>), a framework for continuous testing of firmware and hardware platforms, from embedded to datacenter. This work increased the reliability of the tested hardware, and minimized regressions by catching them before prod. The framework is currently used in production at Meta and other big technology companies, and is also sold as a commercial, managed solution by some partners.

\* Integrating my open-source project **Dublin Traceroute** (<https://dublin-traceroute.net>) into Meta's internal tooling. This work improves the visibility and understanding of network issues between Meta and the rest of the world.

\* **OS Provisioning:** I worked on improving the reliability, debuggability, and features of Meta's internal OS installation and configuration systems. Subsequently I led the team, and helped it to improve the oncall quality, and to set a new mission and direction. Faster and more reliable provisioning led to a reduction of downtime and an increase of usable capacity. Better oncall reduced team's toil. New mission and direction helped reuse the team's skills into the ever-changing world of datacenter growth.

\* **DHCP infrastructure:** I wrote most of the code that runs Facebook's DHCP infrastructure, including an open source DHCP library at <https://github.com/insomniacslk/dhcp> that is used by several big tech companies. After the rewrite, this became one of Meta's most reliable services, with near-zero operations. The cleaner structure made it easy to modify and test by other teams, simplifying the creation of new, specialized use cases.

\* **DNS infrastructure:** I have significantly improved performance, reliability, monitoring and operations of Facebook's internal DNS infrastructure. Faster internal DNS led to reduce DNS update latency. Better monitoring led to reduce time-to-resolution for DNS-related outages.

\* **Cluster automation:** I have improved the tooling to automate cluster turn-up, migrations and decommissioning, along with running the actual turn-up/decom process and providing support to teams owning specific parts of the infra turn-up/decom.

My main responsibilities range from designing and developing distributed systems, setting the long-term technical direction, mentoring and coaching engineers in multiple teams.

## **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 in favor of full-time employment.

## **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

### **Spokesman, multiple events**

- 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)

## **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 and resident (EU)

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