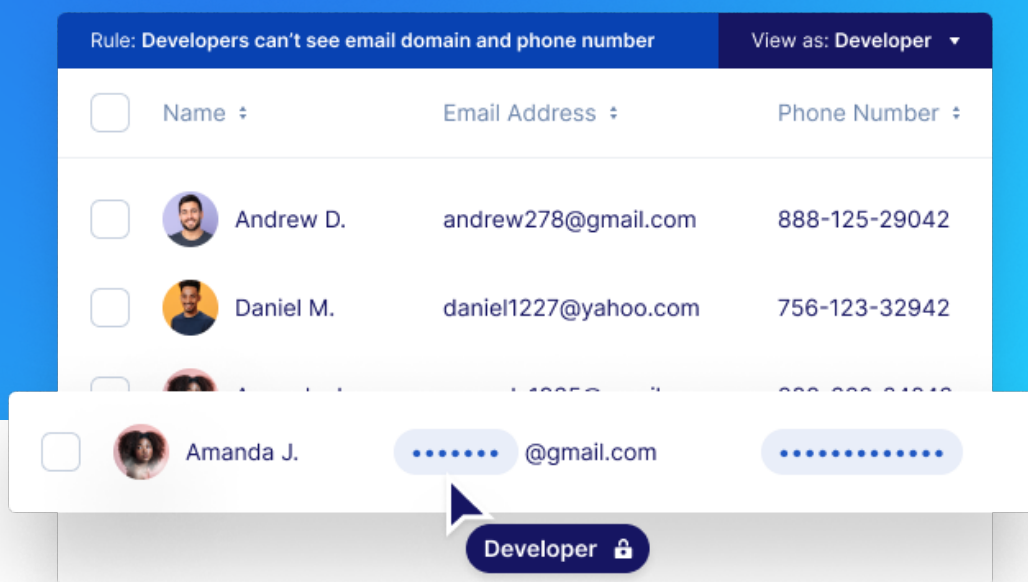# See and Secure Sensitive Data in Motion — Automatically, Anywhere It Flows

Nullafi instantly detects and controls sensitive data in motion, before it ever reaches endpoints, apps, or the wrong hands

Most data security tools are complicated, ineffective, or just don't work. They often only focus on data at rest, rely on outdated, clunky access controls, and after-the-fact detection. But there's a better, easier, more effective way: instant, effortless visibility into and control over how data is viewed, moved, and used — anywhere it travels — through a simple, flexible, and powerful dynamic data protection platform: Nullafi.

We're purpose-built to deliver real-time visibility and control over sensitive data in flight without the complexity of traditional tools. Unlike conventional monitoring systems, Nullafi operates on data in motion to detect, classify, and control sensitive data in real time before it reaches unauthorized users, applications, or environments.

By intercepting data before it reaches endpoints or cloud services, Nullafi eliminates blind spots, enforces access policies at the data level (no tagging or field level-identification required), and ensures that sensitive information is protected, automatically and at scale.

With Nullafi, your data security is airtight:

Instant, Granular Data Visibility and Control

Nullafi gives organizations real-time visibility into and control over who accesses what data, where, when, and how — across all apps, formats, and environments. No agents, no integrations, no delays.

Data-Centric Security Built for Modern Threats

While legacy tools protect containers (apps, endpoints, networks), Nullafi protects what matters most: the data itself, regardless of where it flows or how it's used.

Dynamic, Adaptive Protection for Data in Motion

Nullafi inspects, classifies, and governs data in transit — structured or unstructured, in any format or channel — applying policies on the fly with surgical precision.

Seamless, Frictionless Deployment

Deploy in minutes without endpoint agents or app integrations. Nullafi runs at the network layer and can be deployed via multiple methods to give maximum flexibility, including as an ICAP Server, API, Sidecar, among other options, making it fast, flexible, and disruption-free.

Enforcement at the Data Level

Rather than block entire files or apps, Nullafi masks/redacts sensitive data dynamically — wherever it is — protecting data without breaking workflows or slowing business down.

Built for the Era of AI, SaaS, and Compliance

As companies adopt AI tools and cloud apps at speed, Nullafi enables safe innovation with real-time access control, AI prompt protection, and compliance audit readiness.

Think of Nullafi as your corporate data firewall. Because when it comes to protecting your business, guessing isn't an option.

How It Works

The engine powering the Nullafi platform delivers dynamic data protection with unmatched speed, accuracy, and flexibility — purpose-built to spot and secure sensitive data as it moves across your organization.

Our unified, multi-channel architecture automatically scans, classifies, and controls data in motion across diverse environments, ensuring sensitive information stays protected no matter where it flows.

We offer a wide range of deployment options to meet your infrastructure needs:

- **ICAP Integration:** Seamlessly integrates with secure web gateways and web proxies to safeguard applications such as HubSpot, Salesforce (SFDC), Workday, Tableau, Redash, Atlassian, ChatGPT, and more.
- **Application API:** Enables data protection in messaging platforms like Microsoft Teams, Slack, Discord, and others.
- **Web Proxy with ICAP for ODBC Connections:** Provides robust coverage for data platforms including Snowflake (and Cortex), Databricks, and BigQuery.
- **Sidecar Container Proxy (Envoy-compatible):** Offers a high-performance, flexible option for Kubernetes-based applications, delivering real-time protection without disrupting performance.

Built on a foundation of 16 issued patents and years of R&D, Nullafi brings precision and intelligence to data in motion — identifying and classifying sensitive data in real-time with exceptional accuracy and without requiring endpoint agents or invasive integrations.

Whether it's structured or unstructured data, in a SaaS platform, chat message, database query, or API call, if it's in motion, Nullafi ensures you can see it, control it, and secure it instantly. Here's how it works:

Pattern Matching

- High-performance regex engines optimized for speed and scalability in enterprise environments
- Extensive, customizable pattern libraries covering a wide range of sensitive data types, including PII, PCI, PHI, and more
- Advanced probabilistic automata to handle complex expressions while minimizing false positives

Fingerprinting

- Robust hashing algorithms that generate unique, privacy-preserving fingerprints for sensitive records
- Partial-match detection capabilities that identify fragments of data, even when full records are not present
- Fuzzy matching using locality-sensitive hashing (LSH) to catch variations in data structure or content

Keyword Matching

- Optimized trie-based search structures enable ultra-fast keyword lookup and detection
- Comprehensive, multilingual dictionaries support global deployments and regional compliance needs
- Semantic analysis enhances keyword detection by identifying synonyms, variants, and linguistic nuances

Data Classification

- Hierarchical classification models segment data into highly specific categories
- Customizable classification policies empower organizations to define rules aligned to business and compliance requirements
- Automated labeling engine ensures consistent tagging and policy enforcement at scale

Contextual Analysis

- Detection that evaluates surrounding data for accurate classification and policy decisions
- Semantic interpretation that distinguishes between similar-looking data types (e.g., numerical IDs vs. credit card numbers)
- Structural analysis of documents and metadata enhances precision and reduces false positives

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Database Fingerprinting

- Cryptographic, non-invasive fingerprinting of database records for secure and privacy-preserving monitoring
- Instant anomaly and leak detection without needing to store or access raw sensitive data
- Real-time fingerprint synchronization ensures continuous protection against new and evolving threats

Machine Learning & AI (Coming Soon)

- Ensemble learning approaches that combine multiple models for improved accuracy and resilience
- Deep learning techniques capable of recognizing complex, high-dimensional data structures
- Continuous online learning enables adaptive improvements based on new data and threats
- Advanced natural language processing (NLP) to detect and classify data with contextual intelligence

Exact Data Matching

- Highly efficient Bloom filters for rapid, memory-light matching of known sensitive values
- Data normalization and tokenization pipelines ensure consistent matching across varied formats and encodings
- Distributed caching for high-throughput, low-latency performance across large-scale datasets

Nullafi doesn't just meet expectations; it redefines what data detection and protection can be. Built in Go for exceptional speed and efficiency, our platform continuously scans real-time HTTP and HTTPS traffic with minimal latency and maximum accuracy. It's designed to operate at enterprise scale without disruption.
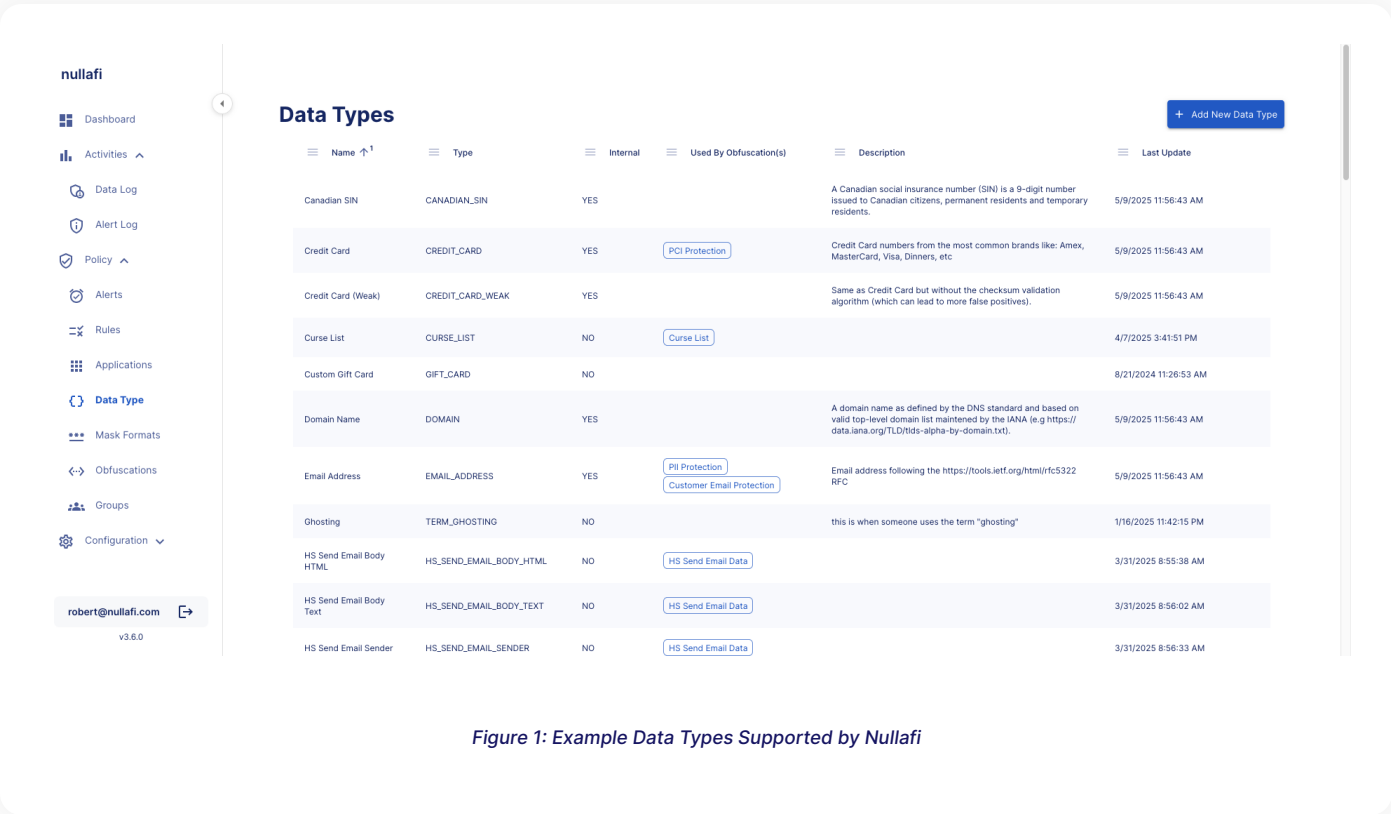

Figure 1: Example Data Types Supported by Nullafi

Here's what sets Nullafi apart:

- **Adaptive Scanning:** Automatically selects the most effective detection techniques in real time
- Exceptionally Low False Positives: Multiple detection methods work in concert to ensure accuracy and reduce noise, enabling more confident decisions
- **Enterprise-Grade Scalability:** Optimized to handle large volumes of data traffic without performance degradation
- **Continuous Innovation:** Regular updates to detection models ensure readiness for new data patterns, threats, and compliance requirements
- **Flexible Customization:** Fine-tune detection logic and policies to align precisely with your organization's needs, with no tradeoffs, no black boxes

With Nullafi, data security isn't just faster; it's smarter, more adaptable, and ready for anything.

Our Architectural Approach

Nullafi's architecture is purpose-built for performance, scalability, and seamless deployment. Developed in Go and designed with a modern microservices framework, our engine delivers high-speed, real-time data protection without compromising flexibility or reliability.

Container-Orchestration Ready

Nullafi deploys effortlessly across leading container platforms, ensuring smooth integration within any environment:

- Docker Compose
- Docker Swarm
- Kubernetes
- Cloud-native clusters including AWS ECS, Azure AKS, and Google GKE

Scalability & Elastic Performance

- **Horizontal Scalability** - Stateless architecture allows for effortless scaling across nodes as demand grows
- **Elastic by Design** - Lightweight services and efficient Go-based performance enable rapid adaptation to traffic spikes
- **Predictable Throughput** - Maintains consistent performance under load without the need for complex tuning

High-Performance Execution

- **Real-Time Data Processing** - Engineered for low-latency scanning and redaction across live data flows
- **Concurrent Efficiency** - Handles high volumes of simultaneous requests with ease
- **Optimized Footprint** - Designed to operate efficiently within containerized environments, reducing infrastructure overhead

Broad Compatibility

- **Directory Services Integration** - Seamlessly connects to Active Directory, Google Workspace, and similar systems
- **Cloud-Native Support** - Fully compatible with AWS, Azure, and Google Cloud ecosystems for hybrid or full-cloud deployments

The bottom line? Our architecture is built to outperform, scale effortlessly, and integrate easily. If you'd like to see Nullafi in action, please request a demo or contact us at support@nullafi.com.

About Nullafi

Nullafi is the first dynamic data protection platform purpose-built to see and control data in motion anywhere it flows, in real time. We can sit between every user, application, and data source to give you instant visibility and granular control over who sees what, where, and when — without agents, friction, or delay. We serve primarily mid-market companies, technology resellers, and application developers in North America. With rave reviews from analysts, multiple patents granted, and key partnerships established, Nullafi is well-positioned to transform data security as we know it.

Learn more at www.nullafi.com.