

Architecture Overview

Stratum Intelligence Inc. · Version 2.0 · June 2026

1. Platform summary

Stratum is a multi-tenant operational intelligence platform that ingests change data from customer-owned databases and IoT brokers, normalises it into a tiered data model, and serves real-time analytics and alerting per tenant.

2. Logical components

- Connector agent — runs in the customer environment, originates mTLS sessions outbound, performs snapshot and CDC of MySQL, Postgres, and MQTT sources.
- Edge ingest — terminates mTLS, validates device identity, writes raw events to the stream bus with at-least-once semantics.
- Stream bus — partitioned by tenant_id with replay and dead-letter support.
- Bronze/Silver/Gold pipelines — raw preservation, typed extras, dashboard-optimised read models.
- Control plane — tenancy, roles, connectors, notifications, audit log.
- Analytics service — tenant queries plus allowlisted cross-tenant rollups.

3. Tenancy model

Every table that holds tenant data carries a tenant_id column with a non-null foreign key to tenants. Postgres row-level security policies, backed by the SECURITY DEFINER helpers is_tenant_member() and has_tenant_role(), gate every read and write.

Mutations to connectors, data sources, and notification preferences require owner, admin, or operator role. Viewers have read-only access to non-secret columns.

4. Network and identity

All customer-bound traffic is outbound from the customer's network over mTLS 1.3. There are no inbound firewall rules on the customer side.

Each connector agent has a unique device identity rotated automatically. Compromised devices can be revoked from the control plane immediately.

5. Data residency

Default region is US-East. EU-West residency is available on the Business plan and above. Cross-region replication is disabled by default and can be enabled per tenant.

6. Reliability targets

- Ingest p99 latency: 250 ms.
- Dashboard query p95 latency: 800 ms.
- Monthly uptime SLA: 99.9% (Business), 99.95% (Enterprise).
- RPO: 5 minutes. RTO: 1 hour.

7. Observability

Per-tenant metrics, structured logs, and traces are emitted for every pipeline stage. Customers can opt in to a read-only telemetry export for their own observability stack.