Nadia Santalla Fdez.

Software Engineer

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Work experience

2023-Present **Grafana Labs**, *Senior Software Engineer*

Worked on xk6-disruptor, a Grafana k6 extension that allows injecting faults to conduct controlled and predictable chaos engineering experiments for reliability testing in Kubernetes environments. As a senior software engineer, my work focused on the agent part of xk6-disruptor, which deploys itself as an ephemeral container and sets up netfilter/iptables rules to redirect traffic to itself in order to inject faults.
I currently work in Grafana's Synthetic Monitoring product, where I have significantly contributed to the underlying architecture responsible of running scripted and web browser synthetic monitoring checks, which are based on k6.

2022-2023 **New Relic Inc.**, *Staff Engineer*

Following my work as a Technical Lead, I became a Staff Engineer reporting to the director of the infrastructure instrumentaiton group. My role was in some middle point between the Architect and Solver archetypes proposed by Will Larsson.
Day-to-day, I dove into complex problems and helped remove technical blockers by writing code, coordinating engineers from different teams, and bringing an engineering perspective to the group and company leadership. Some of the initiatives I worked on include:

- Release engineering for automating dependency updates, changelogs, and releases for software distributed as linux packages, Docker images, and Helm charts.
- Architecting and contributing to business-critical products.
- In general lines, helping the teams to take decisions that are in line with the company's architecture and direction.
- In general lines, providing product leadership technical insight about the direction and expectations of the open source community.

2021-2022 **New Relic Inc.**, *Technical Lead*

After working as an SSE for several months, I was offered the opportunity to become the Technical Lead for the team, which I gladly accepted as an opportunity to explore new challenges and help shaping the technical direction and workflow of the team.
Apart from continuing with my IC work on infrastructure monitoring software, including Prometheus, Kubernetes, and "bare-metal" linux, I worked together with management to continously adapt our workflow to our needs, offering feedback about sprint planning, bandwidth allocation, balancing innovation and technical depth, and how to empower engineers in the team to get their initiatives and PoCs into the roadmap.
Additionaly, I mentored more junior teammates, offering to help with both technical advice on my areas of expertise, like linux and Kubernetes internals, and also more general practices such as design patterns, object-orientation, and practical guidelines to write testable code.

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2020-2021 **New Relic Inc.**, *Senior Software Engineer*

As a member of the Core Integrations team, I helped to develop most of the New Relic integrations, the pieces of software that monitor many popular services on-host, and later send the data to the New Relic backend. I've participated in a significant part of the development and design of:

- nri-prometheus, which scrapes prometheus metrics from services and exporters.
- nri-kubernetes, responsible of collecting and processing metrics and data from kubernetes clusters.
- Significant improvements and overhauling of CI/CD pipelines, including multiarch docker images, and advocating for GitHub Actions.
- Maintaining and supporting integrations with other services such as nri-nginx, nri-mysql, nri-docker, etc.

2020-2020 **Maspatechnologies S.L. (BSC Spin-off)**, *Senior Embedded R&D Engineer*

As a Research Engineer, I was tasked with designing and implementing the code used to stress, profile, and analyze very specific parts of embedded hardware, such as CPU load-store and floating point units, on-core caches, interconnection fabrics, and DDR RAM. Some of my key roles were:

- Timing analysis and profiling of multicore hardware platforms
  - Development of stress tests to characterize latencies across the data path
  - Configuring and tuning platform behavior to maximize performance and minimize core interference
- Development of libraries and drivers to interface with on-board devices such as UART, DMA or DDR controllers
- Development of tools for automating and schedule multi-core experiments, across multiple platforms and operating systems

2018-2020 **Barcelona Supercomputing Center**, *Research Engineer, Computer Architecture*

- Development and deployment software and firmware, to be run under either under embedded RTOS (Linux, RTEMS, DEOS) or baremetal (without an operating system) in C, C++ and/or assembly.
- Development of highly-specific pieces code designed to stress specific architectural parts, usually directly in assembly code
- Configuring low-level platform behavior
  - Configuring and tuning CPU features such as the instruction prefetcher or the branch predictor
  - Controlling behavior, replacement policies, and various other settings of different cache levels
  - Hardware debugging with JTAG
- Writing libraries and drivers to interface with on-board devices, such as UART, DMA and DRAM controllers, PCIe devices, etc.
- Setting up git-based development environments and CI/CD pipelines (devops), and coordinating the team working with them

2015-2018 **University of León**, *Researcher on network security in critical infrastructures*

- System administration (IP network design, management and administration, virtualization, etc.)
- Embedded systems development (mainly arduino, PLCs, circuitry)
- Backend development (HTTP REST backends, including websockets and realtime endpoints)
- Frontend development (React, Bootstrap, jQuery)
- Network devices programming (experimental firewall/IDS development, with support for industrial protocols e.g. MODBUS/TCP, S7Comm, etc.)
- SCADA Programming
- Critical Infrastructure cybersecurity research:
  - Reversing of network protocols
  - Controlling behavior, replacement policies, and various other settings of different cache levels
  - Pentesting of embedded devices (PLCs, industrial computers)

Technical skills

Programming

C (embedded, networking, OS utilities, kernel modules), **Assembly** (drivers and hardware libraries), **Go** (REST APIs, CLIs, networking, cryptography, observability, **Kubernetes** operators), Javascript (EcmaScript 6+, Typescript, ReactJS, JSX), Python, Java, Bash, and PHP.

Software architecture

Experience contributing, maintaining, and Architecting distributed systems, monitoring agents, CLI tools and APIs in general. Practical experience both as a contributor and maintainer in open source projects.

Infra & Kubernetes

In-depth knowledge of linux systems, with more than 10 years of experience managing linux machines. Confortable diving into arbitrarily deep documentation for specific services and tools, like caches, message queues, load balancers, or databases, and figuring out how to integrate them into new or existing systems. Wide experience with container and cloud-native platform, notably **Kubernetes**, having written applications that run on it, **operators** to manage complex use cases, and **observability software** to monitor it. Experience working with VM and hypervisor software like VMWare, Proxmox and Qemu/KVM.
Wide experience setting up complex **CI/CD** pipelines, including multiarch release pipelines for containerized applications in Github Actions, pipelines for embedded bare-metal software in Gitlab CI, and testing infrastructure as code in Drone CI.

Embedded, device drivers, and electronics

Experience working with and writing device drivers in **firmware development** in C, C++ and Assembly.
In-depth knowledge of computer architecture, OS, platform, and hardware internals.
Knowledgeable of **electronics**. Experience with 2D and 3D CAD and PCB design.

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Cybersecurity

Experience working as researcher on critical infrastructure cybersecurity. Proficient at **network protocol reversing**, embedded pentesting, mobile app reverse engineering, binary disassembly (radare2), forensics (linux). Experience working with **cryptographic APIs**.

Networking

Deep knowledge of the **TCP/IP stack**, experience developing of **low-level network protocols** on top of TCP, UDP and raw sockets. Experience working with, netfilter (iptables), VPNs, firewalling, and SDN (Software Defined Networks). I proudly admit having to run tcpdump in production at least once a month.

Open source contributions

systemd	System and Service Manager	mgo	MongoDB driver for Go
iwd	Intel wireless daemon	mux	Golang HTTP router
polybar	Fast and easy-to-use status bar	dino	Modern XMPP Chat Client
reviewdog	Automated code review tool	ampache	Web audio streaming application
Marlin	3D printer firmware	Kallax	PostgreSQL ORM for Go
Helm	Kubernetes package manager		

Leadership skills

Experience leading teams of talented engineers in a large technological company, enabling them to solve complex problems by helping in technical and architectural decisions, as well as identifying and solving dependencies with other teams. My communication and writing skills are highly regarded by my teammates, which often ask me for advice on how to structure technical documentation, or for me to proof-read their documents.
Wide experience working on PR and review-centric worfklows, making comprehensive but respectful reviews to keep code quality and engineering standards high.

Education

2015-2017 **Master's Degree in Computer Engineering**, *Universidad de León*

2011-2015 **Degree in Computer Engineering**, *Universidad de León*

Languages

Spanish Native

English Fluent

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