MAGELLAN AI · SEMANTIC MATCH ENGINE

Audit Ledger

ULID-keyed, SHA-256–chained, tamper-evident decision history

What is recorded

Every accepted Semantic Match decision is appended to an immutable, append-only ledger. Each entry is keyed by a ULID (never UUID) and references the previous entry's SHA-256 hash, producing a tamper-evident chain. The ULID prefix encodes the creation timestamp, so the chain is chronologically ordered without separate index keys.

Ledger entry schema

Field	Type	Purpose
`id`	`ULID`	Primary key; lexicographically sortable, time-ordered.
`prev_hash`	`sha256`	Hash of the previous entry; binds the chain.
`entry_hash`	`sha256`	Hash of this entry's canonical JSON.
`source.id / target.id`	`A-ULID`	Stable attribute identities from the MetaModel.
`source.path / target.path`	`string`	Dot-delimited schema path (e.g. patient.address.zip).
`confidence`	`int 0–100`	Engine's confidence for the pair.
`algorithm`	`enum`	exact_match | synonym_match | abbreviation_match | context_hierarchy | domain_equivale
`rationale`	`string`	Short natural-language justification from the model.
`decision`	`enum`	AUTO-ACCEPT | REVIEW | REJECT (from active threshold profile).
`profile_ver`	`semver`	Threshold profile identifier in effect at decision time.
`model`	`string`	Model identifier, e.g. google/gemini-2.5-flash.
`api_version`	`semver`	semantic-match edge function version (currently 1.0.0).
`actor`	`string`	Authenticated user or service principal.
`ts`	`ISO-8601`	Wall-clock timestamp; ULID timestamp is authoritative.

Why ULID, not UUID

- Lexicographic sort = chronological sort. No secondary index needed for time-range scans.
- 26 characters, Crockford base32 — case-insensitive, URL-safe, copy-paste friendly.
- 128 bits of entropy + 48-bit timestamp prefix; collision-resistant without a coordinator.
- Aligns with regulatory expectations for monotonically traceable identifiers.

Reproducibility guarantee

Given any decision ULID, a reviewer can reconstruct exactly which model version, which threshold profile, and which annotations were in effect — six months or six years later. The ledger is the audit answer to HIPAA §164.312(b), 21 CFR Part 11 §11.10(e), and HHS Information Blocking review.