Justin Crites

Software Development Engineer & Business Technology Leader
1-951-454-0970 · jcrites@gmail.com · https://linkedin.com/in/justin-crites · Seattle, WA
Evergreen resume available at: https://resume.jcrites.com
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Summary
Software Development Engineer with 15 years with a wide variety of experience. Presently Software Engineer at WhatsApp, subsidiary of Meta, formerly Facebook (2021-2022). Formerly Principal Software Development Engineer at Amazon & Amazon Web Services (2007-2021).

About Me: As an individual contributor, I am an engineering leader focused on success of the business, by leading projects to build reliable software systems, maximizing operational excellence, and boosting the productivity of the people and teams I work with, reducing operations cost. This includes training, mentoring, and short- and long-term leadership, developing teams capable of building maximally secure, high-scale, high-reliability systems that require minimal "keep the lights on" effort. I have a demonstrated ability to scale and grow existing businesses, as well as conceptualize new products and features, justify/rationalize them in data-driven way, pitch for investment to executives, then plan, implement, and launch new software products. I've also proven my ability to influencing company-wide technical strategy at the largest the companies. I hustle and work on any task, whether attending conferences, joining sales calls as a technologist, or helping customers directly, plan roadmaps, organize team planning, or write and deliver code.

Strengths & Expertise

1. **Business:** I view engineering as a way to achieve business goals, and translate them into engineering strategy and plans.
2. **Customer focus:** requirements to ops to customer support. *Founder's Mentality*: No problem is someone else's.
3. **Inventing new products and features:** pitching, justifying investment in them, and earning return.
4. **Continually learning**: applying the most suitable technology for the task.
5. **Proactivity**: delivering results individually and hustling, as well as motivating teams, whether quickly creating small tools or leading the design, implementing, and operation of cross-team projects.
6. **Creating and improving engineering and best practices:** operational excellence. e.g., Infrastructure-as-Code, Continuous Deployment, Blue/Green Deployments, monitoring, alarm-based automatic rollback, automatic scaling.
7. **Programming languages:** Familiar with and have worked in nearly all modern languages: most proficient in Java/JVM; C#/.NET; C/C++ (through C++17 and C++20); comfortable backend JavaScript/TS and NodeJS; some experience in frontend web apps using ReactJS and GraphQL.
8. **High Scale:** Proven ability to build and evolve high-sccale, high-reliability distributed services (99.999% availability in >100K request per second systems). Experienced using DevOp and proponent of "Infrastructure-as-Code": Systemd, Chef, Terraform, Cloud Development Kit; Containers (cgroups/namespaces), Docker, Kubernetes, etc.
9. **Highly proficient with Amazon Web Services** and familiar with other public clouds.
10. **Highly proficient with software security at all layers**; secure systems and processes; network hardening; defense in depth; threat modeling & security review; anti-fraud & anti-abuse. Implementing compliance regimes (e.g., SOC-2, ISO 27001, FedRAMP). Modern web security: SAML, OAuth, OpenID Connect, WebAuthn, FIDO, JWT.

Career & Accomplishments

2007 – 2021: Principal Software Development Engineer @ Amazon
2021 – present: Software Engineer (E7/IC7) at WhatsApp, subsidiary of Facebook/Meta

1. Amazon.com – Automated Marketing & Transactional Email (2007 – 2009): Redesigned Amazon's email infrastructure from legacy technologies to use nascent AWS alternatives, to enable the delivery of both password reset emails in moments while also broadcasting personalized marketing to the entire customer base (hundreds of millions) in a short time. Improved throughput and reliability of the system substantially.

2. AWS – Simple Email Service aka SES (2010 – 2015): https://aws.amazon.com/ses/. Identified the business opportunity to sell scalable email sending as a service. With two colleagues, pitched AWS leadership (including now-CEO of AWS Andrew Jassy) for funding to build SES. Bootstrapped new engineering team as chief architect, then led design and launch of the service. Developed a proprietary asynchronous, distributed cloud-native email server that allowed us to reach high scale cheaply, enabling us to launch at a low price that was disruptive to the existing market. Like a startup inside Amazon, hustled & did all necessary jobs: engineering, sales calls, trade shows, and customer support – all to ensure we had the optimal

product-market fit and happy customers. Usage of SES has grown rapidly YoY ever since launch, and it is now one of the largest commercial email senders worldwide.

3. **Developer Tools – Cloud Desktop (2015).** Amazon runs most of its software on Linux, and every employee originally required a Linux desktop PC in addition to their office productivity laptop. Conceptualized and prototyped a cloud-based Linux development environment built on AWS, then successfully pitched for funding to productize it. Bootstrapped the project in the Developer Tools division, and successfully launched the product. It has subsequently been adopted by virtually all the company's technologists (>50,000 people), enabling IT staff to cease provisioning and managing Linux desktops, achieving a significant savings in staff time, hardware spending, and storage when not in use. AWS EC2 runs the same workloads more efficiently due to economies of scale, ability to pause while not in use, and provides more capabilities (e.g., machines with GPUs for machine learning work).
4. **Amazon – Established New AWS Usage Strategy & Led Migration (2015 – 2021):** Amazon faced significant hurdles to its use of AWS internally. I formed a working group of principal engineers from across the company to devise a new, better strategy. After developing the strategy, a coauthor and I pitched it to then-CEO of Amazon Jeff Wilke, successfully resulting in our plan becoming the Amazon-wide strategy for running on AWS. This involved substantial architectural changes across many groups and the invention of new technologies, which I helped coordinated, and was finally accelerating to full speed around the time I left.
5. **AWS – Cloud9 Acquisition (2016).** Lead Principal Engineer for AWS's acquisition of the company Cloud9 IDE, in charge of technical due diligence, working with our security and compliance teams to identify risks and assess remediation costs. After closing, helped the company (then an AWS team) integrate with AWS and the company culture. Supported the team as they rebuilt their product as an AWS service: https://aws.amazon.com/cloud9/
6. **Amazon – Designed and Implemented New Company AWS Adoption & DNS Strategy (2019 – 2021)**. As part of our cloud native migration, Amazon's security strategy has embraced the model known as the 'zero trust network', which eliminates the classic company-spanning corporate network. Cloud native systems also benefit from designing for minimal connectivity (e.g. not requiring a connection to a corporate network) and from the ability to use Internet DNS where desired.

7. **WhatsApp – Developed "1-Click Onboarding" and Public Test Numbers for WhatsApp Cloud API (2021-2022).** Cloud API is WhatsApp's soon-to-launch web API that will enable business to communicate with customers using a simple web API, though which they can provide customer support, conduct transactions, and engage in other novel forms of commerce. Prior offerings involved on-premise software installations that were difficult to set up, support, and scale, with a long lead time.

Problem I identified and solved: Phone numbers can sign into only one WhatsApp platform at a time. I identified that 50% of new signups dropped out during signup, typically because their phone number was already in use with another WhatsApp platform (such as Consumer or another Business platform). **I conceived of, pitched, persuaded the product team, then prioritized, built and launched support for WhatsApp Cloud API to assign test phone numbers to customers during onboarding** – the opposite of the onboarding process WhatsApp employed through its entire history. This required persuading people across the organization and developing technology to mitigate potential fraud and abuse.
The development of this feature enabled us to provide "One Click" signup (after accepting the Terms of Service), dropping an onboarding process that used to take weeks down to minutes in our private beta test – a product experience with nearly zero experience on the user's part. WhatsApp Cloud API is due to launch in several countries within our first target countries within the month.

- More about WhatsApp Cloud API from TechCrunch.

Awards

1. Outstanding Award for Innovation · 2009
2. Amazon "Just Do It" Award · circa 2012 · Presented by Jeff Bezos to one employee at company-wide all-hands
3. "Think Big" Leadership Award · 2016

Issued Patents

Two-party, role-based transaction verification · Oct 14, 2014 · US 8863226
Out-of-band authentication of e-mail messages · Feb 2, 2015 · US 8966621
Permissions based communication · Oct 31, 2017 · US 9866391
Processing large data sets from heterogeneous data sources using federated computing resources · Oct 31, 2017 · US 9805177

Education

B.S. in Computer Science · 2007 · Rice University · Houston, TX