Marcello Barnaba
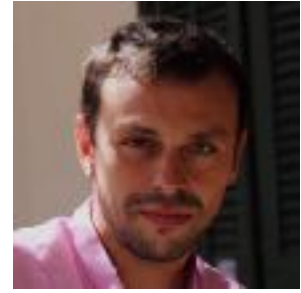
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Introduction

"**Tech Lead with 20+ years of experience delivering resilient distributed systems, leading cross-functional teams, and architecting critical infrastructure at scale (Meta, UN, startups). Passionate generalist, mentor, and OSS contributor.**

Skills and competences:

▪ Distributed Systems ▪ Tech Leadership ▪ CI/CD ▪ Rust, Python ▪ Linux Internals

▪ Infrastructure Automation ▪ Incident Response ▪ Security Hardening ▪ Cross-functional Collaboration

Cover letter:

I am a computing enthusiast since my early youth. The first computer I have been typing onto was an Olivetti Prodest PC1, 8086 4.77Mhz, in 1987. I've been living with computers and software since then, first computer network with Novell Netware Lite, 10Mb Ethernet cards and coax cables.

Connected to the Internet for the first time in 1997, by heart became aware of the Free Software Foundation and the Open Source movement. Started researching and working with UNIX systems ever since.

I started my professional career on December 1999, maintaining and building FreeBSD and Windows NT servers, creating site-to-site VPNs with dynamic routing and administering mail servers, while building PHP web applications for the general public and for private intranets, some of which are still in production as of today.

In the mid 2000s various experiences with different start-up environments, designing and implementing both software and UNIX infrastructures, some active to this day.

From 2010 to 2021 I have been worked for a specialised agency of the United Nations, wearing different hats, from authoring CSS style sheets to writing backend Ruby side code while creating and distributing RPM packages, creating supporting infrastructure and automating its provisioning and maintenance, calling meetings and hardening the security of critical pieces of infrastructure. In the last years, I have been working as Tech Lead in an organization-wide IT project with high external impact, commissioned to a third party vendor, and worked in its streamlining in the organisation ensuring ICT was in control.

I consider myself as a **generalist**, eclectic and passionate engineer with interest and solid capacity over a broad spectrum of computing and internetworking. When I'm not coding or administering infrastructures, I lift my eyes to the sky, point my refractor to the sky and collect photons from outer space.

Work Experience

Meta Platforms Inc. - Production Engineer

Company size: 100000
Timeframe: December 2021 - Present
Role: Production Engineer
Technologies: CentOS, Python, Rust, Workflow Engines, Distributed databases, CI, Big Data

2021-2023: PE Unprovisioning team, in the Datacenter Automation (DCA) Org. Responsible for asset decommissioning and wiping before exiting company premises. Implemented orchestration of physical destruction when wipe fails (i.e. broken hardware).

Key results:

- Embraced ambiguity and led a deprecation effort and migration off legacy systems, encouraging our team towards success.

- Developed, monitored, and rolled-out the new breed of unprovisioning workflows.

- Worked cross-functionally with DC ops to ensure secure erasure / destruction.

- Mentored junior engineers across multiple time zones, fostering growth paths and ownership.

2023-present: Bootstrap/MetalOS, DCA Org. Responsible for the bare-metal OS running on millions of servers in the fleet. The globally distributed team engineers and deploys to the fleet a custom breed of the OS geared at stability, security, predictability and fault tolerance. The EMEA team is responsible for the net-booting infrastructure.

Key results:

- Halved re-provisioning cycles across millions of servers, reducing downtime and hardware churn. Negotiated technical trade-offs across multiple teams to enable secure server lifecycle automation at scale.

- Reduce the dynamic nature of the fleet for increased predictability and reliability, leading cross-functional projects across our org.

- Designed, implemented and rolled out hardware identification mechanisms used in early OS imaging. Subsequently delegated its support over to hardware engineers.

- Designed and implemented sandboxing for hermetic configuration generators

- Prioritised deprecating legacy net-booting infrastructure systems owned by the team in favour of newer building blocks and handed over to other teams.

IFAD - Tech Lead

Company size: 1000
Timeframe: February 2016 - November 2021
Role: Technical Lead
Methodologies: Agile Web Development, Project Management
Technologies: RHEL, CentOS, Ansible, VMWare vSphere, IBM WebSphere, IBM ISAM, IBM BPM, ORACLE VM, ORACLE Database, HPE 3PAR, VMware vSphere, Outlook, Office365, E-mail

Oversaw and directed the technical side of a financial system implementing the electronic counterpart of the Disbursement process, where IFAD emits its financings to its Borrowers.

Responsibilities:

- Review technical proposals and participate in the technical analysis.
- Act as a liaison between internal customers, external service providers and suppliers, translating information between non-technical to technical and vice-versa, participating in the decision process with the stakeholders.
- Collect requirements and author technical documentation.
- Interview and hire technical resources.
- Oversee software development and its integration within the existing landscape.
- Scrutiny the security design, delegate vulnerability assessment and security hardening.
- Plan technical project activities.
- Lead the automation project of the ICP infrastructure. Produced full infrastructure automation and persuaded its re-use in provisioning and maintaining the existing IFAD Line-of-Business applications' infrastructure. Increased resilience, adaptability, reliability and performance.

IFAD - Solutions

Company size: 1000
Timeframe: January 2011 - January 2016
Role: Software Engineer and Systems Administrator
Methodologies: Agile Web Development
Technologies: OpenSuSE, CentOS, Windows Server, Ruby 1.8 -> 2.7, Ruby on Rails 2.3 -> 5, PostgreSQL, CouchDB, ORACLE, Sybase, MSSQL, nginx, haproxy, Apache, VMware ESX, Microservices, SOA, Google Search Appliance, Elastic Search.

Responsibilities:

- Architect and develop multiple line-of-business applications: Document Management Systems, CRMs, Business Process Automation Workflows, Distributed Authentication and Authorization, Identity and Access Management, Webcasting, Social Media.

- Tie systems together: calendaring systems, Active Directory, Data Warehouses and Enterprise Document Management systems - bringing the best out of the mix.
- Build, secure and maintain the dev, staging and production environments for 30+ Ruby applications and foundational infrastructure. Set up DNS, IP Routing, software distribution infrastructure, monitoring and alerting systems.
- Act as a liaison with customers, iteratively collecting requirements, building solutions and releasing them.
- Establish a core framework of libraries to be shared across the applications portfolio, releasing them as Open Source whenever possible.
- Foster participation and collaboration between divisions through effective technological solutions focused on data deduplication, process automation and information architecture.

Mind2Mind s.r.l.

Company size: 10
Timeframe: September 2009 - December 2010
Role: Web Developer and Systems Administrator
Methodologies: SCRUM
Technologies: Ubuntu Linux, PostgreSQL, CouchDB, Ruby 1.8, Ruby on Rails 2, Javascript, Erlang, nginx.

Responsibilities:
- Refactored, architected and took care of front-end and back-end components of the panmind.com project, built with Ruby, Javascript and Erlang.
- Participated in the pivoting process of the project due to change in the target audience.
- Designed, implemented, automated, optimised and assessed the security of the staging and production execution environments.
- Evangelised and fostered open source collaboration through extraction of reusable components from the project, release on GitHub and presentation to local Ruby conferences.

Lime5 s.r.l.

Company size: 10
Timeframe: February 2008 - November 2009
Role: Web Developer and Systems Administrator
Methodologies: Agile Web Development
Technologies: Ubuntu Linux, Gentoo Linux, TCP/IP, OpenVPN, PostgreSQL, Postfix, Dovecot, SA, Ruby 1.8, Ruby on Rails 2, Flash Media Server, Delayed Job, Apache, Engine Yard.

Designed and implemented multiple projects:

- **Visita CSA**: Tourism platform for the municipality of Città Sant' Angelo, Abruzzi, Italy. Using a 360 image viewer and mashes Google Maps and the site own data to let an user dive into the city's points of interest, browse upcoming events and review local businesses.
  Responsibilities: Architect, develop, deploy and maintain visitacsa.it's backend and frontend code and production infrastructure

- **Myousica**: Social network targeted at musicians providing tools to upload, store and share instrumental tracks and tools to assemble new songs and remix existing ones, even with live recording.
  Responsibilities: Set up in-house startup development infrastructure and a customized Engine Yard production Linux infrastructure for the myousica.com project and its audio streaming requirements. Participate in designing the overall app architecture and optimizations, develop front-end and back-end components, design XML APIs to integrate with the Flex Multitrack editor running in-browser.

- **Agorà**: Participated in the early stages of an Enterprise 2.0 project aimed at knowledge sharing within an established enterprise, similar in concept to contemporary Lync plus SharePoint.
  Responsibilities: Implement a CI solution for continuous application delivery, oversaw the implementation of the production environment and replicated for staging purposes; redacted and maintained technical documentation on Dokuwiki.

Softmedia p.s.c.r.l.

Company size: 10
Timeframe: December 1999 - December 2007
Role: Web Developer and Systems Administrator
Methodologies: Agile Web Development
Technologies: FreeBSD, Debian GNU/Linux, Windows Server {NT4,200{0,3}}, TCP/IP, OpenVPN, MySQL, SQL Server, Microsoft Exchange, Postfix, Cyrus, SA, Zimbra, Samba, PHP{3,4}, Ruby 1.8, Ruby on Rails 0.13, Apache.

Responsibilities:

- Set up and maintenance of the company's and customers' UNIX and Windows Server infrastructures providing file - Windows/Samba -, groupware - Exchange, Zimbra, ad-hoc Postfix/SA/Cyrus/SquirrelMail - web - Apache+PHP - and infrastructure services - Shorewall, iproute2, grsecurity, munin, UNIX toolset.

- Establishment and mainenance of site-to-site VPNs between Softmedia and its customer base's private networks for remote assistance and ordinary systems maintenance

- Development of public-facing web applications and private managerial systems for Softmedia's internal use and for its clients, in PHP and lately in Ruby

- Establishment of Version Control Systems, issue tracking, development and deployment workflows

- Requirements collection from customers and direct feedback loop for iterative delivery of functionalities.

Open Source and Community Impact

Antifork.ORG

Company size: 10
Timeframe: July 2007 - Present
Role: Systems Administrator
Methodologies: UNIX Handcrafting
Technologies: Debian Linux, nginx, postfix, dovecot,

On my VPS I maintain the legacy of <u>antifork.ORG</u>, the <u>manifesto</u> and the <u>code</u> that this loosely-knit group of high-profile hackers/friends produced in the early 2000s. Old-school systems administration for UNIX shell, HTTP, SMTP and IMAP services to the group, up until to the move to EC2 and GitHub.

The Binary Elevator

Company size: 3
Timeframe: July 2007 - December 2007
Role: Systems developer
Methodologies: Extreme Programming
Technologies: C, SIP, SDP, RTP, UNIX (Linux, BSD, SCO SV, Solaris)

The Binary Elevator has been an artistic effort of Gianluca Guida, Orlando Bassotto and myself to experiment in building a next-gen, platform-indipendent IMS system in C, starting from scratch. I cured the implementation of the Media Gateway component and the logging system.

The project was a titanic effort to rebuild NextStep's core foundation and build the IMS on top of it. To date, the core foundation and its logging system have been used to build binary translation frameworks for the much sought cross-platform compatibility in the mobile applications' landscape.

Azzurra.ORG IRC Network

Company size: 20
Timeframe: January 2002 - November 2005
Role: IRC Operator, Services Developer
Methodologies: Open Source
Technologies: C, IRC, Debian Linux, FreeBSD

Azzurra IRC Network has been the largest Italian IRC network in the early 2000s.

I wrote most of the Azzurra IRC server customization patches, adding support for IPv6, SSL, cloaked client hostnames and a bunch of other features on top of DALnet's bahamut. Code available on SourceForge: <u>http://bahamut-inet6.sf.net/</u>.

As a side project, I gave SSL support to the irssi IRC client, and started an ambitious project that aimed to realize multithreaded, sql-backed IRC services, that grew until the interest in IRC fell down. Code available on http://suxserv.sf.net/.

Favorite Quotations

Keep looking up (*Neil DeGrasse Tyson*)

Computer science is no more about computers than astronomy is about telescopes (*E. W. Dijkstra / Hal Abelson*)

A name indicates what we seek. An address indicates where it is. A route indicates how we get there (*Jon Postel*)

Be liberal in what you accept, be conservative in what you send (*Jon Postel*)

Carl Sagan's Pale Blue Dot

M27 (Dumbbell) Planetary Nebula. Photo by me.