

The Future of Data Networks

Executive Summary

Imagine a network that moves as fast as your best idea. A network that lets data glide across continents, each packet aware of the safest, fastest, most efficient route. A network where AI agents can spin up new connections in seconds and monitor compliance in real-time.

At Graphiant, we build the infrastructure that makes that shift possible. Our AI-native stateless core frees your data from constraints giving you the control and flexibility to treat it like working capital. Deploy data where value can be created while risk stays contained.

A World in Flux

Data infrastructure must evolve to meet new opportunities and respond to mounting business pressures.



AI Pressure

Enterprise traffic to AI services jumped by over **3,500%** in 2024. Models now train and infer in every division, driving torrents of east-west traffic that traditional hub-and-spoke designs are ill-equipped to handle.



Data Pressure

IDC forecasts the enterprise data sphere will roughly **double every two years** through 2028. More packets, more variety, and an expectation that they move instantly, all while IT budgets and investment hold steady.



Trust Pressure

Laws that dictate where information may live multiply each quarter. Overlapping jurisdictions have become a strategic risk at the boardroom level, not just for the legal department.



Future-ready infrastructure is built with these pressures in mind to respond better and faster at lower cost. Traditional networks see bits on a wire. A stateless network sees metadata-rich objects, allowing policy engines to steer traffic based on business context like payload type, risk profile and location. Encryption evolves in place, swapping algorithms

without forklift upgrades. Above all, the network is driven by software and by AI systems that anticipate demand and manage resources in real time.

The reward is the strategic freedom to launch a new service, market, or agent without a six-month network change window.

The Strategic Gap: Why Legacy Designs Hold You Back

Ideas outpace infrastructure. Boards approve an AI-driven product in Q1 and expect revenue to materialize in Q3. Yet, the network that must carry the data is still gated by hardware refreshes and upgrade cycles measured in months. It's simply not fast enough.



Agility Deficit

Traditional designs assume a fixed set of sites and predictable traffic. When a load spikes (a real-time fraud-detection model spinning up in two clouds), teams scramble to update the design, add circuits, and roll out configurations. Change tickets pile up, and launch dates slip. In a recent Gartner pulse survey, **64% of CIOs cited “network change lead-time” as the top barrier to digital rollouts.*** Static designs simply cannot compress innovation timelines.



Data-Mobility Deficit

Data is created everywhere: edge sensors, partner APIs, and SBA microservices. Yet legacy networks treat every packet the same (an address and a port), offering no real context. With volumes expected to double every two years, rigid routes become choke points, forcing teams to replicate data rather than move it. Costs rise, insights lag, and competitive advantage evaporates.



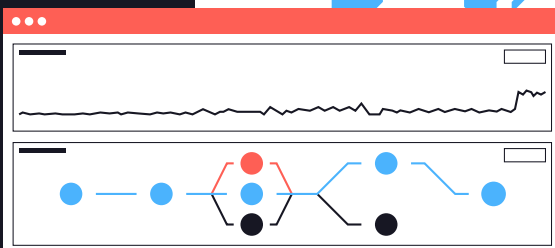
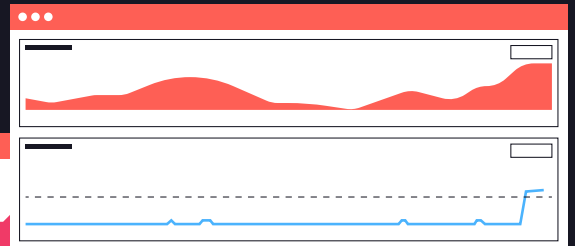
Trust & Sovereignty Deficit

Security controls bolted on after the fact can no longer satisfy regulators or the board. Intent is hidden inside opaque tunnels, and auditors see only encrypted blobs. Cross-border policies must track each byte, yet most networks can only enforce controls at the edge, never in flight. Add the looming risk of quantum-capable attackers, and yesterday's encryption becomes tomorrow's exposure.



Where This Leaves the Enterprise

- **Slow to market.** Every quarter, product ideas stall behind change windows and security reviews.
- **Data trapped in silos.** Analysts spend more time staging data than deriving insight.
- **Unquantified risk.** Boards carry growing liabilities they cannot map or measure.



Real World Results

Valmont operates a global network for 10,000 employees across 150 sites. The team adopted Graphiant in a field trial to overcome the limits of legacy SD-WAN. They used Graphiant's Data Assurance to segment traffic by application, including AI and ERP, to ensure priority applications ran smoothly. The goal was to simplify operations, allow application-level policy without hardware rework, and enforce stronger governance across borders.

The result? Valmont has fewer VPN and IPsec tunnels and policy-based microsegmentation, simplifying their network while improving performance and reducing downtime and latency. The field trial was so successful that the team plans to reduce its colocation by using direct cloud connectivity, all powered by Graphiant.

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The simplicity of implementation and the capabilities brought by Graphiant, including the Data Assurance components, are game-changing.

- Global IT Operations Senior Manager, Valmont Industries -

Building Future-Ready Infrastructure

Yesterday's networks were engineered for location on boxes bolted to sites, traffic pushed through fixed routes.

A future-ready network is engineered for data. It senses demand, understands policy, and composes the right path the instant data asks for it. Graphiant delivers that infrastructure through four integrated pillars.





What it is

A globally distributed mesh that keeps no session state. Data is encrypted, carrying metadata context, and the infrastructure enforces policies based on context. Freed from the constraints of traditional networking, the Graphiant stateless core scales quickly and easily.

Why it matters

Instant elasticity

AI training one day, real-time analytics the next. Capacity flexes minute-by-minute because the infrastructure is driven by intent, and tuned to machine learning.

Self-optimizing paths

Graphiant's policy engine feeds live telemetry into reinforcement models that clear congestion before users feel it. Think "context-aware routing" but at microsecond resolution.

Hardware freedom

Commodity equipment at the edge, and cloud POPs at the core. When new silicon drops, you adopt it with a software push, not a truck roll.

Data-First Transformation: From Packets to Purpose

Most networks see only ports and addresses. A data-first network reads intent directly from the packet metadata, then applies policy in real time.

1. **Contextual classification.** Ingress points tag data with business context: workload ID, sensitivity, residency rule.
2. **Intent-based steering.** Depending on policy, the infrastructure selects the optimal path: fastest, greenest, or lowest risk.
3. **Feedback to insight.** Every point along the path writes immutable telemetry to a ledger. These records fuel AI agents that predict usage, pre-stage capacity, or flag anomalies before they propagate.

The payoff is speed and leverage. Data moves seamlessly to where it can create the most value without the need for manual change requests. Development teams iterate faster because the network works for them, not against them.

Your risk team mandates that private keys stay inside country A, but your AI workloads run in country B. The infrastructure maps a split-flow path in seconds. Features move to GPUs abroad, but your keys stay in-country; compliance is automatic.

Visibility & Post-Quantum Trust

Tomorrow's board questions won't be "Was the network fast enough?" but "Can we prove every packet took a trusted path?" or "Will our encryption still hold in 2035?"

Graphiant's network meets these challenges head-on.

Challenge	Why It Matters	Graphiant's Solution
Path blindness: Older VPN technologies mask the exact route traffic takes	Auditors can't verify compliance or troubleshoot in real time; attackers hide in the dark	Per-packet signatures. Ops gains a live flight recorder; auditors download an immutable ledger
Reactive monitoring: Telemetry arrives after the incident	Mean-time-to-detect stays in days when threats propagate in minutes	Inline streaming telemetry. Edges export enriched flow records (source, policy tag, latency, cryptographic state) at line rate to your SIEM or AIOps stack
Cryptography sunset: RSA and ECC may be obsolete once practical quantum computers arrive	A single broken algorithm could expose years of archived traffic and valuable IP	Algorithm agility. Keys rotate automatically; the network shifts to NIST-approved post-quantum suites with a policy change. No new hardware, no forklift migration

Outcome

You gain a network that is provably trustworthy today and cryptographically resilient tomorrow. Instead of hoping you pass the next compliance audit, you walk in with deterministic proof and a roadmap that stays valid after the quantum curveball.

Data Sovereignty: Control Without Compromise

Where data lives can shape M&A strategy and go-to-market timing. Traditional workarounds (duplicate data stores, regional stovepipes) add cost, increase complexity, and slow down operations. Graphiant embeds locality into the routing infrastructure, so business velocity remains high while governance risk stays low.

Key Capabilities

01

Policy-Defined Geo-Fencing

- Write a rule once (“Personal data stays in EU-27”) and the infrastructure enforces it at packet ingress.
- If a flow tries to exit the zone, it never launches. No after-the-fact alerts, no expensive rollbacks.

03

Residency Proof Ledger

- The same per-packet stamps that deliver visibility also record jurisdictional adherence.
- Compliance officers export a signed report instead of stitching logs for weeks.

02

Intelligent Split Flows

- Sensitive payload elements remain in jurisdiction A.
- Non-sensitive compute or AI inference travels to jurisdiction B.
- Both halves reunite only in the application layer, zero developer re-plumbing.

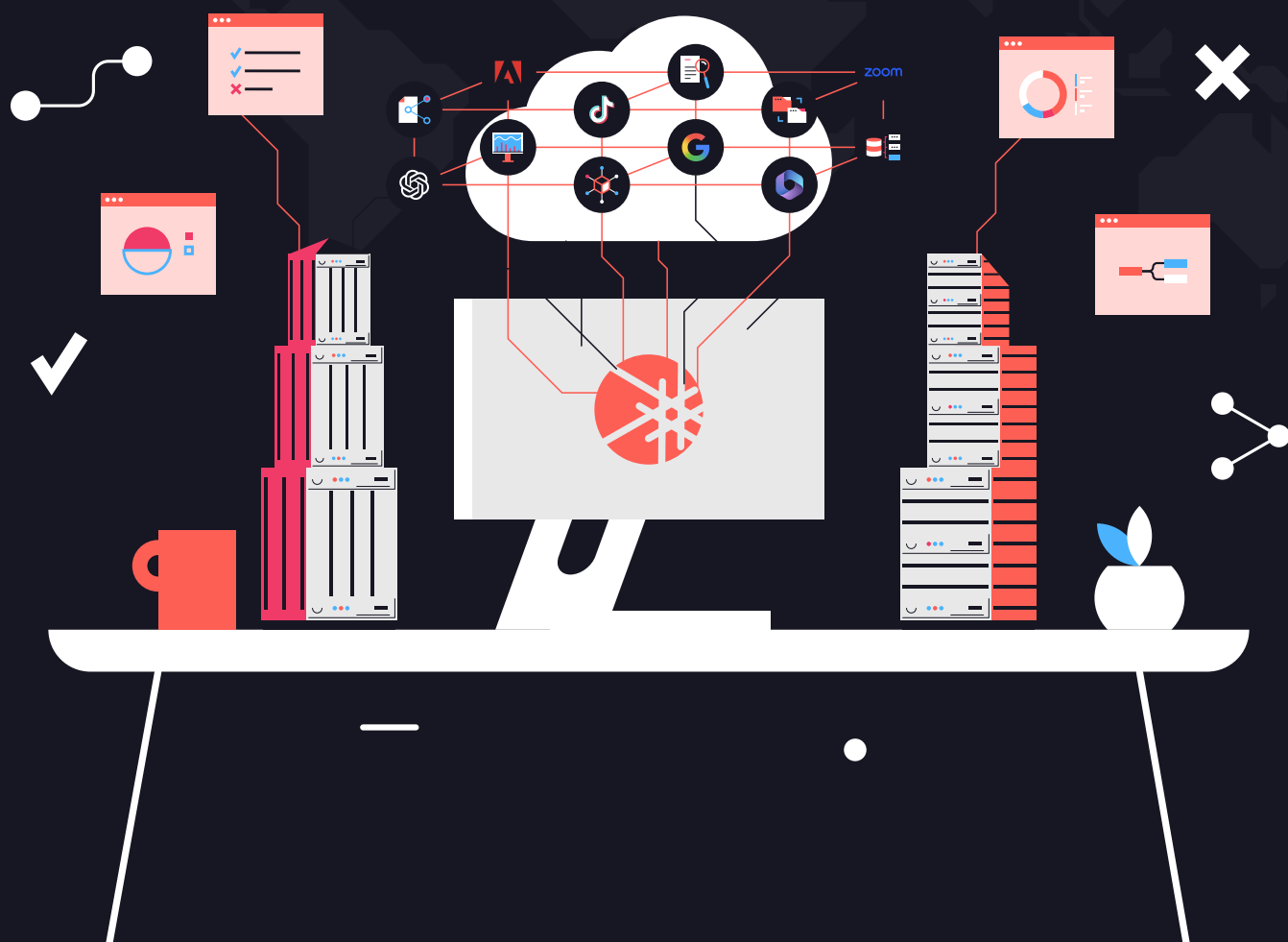
Strategic Benefit

Markets that once required separate infrastructure (EU healthcare, Canadian banking, UAE public sector) now open with a policy toggle, not a new data centre build. Governance teams see real-time dashboards, and product teams see green lights, not red tape.



The Path Forward: From Vision to Live Infrastructure

Picture your network five years from now. Paths can spin up the instant they need to, fully managed by AI agents operating securely on a compliant network. Audits run in real-time. Product teams treat the infrastructure like code, requesting secure corridors with a single API call. Expansion into a new region is no longer a project; it's a remote policy push.





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