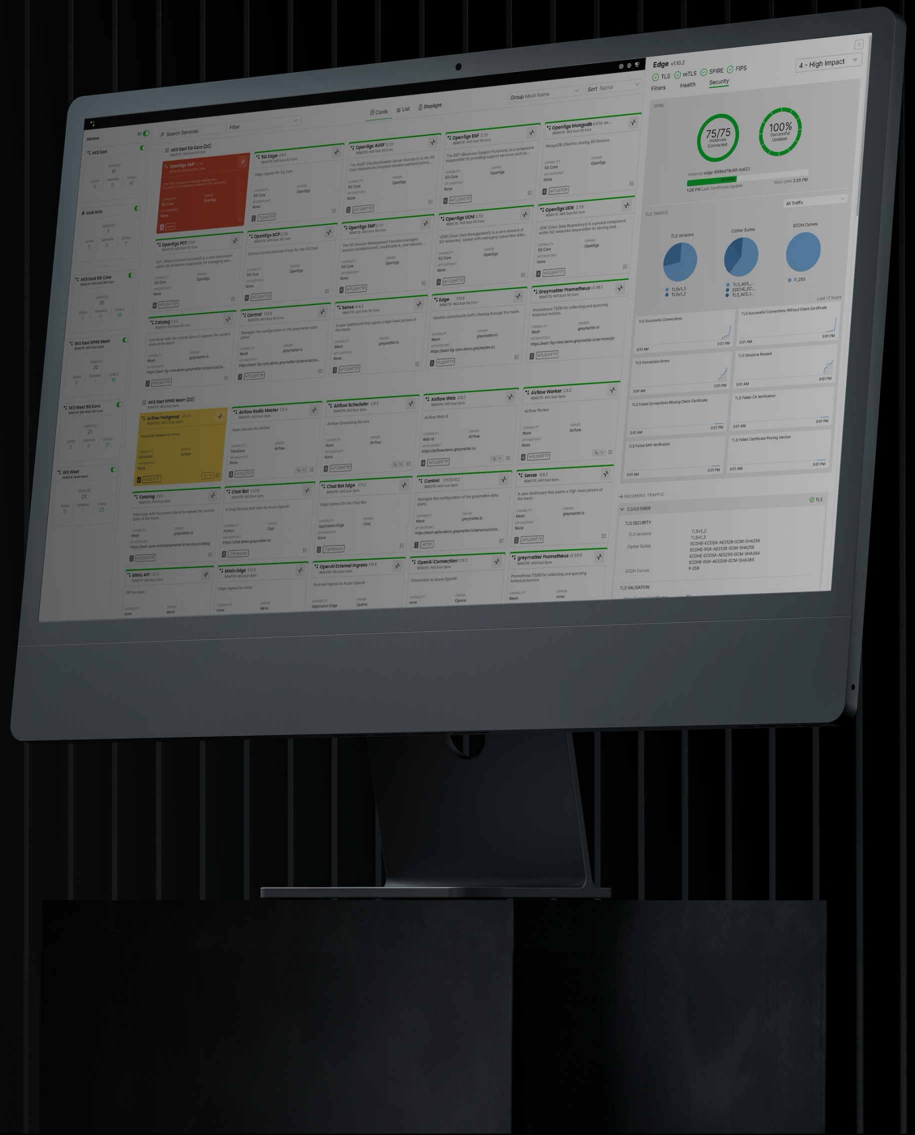
Greymatter.io

Greymatter 101: Zero Trust Networking Platform

Mission Success Through Automation, Security, and Observability

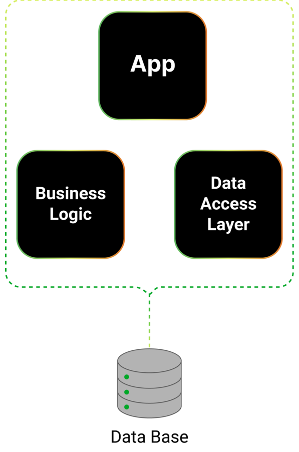


Greymatter.io | Trusted by Mission Critical Enterprises

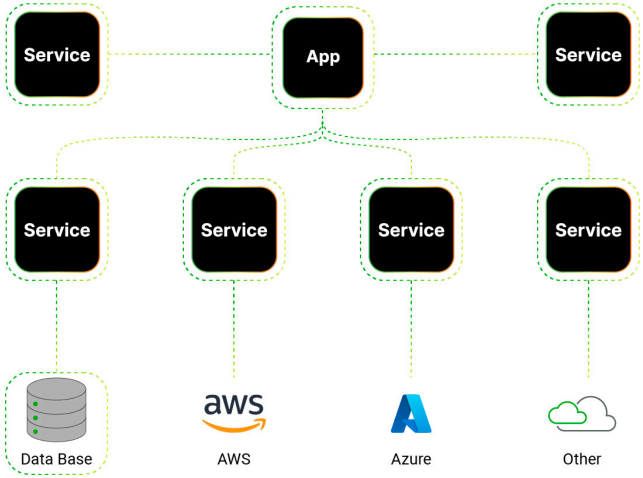
Understanding Containers & Microservices

- **Monolithic Applications: A Unified but Rigid Architecture**
  - A single, large machine where all components (UI, business logic, data access) are tightly connected. If one part fails, the whole system may stop.
    - **Simple but Inflexible** – Monolithic applications are easier to develop and deploy as a single unit but harder to scale and maintain due to tight coupling.
- **Containers: Standardizing Application Environments**
  - Containers are lightweight, self-contained software packages that include an application and all its dependencies, ensuring consistency across different environments. They:
    - **Consistent and Efficient** – Containers ensure reliable deployments across environments, enable rapid scaling, and reduce compatibility issues.
- **Microservices: Decoupling for Scalability and Resilience**
  - A team of smaller, independent machines (services), each handling a specific task (e.g., user service, payment service). If one fails, others keep running, enhancing flexibility and resilience.
    - **Scalable, Flexible, and Resilient** – Microservices enable independent scaling, faster updates, and improved fault isolation while allowing teams to use different technologies for optimal performance.
- **Key Points**
  - 93% of organizations currently use or plan to deploy containers in production, driving efficiency, scalability, and portability across cloud and on-prem environments.
  - 85% of large organizations (5,000+ employees) use microservices for agility and scalability.

Monolithic Architecture

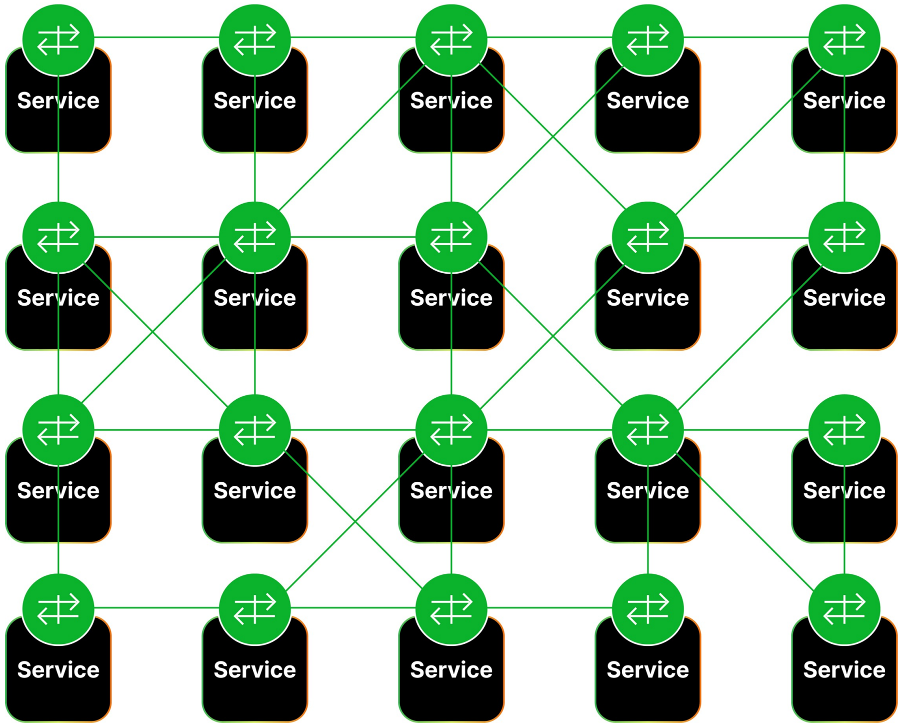


Microservice Architecture



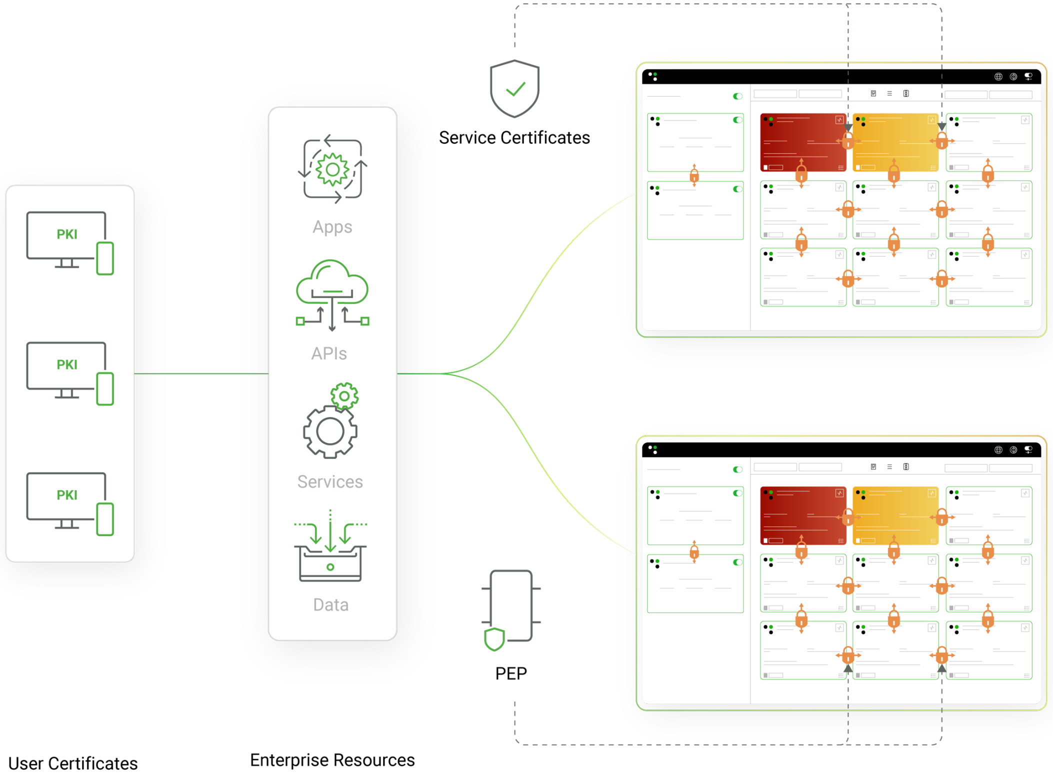
The Role of a Service Mesh

- **Definition:** A dedicated infrastructure layer that manages service-to-service communication in a microservices architecture, acting like a traffic controller.
- **Key Functions**
  - **Secure Communication:** Protects data between services with encryption.
  - **Reliability:** Ensures smooth operation despite failures.
  - **Observability:** Provides visibility into service performance.
- **How It Works**
  - Lightweight proxies (sidecars) are deployed alongside each microservice.
  - These proxies mediate all communication, enforcing security and collecting metrics.
- **Key Points**
  - **Service Mesh Adoption** – 85% of microservice adopters now use a service mesh for managing service-to-service communication, enhancing scalability and security.



Addressing Microservices Challenges with a Service Mesh

- **Challenges of Microservices**
  - **Communication Complexity:** Managing numerous service-to-service calls becomes a "spaghetti" mess.
  - **Security & Zero Trust:** Internal calls need authentication; perimeter security isn’t enough.
  - **Observability:** Hard to pinpoint issues without a holistic view of interactions.
  - **Operational Overhead:** Manual management of deployments and policies is overwhelming.
- **How a Service Mesh Solves These**
  - **Automates Communication:** Handles routing, load balancing, and retries.
  - **Enforces Security:** Implements zero-trust policies (e.g., encryption, authentication).
  - **Provides Visibility:** Collects metrics and traces for real-time monitoring.
  - **Reduces Complexity:** Centralizes networking tasks, freeing developers for business logic.

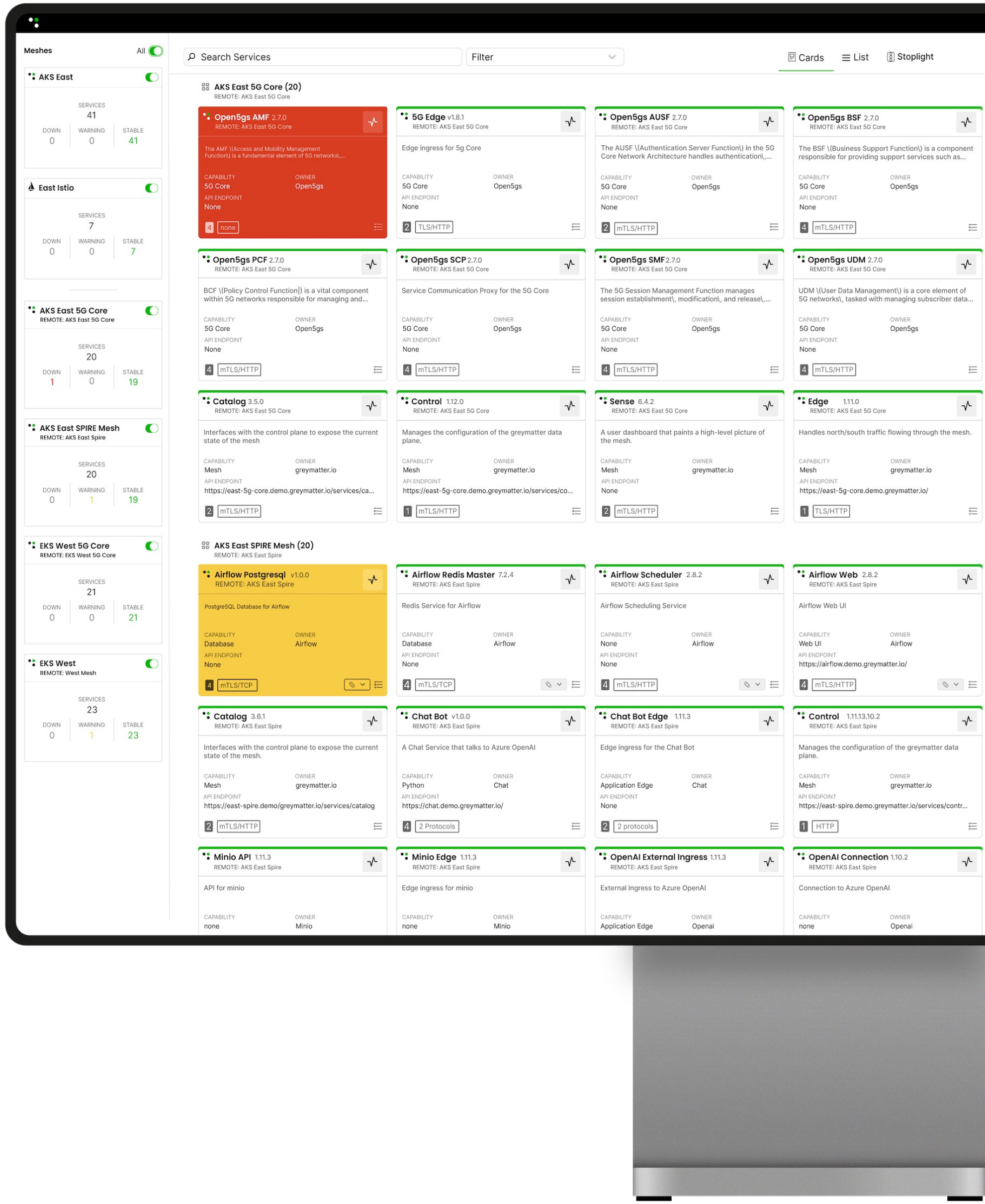


Introducing Greymatter: A Zero-Trust Networking Platform

Evolving beyond a basic service mesh to enforce zero-trust principles, Greymatter is a comprehensive zero-trust networking platform that automates delivery, enhances service-to-service communication, and enforces security across applications, APIs, databases, AI tools, and more.

Why Greymatter?

- Unlike traditional service meshes, Greymatter integrates advanced zero-trust security policies and governance.
- Designed for highly regulated industries and government agencies, ensuring compliance and operational efficiency.
- Provides an all-in-one management platform that eliminates the need for multiple networking and security tools.



Meshes · All

AKS East — SERVICES 41 · DOWN 0 · WARNING 0 · STABLE 41

East Istio — SERVICES 7 · DOWN 0 · WARNING 0 · STABLE 7

AKS East 5G Core — REMOTE: AKS East 5G Core — SERVICES 20 · DOWN 1 · WARNING 0 · STABLE 19

AKS East SPIRE Mesh — REMOTE: AKS East Spire — SERVICES 20 · DOWN 0 · WARNING 1 · STABLE 19

EKS West 5G Core — REMOTE: EKS West 5G Core — SERVICES 21 · DOWN 0 · WARNING 0 · STABLE 21

EKS West — REMOTE: West Mesh — SERVICES 23 · DOWN 0 · WARNING 1 · STABLE 23

Search Services · Filter · Cards · List · Stoplight

AKS East 5G Core (20)
REMOTE: AKS East 5G Core

Open5gs AMF 2.7.0 — REMOTE: AKS East 5G Core
The AMF \(Access and Mobility Management Function\) is a fundamental element of 5G networks\,...
CAPABILITY 5G Core · OWNER Open5gs · API ENDPOINT None · 4 · none

5G Edge v1.8.1 — REMOTE: AKS East 5G Core
Edge ingress for 5g Core
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Open5gs BSF 2.7.0 — REMOTE: AKS East 5G Core
The BSF \(Business Support Function\) is a component responsible for providing support services such as...
CAPABILITY 5G Core · OWNER Open5gs · API ENDPOINT None · 4 · mTLS/HTTP

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Open5gs SMF 2.7.0 — REMOTE: AKS East 5G Core
The 5G Session Management Function manages session establishment\, modification\, and release\,...
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Open5gs UDM 2.7.0 — REMOTE: AKS East 5G Core
UDM \(User Data Management\) is a core element of 5G networks\, tasked with managing subscriber data...
CAPABILITY 5G Core · OWNER Open5gs · API ENDPOINT None · 4 · mTLS/HTTP

Catalog 3.5.0 — REMOTE: AKS East 5G Core
Interfaces with the control plane to expose the current state of the mesh
CAPABILITY Mesh · OWNER greymatter.io · API ENDPOINT https://east-5g-core.demo.greymatter.io/services/ca... · 2 · mTLS/HTTP

Control 1.12.0 — REMOTE: AKS East 5G Core
Manages the configuration of the greymatter data plane.
CAPABILITY Mesh · OWNER greymatter.io · API ENDPOINT https://east-5g-core.demo.greymatter.io/services/co... · 1 · mTLS/HTTP

Sense 6.4.2 — REMOTE: AKS East 5G Core
A user dashboard that paints a high-level picture of the mesh.
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Edge 1.11.0 — REMOTE: AKS East 5G Core
Handles north/south traffic flowing through the mesh.
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AKS East SPIRE Mesh (20)
REMOTE: AKS East Spire

Airflow Postgresql v1.0.0 — REMOTE: AKS East Spire
PostgreSQL Database for Airflow
CAPABILITY Database · OWNER Airflow · API ENDPOINT None · 4 · mTLS/TCP

Airflow Redis Master 7.2.4 — REMOTE: AKS East Spire
Redis Service for Airflow
CAPABILITY Database · OWNER Airflow · API ENDPOINT None · 4 · mTLS/TCP

Airflow Scheduler 2.8.2 — REMOTE: AKS East Spire
Airflow Scheduling Service
CAPABILITY None · OWNER Airflow · API ENDPOINT None · 4 · mTLS/HTTP

Airflow Web 2.8.2 — REMOTE: AKS East Spire
Airflow Web UI
CAPABILITY Web UI · OWNER Airflow · API ENDPOINT https://airflow.demo.greymatter.io/ · 4 · mTLS/HTTP

Catalog 3.6.1 — REMOTE: AKS East Spire
Interfaces with the control plane to expose the current state of the mesh.
CAPABILITY Mesh · OWNER greymatter.io · API ENDPOINT https://east-spire.demo/greymatter.io/services/catalog · 2 · mTLS/HTTP

Chat Bot v1.0.0 — REMOTE: AKS East Spire
A Chat Service that talks to Azure OpenAI
CAPABILITY Python · OWNER Chat · API ENDPOINT https://chat.demo.greymatter.io/ · 4 · 2 Protocols

Chat Bot Edge 1.11.3 — REMOTE: AKS East Spire
Edge ingress for the Chat Bot
CAPABILITY Application Edge · OWNER Chat · API ENDPOINT None · 2 · 2 protocols

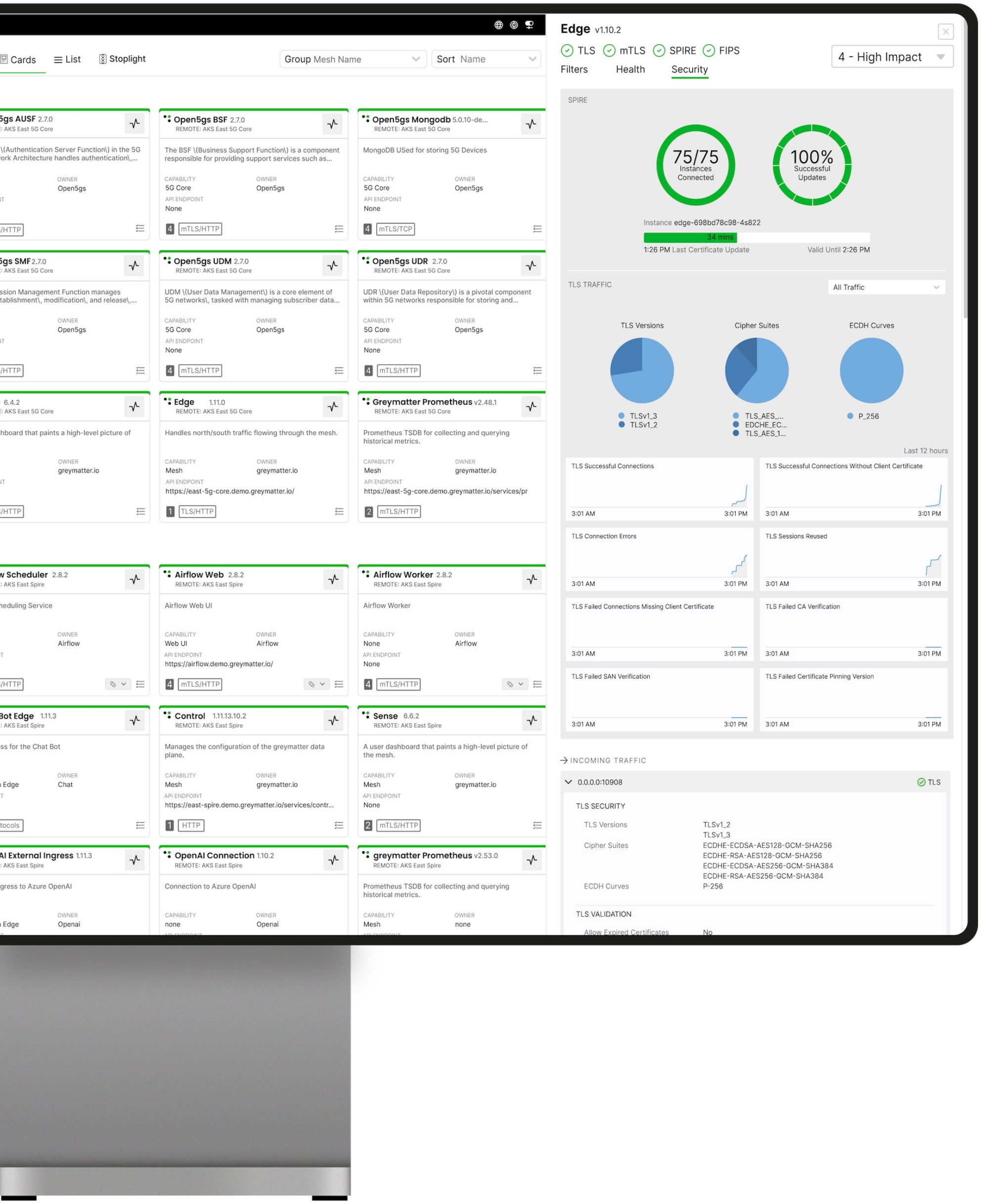
Control 1.11.13.10.2 — REMOTE: AKS East Spire
Manages the configuration of the greymatter data plane.
CAPABILITY Mesh · OWNER greymatter.io · API ENDPOINT https://east-spire.demo.greymatter.io/services/contr... · 1 · HTTP

Minio API 1.11.3 — REMOTE: AKS East Spire
API for minio
CAPABILITY none · OWNER Minio

Minio Edge 1.11.3 — REMOTE: AKS East Spire
Edge ingress for minio
CAPABILITY none · OWNER Minio

OpenAI External Ingress 1.11.3 — REMOTE: AKS East Spire
External Ingress to Azure OpenAI
CAPABILITY Application Edge · OWNER Openai

OpenAI Connection 1.10.2 — REMOTE: AKS East Spire
Connection to Azure OpenAI
CAPABILITY none · OWNER Openai

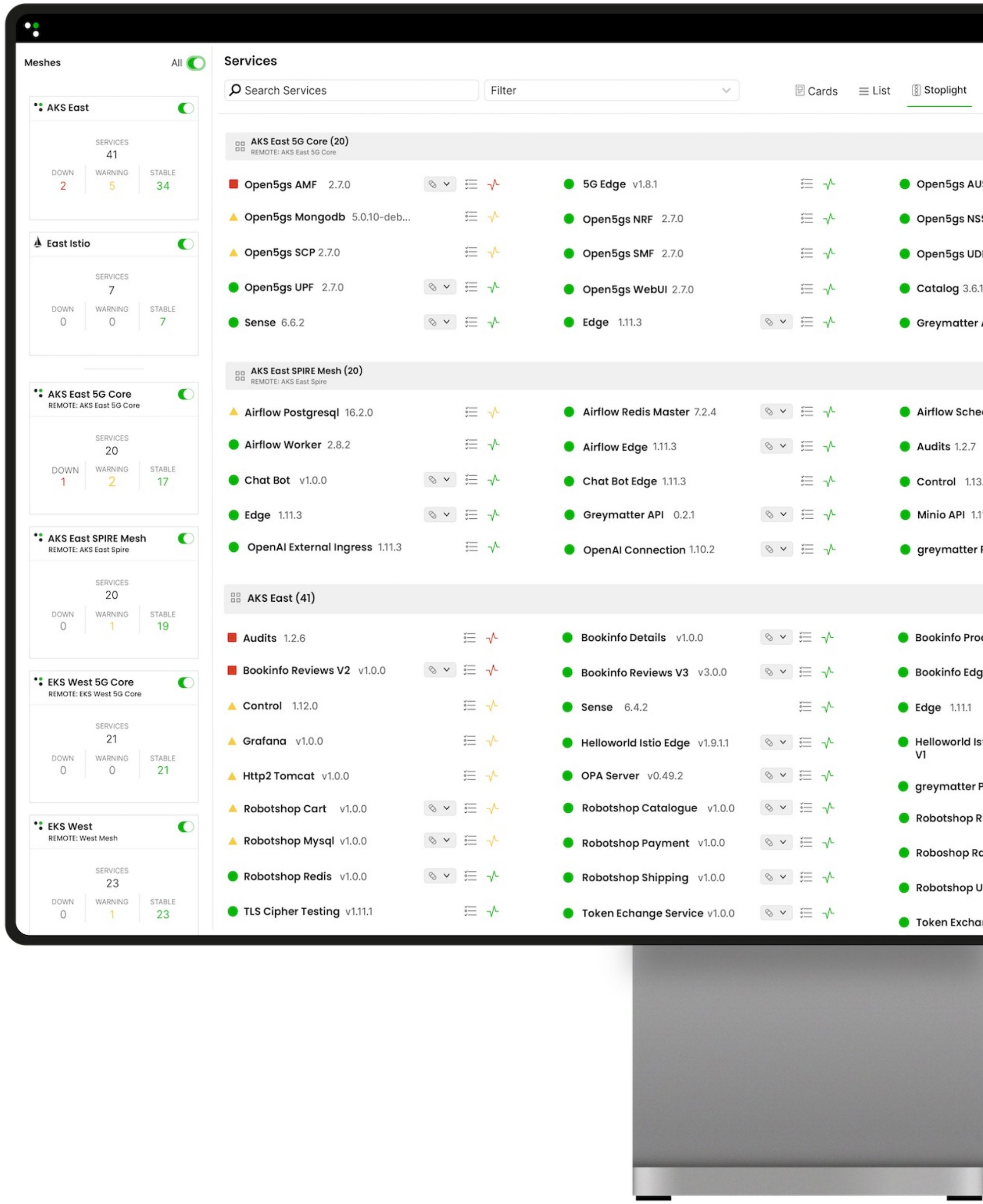


Exploring Greymatter's Core Features

- **Automated, Secure Service Connectivity**
  - Encrypts all traffic with mutual TLS.
  - Automates service discovery, routing, and authentication.
- **Built-in Policy Enforcement & Zero Trust Security**
  - Central policy engine with fine-grained access control.
  - Consistent security across cloud and on-premise environments.
- **Traffic Management**
  - Optimizes flow, supports canary deployments, and prevents overload with circuit breakers.
- **Governance & Configuration Management**
  - Declarative configuration and automated rollback.
  - Native GitOps support for streamlined management.
- **Application Networking Intelligence**
  - Auto-provisions metrics and audit infrastructure.
  - Offers multi-mesh visibility and dependency health checks.
- **Security & Compliance**
  - Meets NIST zero-trust and FIPS 140-2 standards.
  - Built-in forensic audit tracking.
- **Business & Operational Advantages**
  - Superior manageability and native observability.
  - Reduces total cost of ownership by minimizing tool dependency.

Greymatter in Action: Use Cases & Integrations

- **Seamless Kubernetes vendor/container Integration**
- **Unified Zero-Trust Networking:** AWS, Azure, Google, on-premise, legacy systems
- **Government Use Case:** Trusted by U.S. DoD for mission-critical systems (Impact Levels 2-6, ATO certified)
- **Enterprise Use Case:** Simplifies multicloud/hybrid management, MPN, MEC security, and compliance
- **Key Benefits:**
  - Enhanced security with zero-trust
  - Reduced complexity & downtime
  - Cost savings via tool consolidation
  - Better compliance & visibility



Meshes All

Mesh	SERVICES	DOWN	WARNING	STABLE
AKS East	41	2	5	34
East Istio	7	0	0	7
AKS East 5G Core REMOTE: AKS East 5G Core	20	1	2	17
AKS East SPIRE Mesh REMOTE: AKS East Spire	20	0	1	19
EKS West 5G Core REMOTE: EKS West 5G Core	21	0	0	21
EKS West REMOTE: West Mesh	23	0	1	23

Services

Search Services | Filter | Cards | List | Stoplight

AKS East 5G Core (20)
REMOTE: AKS East 5G Core

🟥 Open5gs AMF 2.7.0	● 5G Edge v1.8.1	● Open5gs AU
▲ Open5gs Mongodb 5.0.10-deb...	● Open5gs NRF 2.7.0	● Open5gs NS
▲ Open5gs SCP 2.7.0	● Open5gs SMF 2.7.0	● Open5gs UD
● Open5gs UPF 2.7.0	● Open5gs WebUI 2.7.0	● Catalog 3.6.1
● Sense 6.6.2	● Edge 1.11.3	● Greymatter

AKS East SPIRE Mesh (20)
REMOTE: AKS East Spire

▲ Airflow Postgresql 16.2.0	● Airflow Redis Master 7.2.4	● Airflow Sche
● Airflow Worker 2.8.2	● Airflow Edge 1.11.3	● Audits 1.2.7
● Chat Bot v1.0.0	● Chat Bot Edge 1.11.3	● Control 1.13
● Edge 1.11.3	● Greymatter API 0.2.1	● Minio API 1.1
● OpenAI External Ingress 1.11.3	● OpenAI Connection 1.10.2	● greymatter

AKS East (41)

🟥 Audits 1.2.6	● Bookinfo Details v1.0.0	● Bookinfo Pro
🟥 Bookinfo Reviews V2 v1.0.0	● Bookinfo Reviews V3 v3.0.0	● Bookinfo Edg
▲ Control 1.12.0	● Sense 6.4.2	● Edge 1.11.1
▲ Grafana v1.0.0	● Helloworld Istio Edge v1.9.1.1	● Helloworld Is V1
▲ Http2 Tomcat v1.0.0	● OPA Server v0.49.2	● greymatter
▲ Robotshop Cart v1.0.0	● Robotshop Catalogue v1.0.0	● Robotshop R
▲ Robotshop Mysql v1.0.0	● Robotshop Payment v1.0.0	● Roboshop R
● Robotshop Redis v1.0.0	● Robotshop Shipping v1.0.0	● Robotshop U
● TLS Cipher Testing v1.11.1	● Token Echange Service v1.0.0	● Token Excha

Greymatter.io – A Leader in Zero Trust Networking

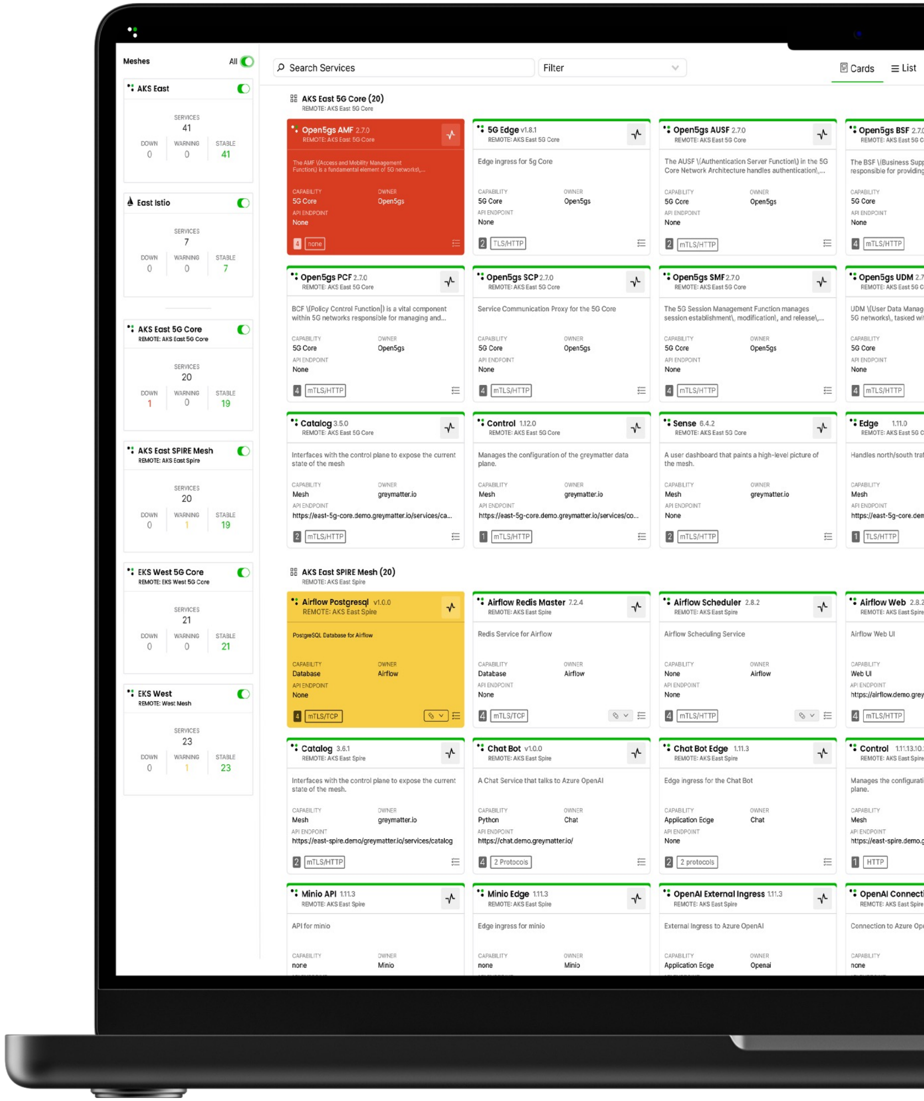
Greymatter is a proven ZTN platform trusted by defense and intelligence communities.

- Certified and accredited for DoD Impact Levels 2-6+ and enforcement of NIST ZTA and FIPS encryption standards.
- Named a leader and outperformer for 3 years in a row in the GigaOm Radar Report for Service Mesh, excelling in features, emerging capabilities, and secure enterprise management.
- Won the 2024 PAAS Security Solution of the Year from CyberSecurity Breakthrough.
- Recognized twice in Gartner's Hype Cycle Reports for both Enterprise Networking and Zero Trust Networking.

GIGAOM RADAR REPORT LEADER 2024 SERVICE MESH

CYBERSECURITY BREAKTHROUGH AWARD 2024

Gartner®



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API ENDPOINT https://east-5g-core.demo.greymatter.io/services/ca...
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API ENDPOINT None
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Edge 1.11.0
REMOTE: AKS East 5G C
Handles north/south traf
CAPABILITY Mesh
API ENDPOINT https://east-5g-core.dem
1 TLS/HTTP

AKS East SPIRE Mesh (20)
REMOTE: AKS East Spire

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REMOTE: AKS East Spire
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API ENDPOINT None
4 mTLS/TCP

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REMOTE: AKS East Spire
Redis Service for Airflow
CAPABILITY Database | OWNER Airflow
API ENDPOINT None
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Airflow Scheduler 2.8.2
REMOTE: AKS East Spire
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API ENDPOINT None
4 mTLS/HTTP

Airflow Web 2.8.2
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API ENDPOINT https://airflow.demo.grey
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REMOTE: AKS East Spire
Interfaces with the control plane to expose the current state of the mesh.
CAPABILITY Mesh | OWNER greymatter.io
API ENDPOINT https://east-spire.demo/greymatter.io/services/catalog
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4 2 Protocols

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REMOTE: AKS East Spire
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CAPABILITY Application Edge | OWNER Chat
API ENDPOINT None
2 2 protocols

Control 1.11.13.10.
REMOTE: AKS East Spire
Manages the configurati
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CAPABILITY Mesh
API ENDPOINT https://east-spire.demo.g
1 HTTP

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CAPABILITY none | OWNER Minio

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Edge ingress for minio
CAPABILITY none | OWNER Minio

OpenAI External Ingress 1.11.3
REMOTE: AKS East Spire
External Ingress to Azure OpenAI
CAPABILITY Application Edge | OWNER Openai

OpenAI Connecti
REMOTE: AKS East Spire
Connection to Azure Ope
CAPABILITY none

Backup Slides

Backup Slides

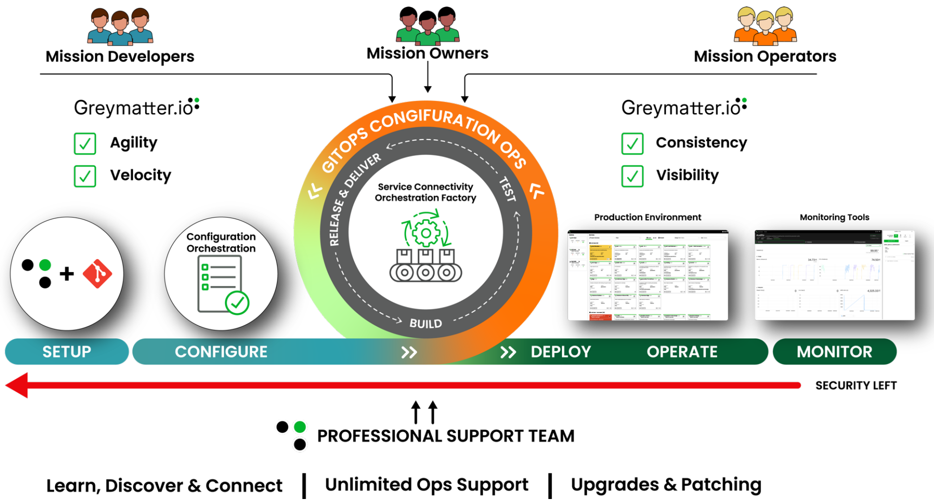
Engineering to Operations – Bridging the Gap

A Real-World Scenario

Technology team transitions new capabilities for customers from dev to ops. Greymatter's playbooks and Canary deployments can streamline the rollout, ensuring uninterrupted support for integration.

Current Challenges

- Response teams struggle to validate updates that are critical for security management, secure protocols, and compliance - delaying capabilities.
- Without user-to-workload transition insights, issues linger undetected, stalling capabilities.
- Manual handoffs without rolling upgrade strategies slow critical mission application readiness



The Greymatter Advantage

Feature	Advantage	Benefit
Greymatter GitOps Playbooks	Automates dev-to-ops transitions	Speeds deployment to production, ensuring security and resiliency
Real-Time Validation via Greymatter Catalog	Confirms system stability	Ensures mission-ready applications, APIs, and services
Canary and Rolling Deployments/Upgrades	Rolls out updates safely, with full support for rollback	Minimizes disruption to analysts

Mission Service Connectivity – Everywhere That Matters

A Real-World Scenario

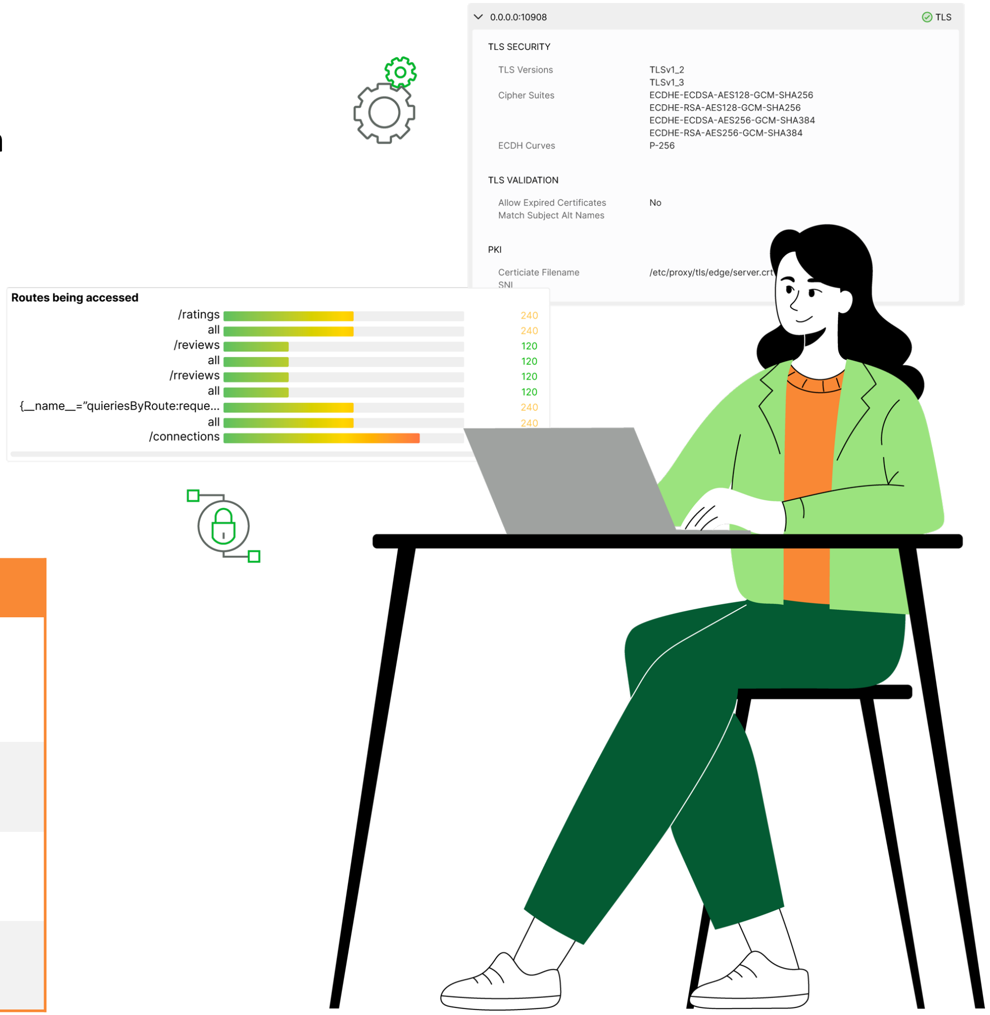
Technology team deploys capability to customers into 5G environments. Greymatter's ZTN management platform ensures security, visibility, and orchestration of applications accessing services from cloud to edge, maintaining connectivity.

Current Challenges

- Manual and disjointed configs delay delivery, impacting business operations and customers.
- Constraints demand automated, scalable, low-overhead solutions.

The Greymatter Solution

Feature	Advantage	Benefit
Playbook-Driven Policy Automation	Enforces dynamic, rule-based access controls to fleet-wide resources	Adapts security to evolving threats in real-time
Continuous Session Monitoring	Tracks user activity across all systems	Detects and stops lateral movement instantly
Automated SIEM/SOAR Integration	Feeds real-time forensic data into security tools	Speeds up detection and response
Least-Privilege Access Control	Restricts access based on contextual policies	Minimizes insider threat exposure



```
0.0.0.0:10908                                          TLS

TLS SECURITY
  TLS Versions                  TLSv1_2
                                TLSv1_3
  Cipher Suites                 ECDHE-ECDSA-AES128-GCM-SHA256
                                ECDHE-RSA-AES128-GCM-SHA256
                                ECDHE-ECDSA-AES256-GCM-SHA384
                                ECDHE-RSA-AES256-GCM-SHA384
  ECDH Curves                   P-256

TLS VALIDATION
  Allow Expired Certificates    No
  Match Subject Alt Names

PKI
  Certiciate Filename           /etc/proxy/tls/edge/server.crt
  SNI
```

```
Routes being accessed
                           /ratings   240
                                all   240
                           /reviews   120
                                all   120
                          /rreviews   120
                                all   120
{__name__="quieriesByRoute:reque...   240
                                all   240
                       /connections
```

Service Certificate Managment – Compliance and Readiness

A Real-World Scenario

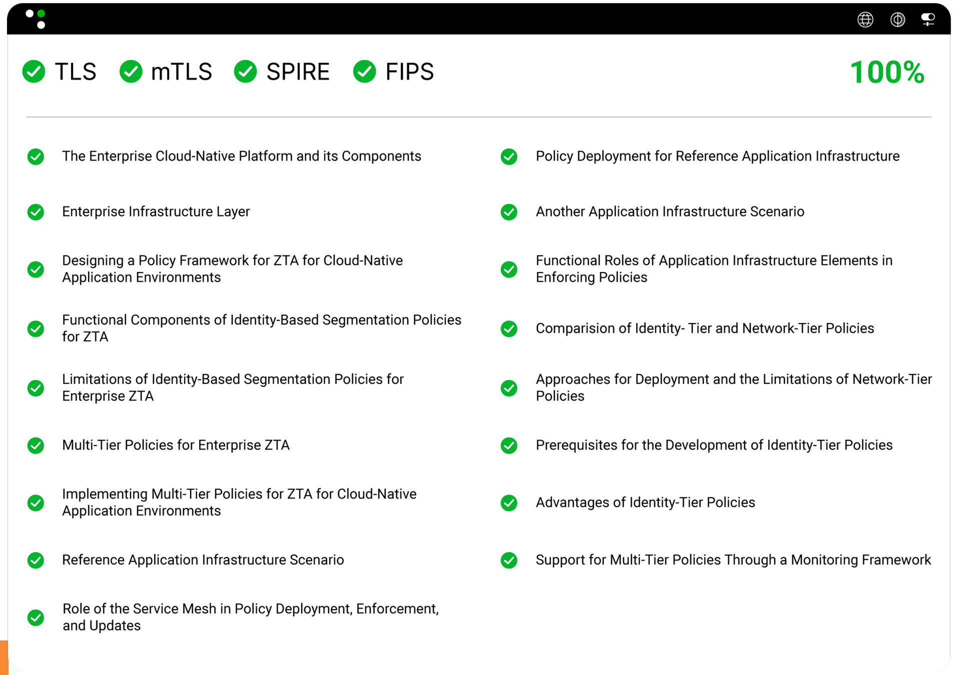
Technology team networks, critical for deterrence against adversary cyber operations, are compromised due to certificate mismanagement. Greymatter's certificate automation and attestation secures every service connection, ensuring compliance with NIST and FIPS standards—vital to the technology operations.

Current Challenges

- Manual certificate management delays updates, leaving systems vulnerable to evolving cyber threats.
- Non-compliance with security standards (e.g., TLS protocols, outdated certificate ciphers) jeopardizes operations and the Zero Trust needs.

The Greymatter Advantage

Feature	Advantage	Benefit
Automated Service Certificates with SPIRE	Automates dev-to-ops transitions	Speeds deployment to production, ensuring security and resiliency
End to end mTLS Encryption both East/West and North/South	Confirms system stability	Ensures mission-ready applications, APIs, and services
NIST/FIPS Compliance	Meets strict government security standards	Ensures regulatory adherence and data integrity



✓ TLS ✓ mTLS ✓ SPIRE ✓ FIPS **100%**

- ✓ The Enterprise Cloud-Native Platform and its Components
- ✓ Enterprise Infrastructure Layer
- ✓ Designing a Policy Framework for ZTA for Cloud-Native Application Environments
- ✓ Functional Components of Identity-Based Segmentation Policies for ZTA
- ✓ Limitations of Identity-Based Segmentation Policies for Enterprise ZTA
- ✓ Multi-Tier Policies for Enterprise ZTA
- ✓ Implementing Multi-Tier Policies for ZTA for Cloud-Native Application Environments
- ✓ Reference Application Infrastructure Scenario
- ✓ Role of the Service Mesh in Policy Deployment, Enforcement, and Updates
- ✓ Policy Deployment for Reference Application Infrastructure
- ✓ Another Application Infrastructure Scenario
- ✓ Functional Roles of Application Infrastructure Elements in Enforcing Policies
- ✓ Comparision of Identity- Tier and Network-Tier Policies
- ✓ Approaches for Deployment and the Limitations of Network-Tier Policies
- ✓ Prerequisites for the Development of Identity-Tier Policies
- ✓ Advantages of Identity-Tier Policies
- ✓ Support for Multi-Tier Policies Through a Monitoring Framework

Traffic Management – Resilience Under Pressure

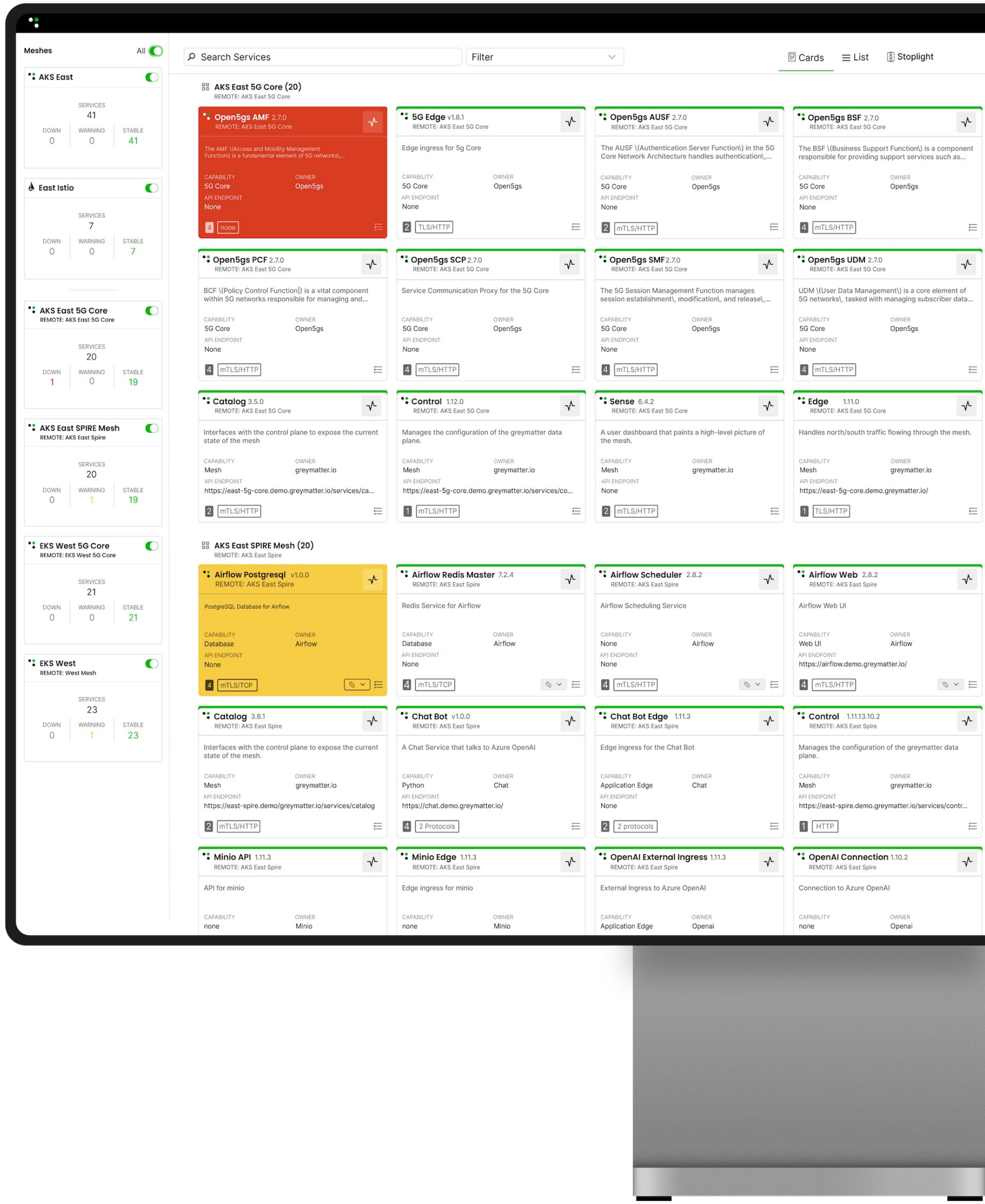
A Real-World Scenario

Customers rely on applications and services to connect and stay online during heavy use periods. Greymatter's traffic management ensures seamless data flows across multi-cloud systems, maintaining operations tempo.

Current Challenges

- Heavy data loads strain multi-cloud networks and applications, risking delays in customer support and troubleshooting.
- Manual traffic routing without an ability to coordinate workload level assets slows critical updates, especially under budget constraints.
- Disparate systems hinder rapid dissemination.

Feature	Advantage	Benefit
Automated Load Balancing	Optimizes application, APIs, and Data traffic across clouds	Ensures timely delivery via prioritized workloads
Global Traffic Management	Routes data efficiently via Envoy	Boosts mission resilience
Management Playbooks	Simplifies configs 50% vs. legacy and enforces NIST/FIPS security and monitoring	Reduces overhead for CIO technical teams and security teams



AKS East
SERVICES 41
DOWN 0 WARNING 0 STABLE 41

East Istio
SERVICES 7
DOWN 0 WARNING 0 STABLE 7

AKS East 5G Core
REMOTE: AKS East 5G Core
SERVICES 20
DOWN 1 WARNING 0 STABLE 19

AKS East SPIRE Mesh
REMOTE: AKS East Spire
SERVICES 20
DOWN 0 WARNING 1 STABLE 19

EKS West 5G Core
REMOTE: EKS West 5G Core
SERVICES 21
DOWN 0 WARNING 0 STABLE 21

EKS West
REMOTE: West Mesh
SERVICES 23
DOWN 0 WARNING 1 STABLE 23

AKS East 5G Core (20)
REMOTE: AKS East 5G Core

Open5gs AMF 2.7.0
REMOTE: AKS East 5G Core
The AMF \(Access and Mobility Management Function\) is a fundamental element of 5G networks\,...
CAPABILITY 5G Core OWNER Open5gs
API ENDPOINT None
4 none

5G Edge v1.8.1
REMOTE: AKS East 5G Core
Edge ingress for 5g Core
CAPABILITY 5G Core OWNER Open5gs
API ENDPOINT None
2 TLS/HTTP

Open5gs AUSF 2.7.0
REMOTE: AKS East 5G Core
The AUSF \(Authentication Server Function\) in the 5G Core Network Architecture handles authentication\,...
CAPABILITY 5G Core OWNER Open5gs
API ENDPOINT None
2 mTLS/HTTP

Open5gs BSF 2.7.0
REMOTE: AKS East 5G Core
The BSF \(Business Support Function\) is a component responsible for providing support services such as...
CAPABILITY 5G Core OWNER Open5gs
API ENDPOINT None
4 mTLS/HTTP

Open5gs PCF 2.7.0
REMOTE: AKS East 5G Core
BCF \(Policy Control Function|) is a vital component within 5G networks responsible for managing and...
CAPABILITY 5G Core OWNER Open5gs
API ENDPOINT None
4 mTLS/HTTP

Open5gs SCP 2.7.0
REMOTE: AKS East 5G Core
Service Communication Proxy for the 5G Core
CAPABILITY 5G Core OWNER Open5gs
API ENDPOINT None
4 mTLS/HTTP

Open5gs SMF 2.7.0
REMOTE: AKS East 5G Core
The 5G Session Management Function manages session establishment\, modification\, and release\,...
CAPABILITY 5G Core OWNER Open5gs
API ENDPOINT None
4 mTLS/HTTP

Open5gs UDM 2.7.0
REMOTE: AKS East 5G Core
UDM \(User Data Management\) is a core element of 5G networks\, tasked with managing subscriber data...
CAPABILITY 5G Core OWNER Open5gs
API ENDPOINT None
4 mTLS/HTTP

Catalog 3.5.0
REMOTE: AKS East 5G Core
Interfaces with the control plane to expose the current state of the mesh
CAPABILITY Mesh OWNER greymatter.io
API ENDPOINT https://east-5g-core.demo.greymatter.io/services/ca...
2 mTLS/HTTP

Control 1.12.0
REMOTE: AKS East 5G Core
Manages the configuration of the greymatter data plane.
CAPABILITY Mesh OWNER greymatter.io
API ENDPOINT https://east-5g-core.demo.greymatter.io/services/co...
1 mTLS/HTTP

Sense 6.4.2
REMOTE: AKS East 5G Core
A user dashboard that paints a high-level picture of the mesh.
CAPABILITY Mesh OWNER greymatter.io
API ENDPOINT None
2 mTLS/HTTP

Edge 1.11.0
REMOTE: AKS East 5G Core
Handles north/south traffic flowing through the mesh.
CAPABILITY Mesh OWNER greymatter.io
API ENDPOINT https://east-5g-core.demo.greymatter.io/
1 TLS/HTTP

AKS East SPIRE Mesh (20)
REMOTE: AKS East Spire

Airflow Postgresql v1.0.0
REMOTE: AKS East Spire
PostgreSQL Database for Airflow
CAPABILITY Database OWNER Airflow
API ENDPOINT None
4 mTLS/TCP

Airflow Redis Master 7.2.4
REMOTE: AKS East Spire
Redis Service for Airflow
CAPABILITY Database OWNER Airflow
API ENDPOINT None
4 mTLS/TCP

Airflow Scheduler 2.8.2
REMOTE: AKS East Spire
Airflow Scheduling Service
CAPABILITY None OWNER Airflow
API ENDPOINT None
4 mTLS/HTTP

Airflow Web 2.8.2
REMOTE: AKS East Spire
Airflow Web UI
CAPABILITY Web UI OWNER Airflow
API ENDPOINT https://airflow.demo.greymatter.io/
4 mTLS/HTTP

Catalog 3.6.1
REMOTE: AKS East Spire
Interfaces with the control plane to expose the current state of the mesh.
CAPABILITY Mesh OWNER greymatter.io
API ENDPOINT https://east-spire.demo/greymatter.io/services/catalog
2 mTLS/HTTP

Chat Bot v1.0.0
REMOTE: AKS East Spire
A Chat Service that talks to Azure OpenAI
CAPABILITY Python OWNER Chat
API ENDPOINT https://chat.demo.greymatter.io/
4 2 Protocols

Chat Bot Edge 1.11.3
REMOTE: AKS East Spire
Edge ingress for the Chat Bot
CAPABILITY Application Edge OWNER Chat
API ENDPOINT None
2 2 protocols

Control 1.11.13.10.2
REMOTE: AKS East Spire
Manages the configuration of the greymatter data plane.
CAPABILITY Mesh OWNER greymatter.io
API ENDPOINT https://east-spire.demo.greymatter.io/services/contr...
1 HTTP

Minio API 1.11.3
REMOTE: AKS East Spire
API for minio
CAPABILITY none OWNER Minio

Minio Edge 1.11.3
REMOTE: AKS East Spire
Edge ingress for minio
CAPABILITY none OWNER Minio

OpenAI External Ingress 1.11.3
REMOTE: AKS East Spire
External Ingress to Azure OpenAI
CAPABILITY Application Edge OWNER Openai

OpenAI Connection 1.10.2
REMOTE: AKS East Spire
Connection to Azure OpenAI
CAPABILITY none OWNER Openai

Observability – Visibility for Decision-Making

A Real-World Scenario

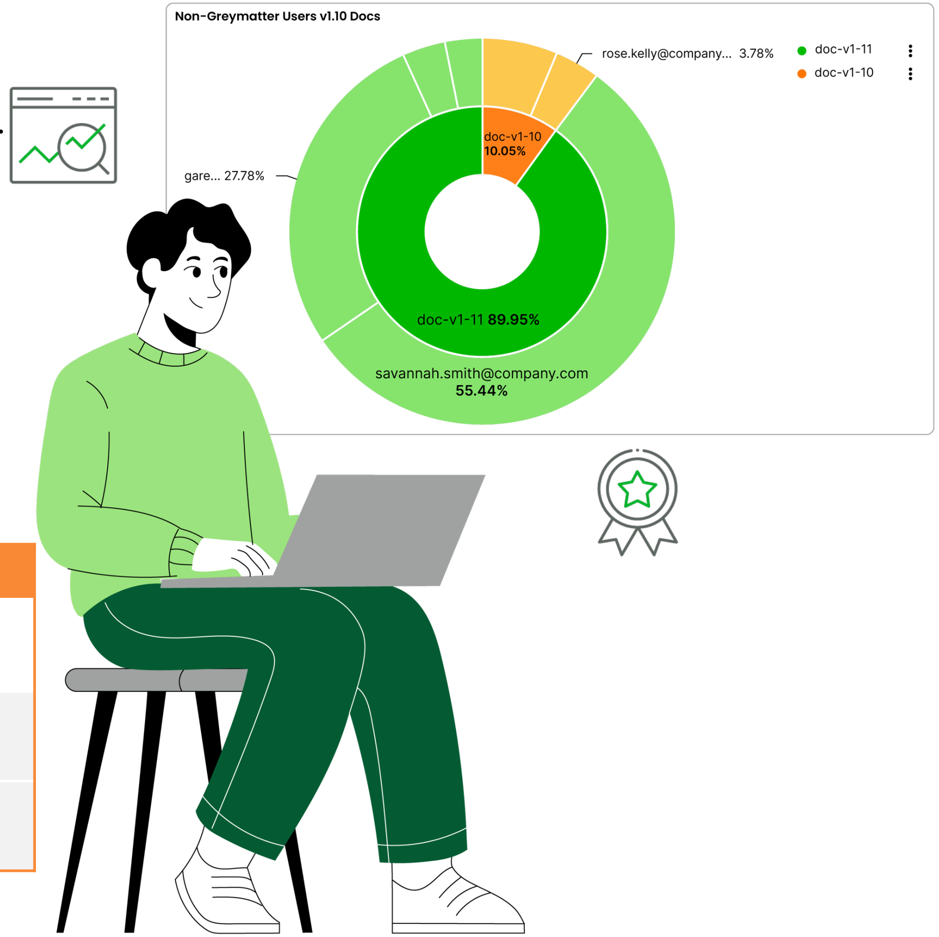
Delivery team initiatives integrate disparate capabilities for customer provided activities. Greymatter's observability provides real-time usage insights across systems, ensuring effective decision-making enabling appropriate budgeting activity.

Current Challenges

- Customer need instant visibility into activity flows to support operational tempo.
- Siloed tools obscure system performance, slowing mission analysis.
- Resource constraints limit manual monitoring, risking missed insights.

The Greymatter Advantage

Feature	Advantage	Benefit
Comprehensive Audit Trails	Tracks every access, download, and transfer	Provides clear forensic evidence for investigations
Enterprise Security Integration	Integrates directly with SIEM/SOAR systems	Speeds up threat detection and response
Real-Time Telemetry	Tracks application, API, and service usage end-to-end	Optimizes mission support efficiency



Proactive Operations - Seeing the Threat Before It Happens

A Real-World Scenario

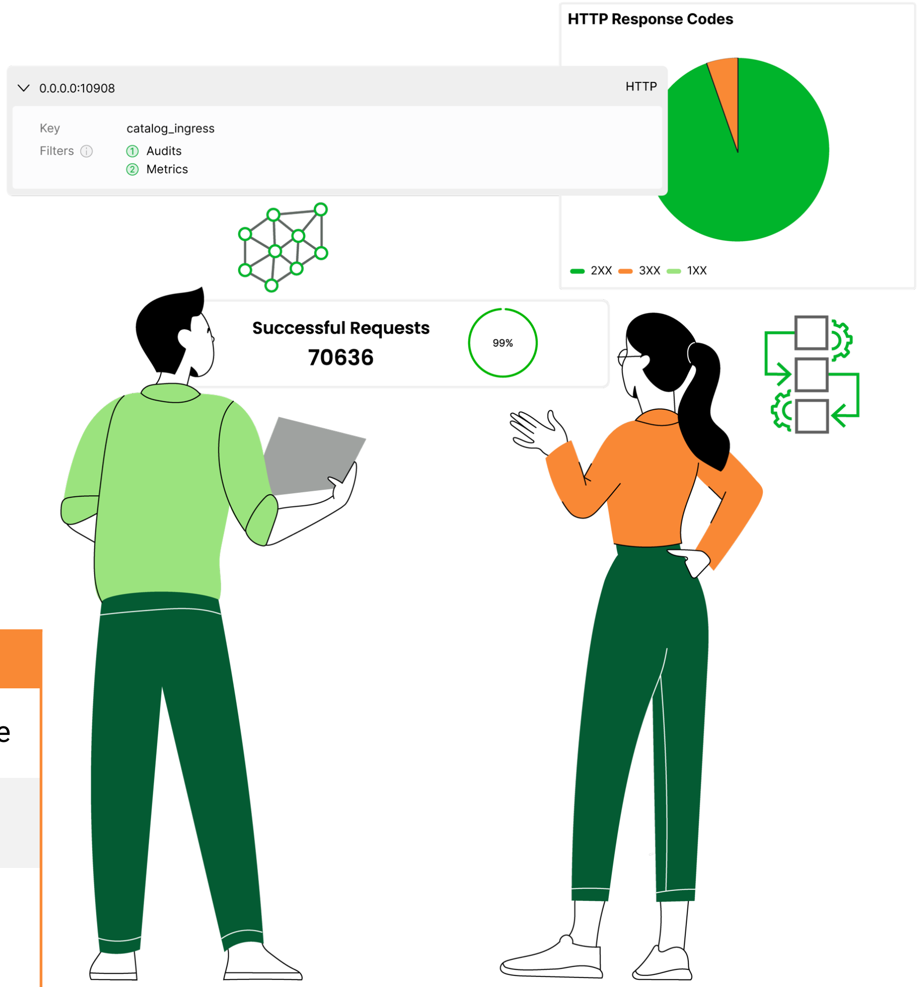
An internal employee with authorized access slowly exfiltrates sensitive data, blending in with routine activity. Security teams rely on SIEM/SOAR tools to detect anomalies, but without unified enforcement, they struggle to respond quickly.

Current Challenges

- Disparate systems and manual controls hinder rapid adjustments, stalling business operations support under budget strain.
- Without user-to-workload traffic mappings, response teams face slowdowns, obscuring critical updates until too late.

The Greymatter Advantage

Feature	Advantage	Benefit
Fleet-Wide Playbook Enforcement	Instantly applies security policies across all resources	Enables real-time threat response
Distributed Workload PEP/PDP Policy Control	Deploys updates to every Greymatter-protected service	Reduces manual effort and response time
Seamless Analytics Integration	Feeds enriched audits and telemetry into existing AI and Reporting tools	Enhances threat detection and automated workflows
Zero Trust Data Plane Enforcement	Verifies and restricts access at the workload level	Prevents unauthorized activity before it spreads

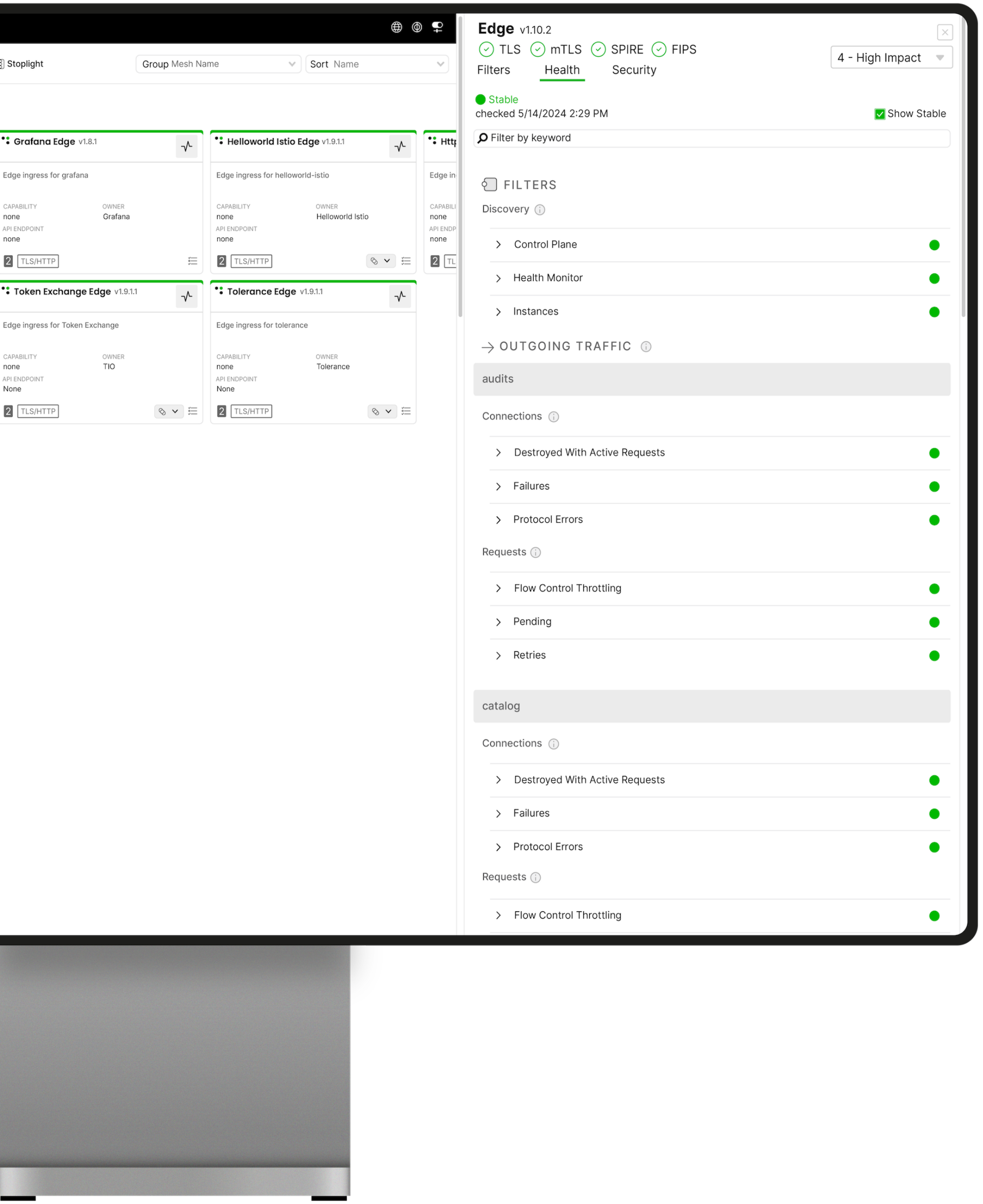


0.0.0.0:10908 HTTP

Key catalog_ingress

Filters ① Audits ② Metrics

Successful Requests 70636



Stoplight

Group Mesh Name

Sort Name

Grafana Edge v1.8.1

Edge ingress for grafana

CAPABILITY none

OWNER Grafana

API ENDPOINT none

2 TLS/HTTP

Helloworld Istio Edge v1.9.1.1

Edge ingress for helloworld-istio

CAPABILITY none

OWNER Helloworld Istio

API ENDPOINT none

2 TLS/HTTP

Token Exchange Edge v1.9.1.1

Edge ingress for Token Exchange

CAPABILITY none

OWNER TIO

API ENDPOINT None

2 TLS/HTTP

Tolerance Edge v1.9.1.1

Edge ingress for tolerance

CAPABILITY none

OWNER Tolerance

API ENDPOINT None

2 TLS/HTTP

Edge v1.10.2

✓ TLS ✓ mTLS ✓ SPIRE ✓ FIPS

4 - High Impact

Filters Health Security

● Stable

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☑ Show Stable

Filter by keyword

FILTERS

Discovery

- Control Plane ●
- Health Monitor ●
- Instances ●

OUTGOING TRAFFIC

audits

Connections

- Destroyed With Active Requests ●
- Failures ●
- Protocol Errors ●

Requests

- Flow Control Throttling ●
- Pending ●
- Retries ●

catalog

Connections

- Destroyed With Active Requests ●
- Failures ●
- Protocol Errors ●

Requests

- Flow Control Throttling ●

The Greymatter Advantage – Value in Context

Greymatter aligns with 2025 Enterprise priorities and long-term realities.

- **Business Readiness:** Secures applications, APIs, AI modules, and data services across clouds and deployments through repeatable Playbook management.
- **Cost Efficiency:** Increases speed of delivery, while cutting operational overhead through automation.
- **Lasting Security:** Locks down every service, manages ephemeral certificate and enforces protocol encryption best practices.

Enterprise-Ready ZTN: Automate, Secure, Observe

Greymatter drives Enterprise success with fast automation, top security, and full visibility. It streamlines ops, protects critical systems, and keeps you in control—no weak spots, just readiness.

Thank you

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