

Basuki Nath Kumar

Senior Software Engineer · Java · Distributed Systems · AWS · Oracle Multicloud Professional Architect · NIT Calicut Alumnus
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SUMMARY

Senior Software Engineer with **5+ years** building Java and Spring Boot platforms for enterprise payroll and compliance at ADP. Architected event-driven, CQRS, and sharded systems on AWS that support **2M+ statements/day** for **15M+ employees across 13 countries**. Also built AI tooling that saves **35 dev-hours/week** by encoding architectural knowledge.

TECHNICAL SKILLS

Languages: Java, Groovy, Kotlin · **Frameworks:** Spring Boot, Spring Cloud, Spring Batch, Spring JDBC, Resilience4j, ShedLock, Micrometer · **Data:** Elasticsearch, MariaDB (sharded), Redis, CQEngine, Liquibase · **Cloud:** AWS (S3, SQS, SNS, STS, Fargate, EventBridge, EKS), Docker, Kubernetes · **Observability:** OpenTelemetry, Splunk, Prometheus, Grafana · **Testing:** JUnit 5, Cucumber BDD, Testcontainers, Spring Cloud Contract · **AI Tools:** GitHub Copilot, Claude, Kiro CLI · **Patterns:** DDD, Hexagonal, CQRS, Event-Driven, Transactional Outbox, Pipeline, Saga, Circuit Breaker, Claim Check, Feature Toggles

EXPERIENCE

ADP India, Hyderabad

Oct 2020 – Present

Senior Member Technical (Sr. Software Engineer) — Payroll Intelligence Platform

Statement Generation Platform

Java · Spring Boot · Elasticsearch · MariaDB (sharded) · AWS S3/SQS/SNS · Spring Batch · ShedLock · Resilience4j · OpenTelemetry

- Architected **configurable pipeline engine** with ~100s of JSON-defined workflows executing DAG-based data aggregation from dozens of APIs spanning multiple microservices — generating **2M+ statements/day (peak 7.63M)** across 13 countries with zero code changes for new statement types
- Designed **command range fan-out** partitioning large workloads across pods via SQS-based backpressure — achieving **10x throughput** with horizontal scaling
- Built **CQRS architecture**: MariaDB writes (sharded by country) + Elasticsearch reads with CQEngine in-memory fallback — **1,000+ req/s, 40% faster** for simple queries
- Achieved **99.9% pipeline completion rate** via circuit breakers, distributed locking, exponential backoff retry, and per-range fault isolation

Event-Driven Messaging Framework (Event Machine)

Java · Spring Boot · AWS SQS/SNS/S3/EventBridge · MariaDB · OpenTelemetry · Prometheus

- Designed **Transactional Outbox-based event platform** — events persisted atomically in same DB transaction as business mutations, published asynchronously to SNS/SQS; adopted by **multiple teams**
- Implemented **deduplication state machine** eliminating double-processing across pods; multiple configurable error strategies with per-listener backoff and Prometheus metrics
- Designed **Claim Check pattern** for large payloads (GZIP → S3, pointer in SQS) and **multi-queue horizontal scaling** with greedy pod-level queue assignment
- Led **Kafka → SQS/SNS migration** — zero operational overhead while maintaining at-least-once delivery guarantees

Payroll Computation Engine

Java · Spring Boot · MariaDB (sharded) · Redis · CQEngine · Spring JDBC

- Built enterprise payroll engine computing gross-to-net across **50+ tax jurisdictions** with internal policy execution tools and hot-deployable S3 rule packages
- Designed **compressed BLOB pattern** (GZIP JSON, 10:1 compression) — single INSERT per calculation vs 500 normalized rows; CQEngine in-memory indexing for sub-ms reporting queries
- Architected **multiple isolated custom thread pools** with OpenTelemetry context propagation preventing cross-shard interference at peak load
- Enforced **Hexagonal Architecture via ArchUnit** — domain layer has zero framework dependencies; enabled JPA→Spring JDBC migration in infra layer only

Payment Orchestration Service

Java · Spring Boot · MariaDB · Event Machine · Caffeine · ShedLock

- Designed **multi-country payment orchestration** workflows — coordinating statement generation, tax filing, money movement, and partner notifications across 13 countries
- Implemented **bi-temporal data model** (transaction time + valid time) — supports retroactive payroll corrections while preserving full audit history
- Built **choreography-based saga** and year-end throttling — queue-based rate limiting with stuck-process detection preventing downstream cascade failures

AI Developer Agents & Platform Productivity

AI Agents · GitHub Copilot · Claude · Kiro CLI · Splunk · Knowledge Bases (Architecture, Failure Modes, API Contracts)

- Engineered **AI-powered developer agents** backed by curated knowledge bases — architecture docs, service interaction maps, failure mode catalogs, and API contracts; providing contextual debugging assistance across multiple microservices
- Built **structured knowledge base system** encoding tribal knowledge into queryable documents — **35 dev-hours/week** saved; new engineer onboarding reduced from **6 → 3 months**

SELECTED IMPACT

7.63M events/day peak	1,000+ req/s query layer	99.9% pipeline completion	4h→15m E2E test runtime	60% less integration dev time	35h/wk saved via AI agents	2M+ statements/day	15M+ employees processed
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EDUCATION

Master of Computer Applications — NIT Calicut (2020)
Bachelor of Computer Applications — BNMU, Madhepura (2017)

LEADERSHIP

- Mentored **3 engineers** — reduced onboarding 6→3 months; established architecture standards across 5+ teams
- Led **production on-call rotations** — diagnosed year-end incidents at peak load; implemented capacity planning
- Authored **20+ architecture decision records**; publishes technical articles on LinkedIn covering system design and distributed systems

CERTIFICATIONS

🏆 **SnowPro Associate: Platform** — Snowflake 🏆 **Oracle Cloud Infrastructure Multicloud Architect Professional** — Oracle