

Jacob Marks

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Senior Engineering Leader · Platform Architecture · Security-Critical Distributed Systems

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Summary

Senior software engineering leader with extensive experience building and operating security-critical, regulated infrastructure at scale. People manager with responsibility for multi-team organizations, including hiring, performance management, and org design. Known for stabilizing complex systems, reducing operational risk, and defining architectures that hold up under real-world load and regulatory scrutiny. Selectively hands-on in critical paths and prototypes, with a focus on technical direction, decision frameworks, and ownership models that scale.

Technical Competencies: Platform architecture, distributed systems, cryptographic services, HSM-backed systems, threat modeling, control-plane and data-plane design, compliance-driven infrastructure (PCI/FIPS), AWS platform services, C#/.NET, operational excellence

Experience

Amazon Web Services | 2016–2026

Software Development Manager – AWS Payment Cryptography | 2020–2026

- Led the definition, architecture, and launch of a first-of-its-kind, globally deployed, hardware-backed payment cryptographic service (**a cloud-native cryptography-as-a-service platform for payment acquiring and card issuance**)
 - Designed a reusable secure rack-level infrastructure and physical compliance architecture that established the PCI-compliant baseline for multiple HSM-backed cryptographic services
 - Managed and grew a specialized engineering team, responsible for hiring, performance management, and day-to-day execution in a startup like environment
 - Led the team through service build, launch, early customer adoption, and steady-state operations in a regulated environment
 - Authored the initial threat model, security posture, and service requirements, establishing foundational assumptions carried through launch and steady-state operation
 - Defined and governed control-plane, data-plane, and hardware designs to ensure system coherence, and maintain security posture during operations
 - Established operational practices and fleet-health monitoring, reducing unsellable HSM capacity from ~10% toward ~5%, which improved service predictability
 - Designed a key-custodian-as-a-service model and secure key-exchange tooling, enabling automated movement of keys from trusted compute environments into HSMs without export or human handling
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Software Development Manager – EC2 Core Platform (Networking & Telemetry) | 2018–2020

- Led mission-critical services supporting network telemetry, logging, transfer billing, and VPC Endpoint services, forming part of EC2's foundational networking stack
- Led the separation of tightly coupled telemetry and billing systems, reducing blast radius and enabling independent evolution

- Balanced design and operational responsibility for systems processing hundreds of petabytes of data, ensuring reliability and scalability for ingestion, reprocessing, and downstream consumers
 - Directed delivery, operational health, and technical direction across multiple foundational services
 - Managed four engineering teams, overseeing direct reports, and one people manager
 - Managed hiring plans, performance management, promotions, and team structure to meet organizational goals
 - Directed transition of legacy telemetry components through a major platform transition, maintaining continuity while adapting to new infrastructure and virtualization models
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Senior Solutions Architect / Solutions Architect Manager | 2016–2018

- Collaborated with enterprise and public-sector customers and partners to translate complex infrastructure and security requirements into deployable cloud architectures, aligned with their cloud strategies
 - Developed early technical content and enablement tools that guided external teams in their cloud adoption journey
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Booz Allen Hamilton | 2008–2016

Senior Lead Engineer / Technical & Program Lead

- Held DoD TS Clearance
 - Joined as a hands-on engineer and progressed into senior technical leadership roles on systems operating under stringent security and compliance constraints
 - Led design and operation of mission systems hosted in DISA-managed facilities as well as early AWS environments prior to formal DoD cloud policy, navigating accreditation in the absence of established guidance
 - Owned a production system deployed on AWS well ahead of CCSRG standards, defining security architecture, control interpretations, and operational practices amid regulatory uncertainty
 - Collaborated with Navy teams involved in the first DoD cloud Authority to Operate (ATO) applying lessons to Air Force programs, to adapt early cloud accreditation approaches across services
 - Led a technical team and acted as the customer interface for regulated, contract-bound systems, balancing delivery commitments with long-term system integrity
 - Managed program-level activities for a defense readiness effort, coordinating execution, and delivery under contract requirements
 - Operated consistently in confidential, regulated environments, developing judgment around risk, compliance, and stakeholder accountability
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Education

B.S.B.A., Management Information Systems (MIS)

University of Central Florida