

AES Fabric ETL: Executive Brief

Legacy warehouse migrations and native Fabric workarounds (such as Fabric Mirroring) introduce operational bottlenecks: steep learning curves, excessive Capacity Unit (CU) consumption, manual schema remediation, and complex maintenance overhead.

AES Fabric ETL eliminates these friction points with a zero-external-infrastructure, metadata-driven orchestration framework running entirely inside your Microsoft Fabric workspace—accelerating time-to-value while sharply reducing Total Cost of Ownership (TCO).

High-Impact Business Metrics

Metric Dimension	Impact	Operational Driver
Time to Production	70% Faster	Rapid metadata configuration replaces manual pipeline builds; operational via a 3-step setup.
Total Cost of Ownership	40–60% Lower	Eliminates external ETL software licenses, staging VMs, and auxiliary integration tools.
External Infrastructure	\$0 / 100% Native	Executes entirely inside customer Fabric tenants using native Spark compute and OneLake.
Configuration Velocity	Seconds vs. Days	Declarative pipeline setup via standard commands (MSSQL2LAKE, SPARKSQL, PYTHON).

Key Operational Advantages

Time-to-Value Acceleration

- ❖ **Rapid 3-Step Onboarding:** Deploy in minutes by running a single instrumentation script, configuring the Fabric environment, and importing the core notebook runner.
- ❖ **Automated Schema Evolution:** Prevents pipeline failures caused by upstream schema changes, eliminating manual patching and expensive table re-seeding.
- ❖ **Enterprise Safeguards:** Native support for automated Slowly Changing Dimensions (SCD Type 1 & Type 2 Delta Lake merges), parallel execution via *ThreadPoolExecutor*, and dynamic incremental key-range slicing.
- ❖ **Unified Control & Auditing:** Low code management interface backed by thread-safe Lakehouse execution logs and operational telemetry to resolve errors instantly.

Cost & Architecture Optimization

- ❖ **Zero External Footprint:** Operates with no external VMs, third-party middleware, or dedicated staging servers—eliminating non-native infrastructure spend.
- ❖ **Fabric CU Optimization:** Bypasses the heavy Capacity Unit burn and throttling thresholds associated with generic polling loops and unoptimized mirroring syncs.
- ❖ **Native Enterprise Security:** Utilizes tenant-level Microsoft Entra ID authentication, native data enclaves, and Azure Key Vault secret management without per-connector licensing fees.