ARCHITECTURE DECISION RECORD (ADR)

Decision Summary: Designate Jaeger and Zipkin as Enterprise Standard utilities within the SWF category Distributed Tracing

Approved by the VA Chief Architect (OIT/OCTO) on 1/23/2026

Context

Distributed tracing provides end-to-end visibility across distributed and microservices-based systems and is a foundational capability for observability, troubleshooting, and performance analysis in modern architectures. As VA's software ecosystem increasingly adopts microservices, hybrid cloud, and DevSecOps practices, traditional monitoring tools alone are insufficient to trace request flows, diagnose latency issues, or perform root-cause analysis across service boundaries.

Open-source distributed tracing tools such as Zipkin and Jaeger are widely adopted in industry and are currently approved for use within the VA Technical Reference Model (TRM). Establishing a clear Software Factory (SWF) category for distributed tracing supports consistent architectural guidance and reuse of approved observability capabilities.

Decision

Establish a new Software Factory (SWF) category for Distributed Tracing and designate Zipkin and Jaeger as Enterprise Standard utilities within this category.

Zipkin is identified as a foundational distributed tracing utility suitable for lightweight and Spring-based implementations. Jaeger is identified as an enterprise-grade distributed tracing utility appropriate for large-scale, production deployments requiring advanced observability and scalability.

Rationale

Zipkin and Jaeger address complementary distributed tracing needs within VA's Software Factory ecosystem.

Zipkin is already in use within VA environments and integrates natively with common application frameworks such as Spring. It provides lightweight distributed tracing capabilities suitable for teams that do not require large-scale trace aggregation or advanced analytics. Its maturity, ease of integration, OpenTracing compatibility, and proven adoption make it appropriate as a baseline distributed tracing utility.

Jaeger provides enterprise-grade distributed tracing capabilities designed for high-volume, production environments. It supports advanced features such as adaptive sampling, scalable storage backends, service dependency analysis, and OpenTelemetry integration. Jaeger's scalability and production readiness make it suitable for complex, mission-critical systems and future growth of Software Factory–aligned applications.

Together, these utilities provide flexible, standards-aligned distributed tracing options that support both lightweight and enterprise-scale observability requirements without constraining implementation choices.

Impact(s)

- Inform relevant teams of this recommendation.
- No direct technical or system-level impacts to Jaeger and Zipkin TRM entries are anticipated.

For questions or further clarification, contact the Enterprise Architecture team at ea@va.gov.

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