

# Michael Szydlo

## Skills

**Management:** Technology area ownership, cross-organizational technical orchestration, team building (hiring, mentoring, compensation), technical team leadership.

**Collaboration:** Coordinated/Interfaced with 15+ cross-functional teams (e.g., Engineering, QA, Architecture, Product, Operations, Program Management, Executive). Proficient in Jira, Confluence, Google Suite.

**Technologies:** Technical ownership of software directing 15-30% of global internet traffic. Managed teams: C/C++ (10K+ lines/component), control systems, distributed databases, full-stack visualization, proprietary communication, configuration engines.

**Focal Areas:** Internet-scale content distribution; mission-critical, real-time control systems requiring 100% uptime; algorithm assessment and visualization; Internet-based technical COGS savings projects reducing CAPEX by 1-10%.

## Experience

### **Akamai, Cambridge MA – Director, Global Load Balancing 2016–2024**

- Managed an org of almost 30 members in the US, Poland, and India.
- Managed the team in charge of the fault tolerant centralized global controller, directing worldwide traffic by adapting every 30 seconds to internet, infrastructure, and customer demand changes.
- Oversaw control system iterations as deployments evolved into modern multi-rack clusters connected to a Software-Defined Networking (SDN) controlled fabric and private backbone. Continuously scaled, improved safety, security, efficiency, and cost of components.
- Founded a new remote team of full-stack developers in Poland and guided them to build an integrated set of approximately 15 visual tools to monitor critical aspects of Akamai's control system. These tools became the go-to resource for answering customer questions, assessing the effects of configuration changes, and production debugging.
- Contributed to and managed three high-profile COGS reduction initiatives, resulting in tens of millions in network deployment savings (e.g., multi-rack clusters, ISP links to Akamai backbone, multi-tiered caching).
- Served as overall engineering lead, coordinating 40 contributors for a new cloud load-balancing product in Akamai's cloud division.

### **Akamai, Cambridge MA – Senior Manager 2011–2016**

- Optimized algorithms annually to maintain the ability to update the plan for worldwide traffic every **30-second** interval despite a 50x growth in operational configurations, ~5x in cluster counts, and ~10x in provider connections.
- Drove reliability initiatives, including robust system testing and safer software rollout, catching bugs that would cause platform-wide outages or degradation. Managed approximately five instances of near platform outages and drove software hardening efforts.
- Led project to enhance control system to avoid overloading internet bottlenecks within provider networks.
- Managed development of a real-time algorithm to calculate capacity headroom available at a prescribed QOS by geography, enabling sales teams to maximize revenue from largest "bit pushers" and operations teams to manually limit traffic to protect the customer base.
- Gave yearly technology education trainings. Presented to 3000 employees at a company all-hands meeting.

### **Akamai, Cambridge MA – Manager 2009–2011**

- Assumed technical ownership of the centralized global controller, directly managing six senior engineers.
- Led cross-organizational engineering effort (25 contributors) to revolutionize Akamai's control systems for multi-ISP clusters. This initiative saved tens of millions in annual CAPEX by reducing redundant storage, and prepared software for eventual modern fabric routing in Akamai POPs.

### **Akamai, Cambridge MA – Senior Software Developer 2007–2009**

- Architected and built a global CDN rate-limiting tool that prevented a type of global outage, protecting Akamai's full CDN revenue stream.
- Developed custom feedback system, crucial for retaining a multi-million dollar mega-cap client.

### **RSA Security, Bedford MA – Senior Research Scientist 2000–2007**

- Contributed original cryptographic research, resulting in 18 publications and invitations to present at 20 conferences/serve on program committees.
- Specialized in cryptanalysis, lattice-based cryptography, protocol design, and privacy.
- Developed a Merkle tree algorithm (relevant to post-quantum security) and co-authored a foundational algorithm on lattices with extra structure, a leading technique for an approach to encryption post-quantum computing.

### **Aetna Life and Casualty – Software Developer and consultant**

- Concurrent with academic studies I implemented algorithms in C to analyze cash flows of assets and liabilities on a \$15B portfolio and model risks to commercial real estate holdings.
- These 10,000 lines of code reflecting the behavior of securities served as input to finance risk models and as inputs into the company's financial reports.

## Education

### **Harvard University** – *Ph.D., Mathematics*

National Science Foundation Fellow. Thesis: "Flat Regular Models of Elliptic Schemes" – algorithms in arithmetic geometry related to singularity resolution.

### **Boston University** – *B.A.*

Math major and Valedictorian.