

Selector Data Hypervisor

A programmable data layer that normalizes, enriches, and unifies operational data for cross-domain intelligence

Selector Data Hypervisor addresses a structural gap in traditional observability and AIOps stacks: data arrives in different formats, with different schemas, different levels of structure, and almost none of the business and operational context required to interpret it correctly. In many platforms, that data is parsed through brittle rules, transformed too early, and handed to analytics layers without enough fidelity to support reliable cross-domain reasoning. Selector takes a different approach. The Data Hypervisor sits between the collection and intelligence layers, where it normalizes, enriches, de-duplicates, suppresses noise, and connects metrics, logs, events, flow records, configuration state, topology, CMDB metadata, and operational signals into a common data model. The result is a programmable, source-agnostic data plane that preserves raw detail, adds context before intelligence is applied, and prepares every signal for correlation, root-cause analysis, and action.

Why Traditional Data

Normalization Fails

Modern network and infrastructure environments generate telemetry from dozens of sources — routers, switches, cloud platforms, applications, monitoring tools, and ITSM systems — each with its own schema, encoding format, and labeling conventions. Traditional architectures address this by creating type-specific pipelines: one for metrics, one for logs, one for events. Each pipeline normalizes data independently, optimized for depth within a single type rather than breadth across types. The result is a fragmented data landscape where operational context is structurally absent and cross-domain correlation requires expensive manual effort.

- Context is lost before analysis begins**
 Raw telemetry rarely includes the business and operational context needed to make it useful across domains. Critical metadata such as site, owner, device role, service dependency, maintenance state, provider notice, and business criticality must be added before signals can be analyzed accurately and connected to related events elsewhere in the environment.
- Early transformation can strip away useful signals**
 Many traditional ETL (Extract → Transform → Load) pipelines transform, collapse, or abstract data before it is fully stored. That can remove the original timestamps, source details, and event boundaries needed to reconstruct what actually happened across network, cloud, infrastructure, and application layers.
- Static schemas do not scale**
 Predefined schemas, source-specific mappings, and hand-built regex rules are difficult to maintain as vendors, software versions, and message formats evolve. As environments change, these brittle normalization models fall behind, causing data to be misclassified, dropped, or stripped of meaning before it can be correlated.

How Selector Data Hypervisor Works

The Data Hypervisor serves as the normalization and enrichment layer between collection and intelligence. It receives raw telemetry from Selector's horizontal collection architecture — including metrics, logs, events, traps, configuration state, flow records, topology, and external operational context — and applies a multi-stage pipeline that standardizes structure, extracts entities, enriches records with metadata, suppresses noise, and routes data to the storage backend best suited to its type.

ML-driven entity extraction and normalization: Rather than relying on static regex libraries or predefined schemas, the Data Hypervisor uses machine learning to infer structure from unstructured and semi-structured content. Log messages, SNMP traps, syslog events, and CLI outputs are parsed without requiring hand-crafted templates, and similar events are clustered into meaningful types across vendor and format variations.

ELT-style raw data preservation: The Data Hypervisor follows an ELT (Extract → Load → Transform) model: raw data lands first with full source detail and original timestamps intact. Transformation and enrichment are applied afterward through the hypervisor layer. This approach preserves the exact signal fidelity needed to reconstruct cross-domain timelines — critical for identifying causal chains that span network, cloud, infrastructure, and application domains.

Programmable context layer: Customer-specific business logic is digitized directly into the hypervisor through YAML-based configuration and DevOps workflows. Maintenance windows, provider notification rules, criticality tags, suppression rules, device ownership labels, and circuit identifiers are applied programmatically and evolve alongside the customer environment without requiring platform changes.

Source-agnostic data routing: Different data types require different storage and processing models. Metrics, logs, topology, configuration state, and flow records are normalized into a shared semantic layer, then routed to the backend most appropriate for each type. Applications, dashboards, and intelligence services interact with a unified data model rather than isolated storage systems.

Data Hypervisor Capabilities

Capabilities	Description
Automatic Schema Inference	Uses ML to infer structure from unstructured and semi-structured data, including free-form logs, syslog, SNMP traps, and CLI output, reducing dependence on manually authored parsing rules.
Multi-Source Normalization	Normalizes data from network devices, cloud platforms, applications, monitoring tools, and ITSM systems into a consistent internal model regardless of vendor, protocol, or encoding format.
Contextual Enrichment	Enriches records with operational metadata such as topology relationships, service dependencies, ownership, location, maintenance state, and business criticality.
Noise Suppression and Deduplication	Identifies duplicate signals, suppresses operationally irrelevant noise, and reduces flapping or repetitive events before they reach the intelligence layer.
Programmable Business Logic	Applies customer-specific logic such as maintenance windows, provider notices, suppression rules, escalation tags, and criticality settings through YAML and DevOps-managed workflows.
Cross-Domain Signal Linkage	Uses shared metadata and enrichment to connect records across metrics, logs, events, configuration changes, topology, and flow data on a unified timeline.
Intelligent Data Routing	Directs normalized records to the storage backend appropriate for their type while preserving a consistent query model across all data domains.
Live Query and Analysis	Supports real-time dashboards, ad hoc investigation, and AI-driven analysis across all ingested signal types through a unified data layer.

Operational Benefits

By centralizing normalization, enrichment, and context application in a single programmable layer, the Data Hypervisor reduces parsing overhead and manual cross-domain stitching. Operations teams work on data that is already structured for analysis.

- **More reliable AI and correlation:** Selector's intelligence layer operates on normalized, enriched, and de-duplicated data rather than fragmented raw inputs. This improves correlation accuracy, reduces false positives, and strengthens root-cause analysis across domains.
- **Lower operational overhead:** Automatic schema inference and ML-based extraction reduce the burden of maintaining large libraries of regex rules, field mappings, and source-specific transformations as environments evolve.
- **Preserved signal fidelity for investigation:** Because raw data is retained before transformation, teams can revisit historical incidents with full source detail intact and analyze them using current topology, metadata, and operational context.
- **Operational logic:** that evolves with the environment Business rules are managed as code through YAML and standard DevOps workflows, making them auditable, version-controlled, and easier to update as infrastructure and policy change.
- **One data model across the full stack:** Network, infrastructure, cloud, and application signals are normalized into a shared model, enabling unified search, consistent dashboards, and cross-domain root-cause analysis without separate tools or query paths.

Built as the Foundation for Operational Intelligence

The Data Hypervisor is not a preprocessing step. It is the data foundation on which Selector's operational intelligence depends. Every AI correlation, every unified dashboard, and every automated action begins with data that has been normalized into a consistent model, enriched with operational context, de-duplicated, and prepared for the right downstream systems. This is what makes Selector's insights explainable and operationally trusted — not just technically correct. For operations teams, the practical result is measurable: fewer war rooms spent manually stitching together signals from siloed tools, faster time to root cause across network and cloud domains, and AI-driven recommendations that engineers act on rather than second-guess.

Build a stronger foundation for operations

Explore how Selector enables teams to break down silos, gain broader context, and act faster across modern hybrid environments. Book a demo to learn more today.

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