



neurons

PRODUCT OVERVIEW

Secure end-to-end encrypted messaging, Matrix-compatible and built to scale.

Neurons combines Matrix-compatible E2EE for messages and attachments with elastic AWS serverless scale, real-time push delivery, and a customer-owned data plane.

SECURE BY DESIGN

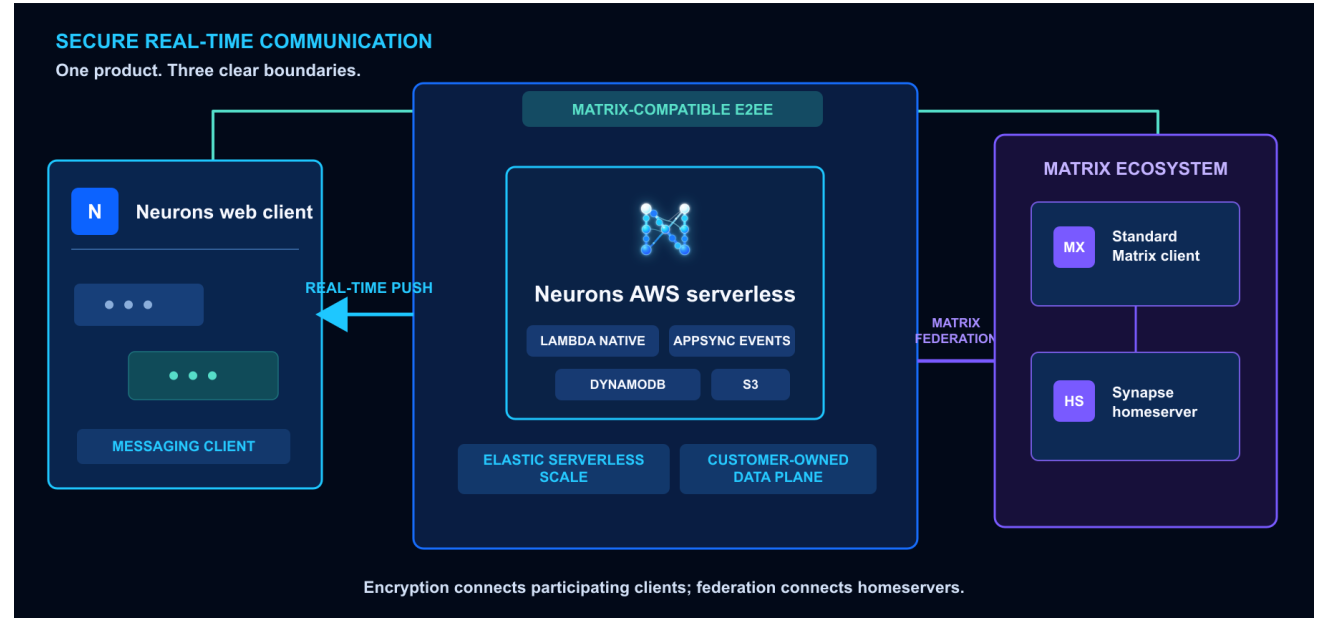
E2EE for messages and attachments

ELASTIC AND REAL TIME

Serverless scale with push delivery

OPEN AND CUSTOMER-OWNED

Matrix federation in your AWS account



Neurons offers a more modern operating model than Synapse.

SYNAPSE OPERATING MODEL

- Always-on homeserver capacity must be sized and operated
- Scaling, resilience and upgrades remain operational work
- Long-polling /sync keeps client connections active

NEURONS OPERATING MODEL

- Managed AWS services scale from idle with demand
- AppSync Events pushes updates over WebSockets
- Runtime services and data stay in the customer AWS account

Neurons preserves standard Matrix federation and API contracts. Synapse retains one advantage: existing standard Matrix clients can connect unchanged.

Neurons is an integrated secure messaging platform.

The Neurons web client and AWS-native backend are delivered together as one deployable communication product.

01

End-to-end encrypted

Matrix-compatible E2EE protects message content and attachments between participating clients.

02

Elastic serverless scale

Managed AWS services scale from idle with demand without pre-provisioned application capacity.

03

Real-time push delivery

AppSync Events replaces long-polling sync with managed WebSocket delivery.

04

Matrix federation

Rooms and messages interoperate with Synapse and other Matrix homeservers.

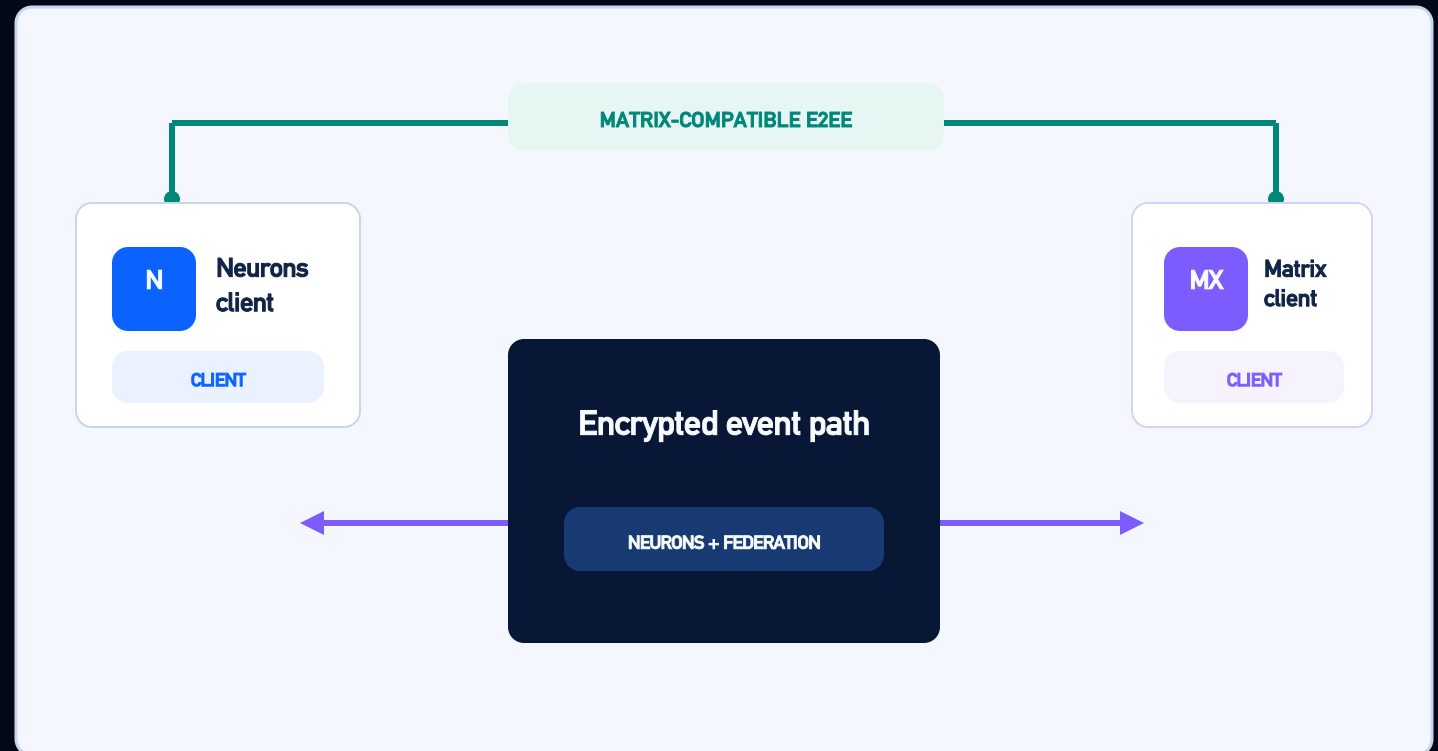
Runtime components and customer data stay in the customer AWS account; the same foundation can support domain applications beyond chat.

E2EE and AWS controls protect content and infrastructure together.

Neurons combines matrix-sdk-crypto E2EE for messages and attachments with customer-owned AWS controls for the runtime and data plane.

TWO COMPLEMENTARY SECURITY LAYERS

- E2EE protects content before it leaves participating clients
- Persisted browser state stays encrypted; transient UI state decrypts only for display
- AWS controls protect identity, transport, storage, monitoring and governance

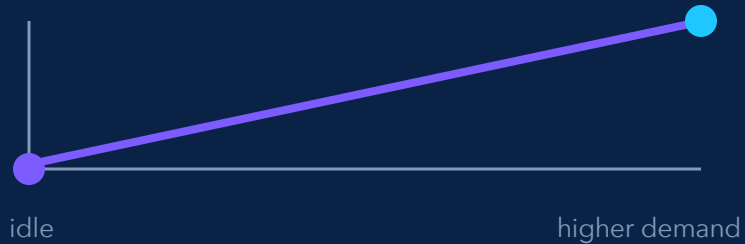


Defense in depth: E2EE protects readable content; customer-owned AWS controls protect the runtime and data plane.

Scale with demand. Deliver updates without polling.

Serverless elasticity and push delivery solve different parts of the communication operating model.

ELASTIC AWS SERVERLESS RUNTIME



- No application capacity reserved during quiet periods
- Capacity follows workload within configured AWS quotas

REAL-TIME PUSH DELIVERY



- Events arrive as they happen
- Neurons client consumes WebSocket synchronization

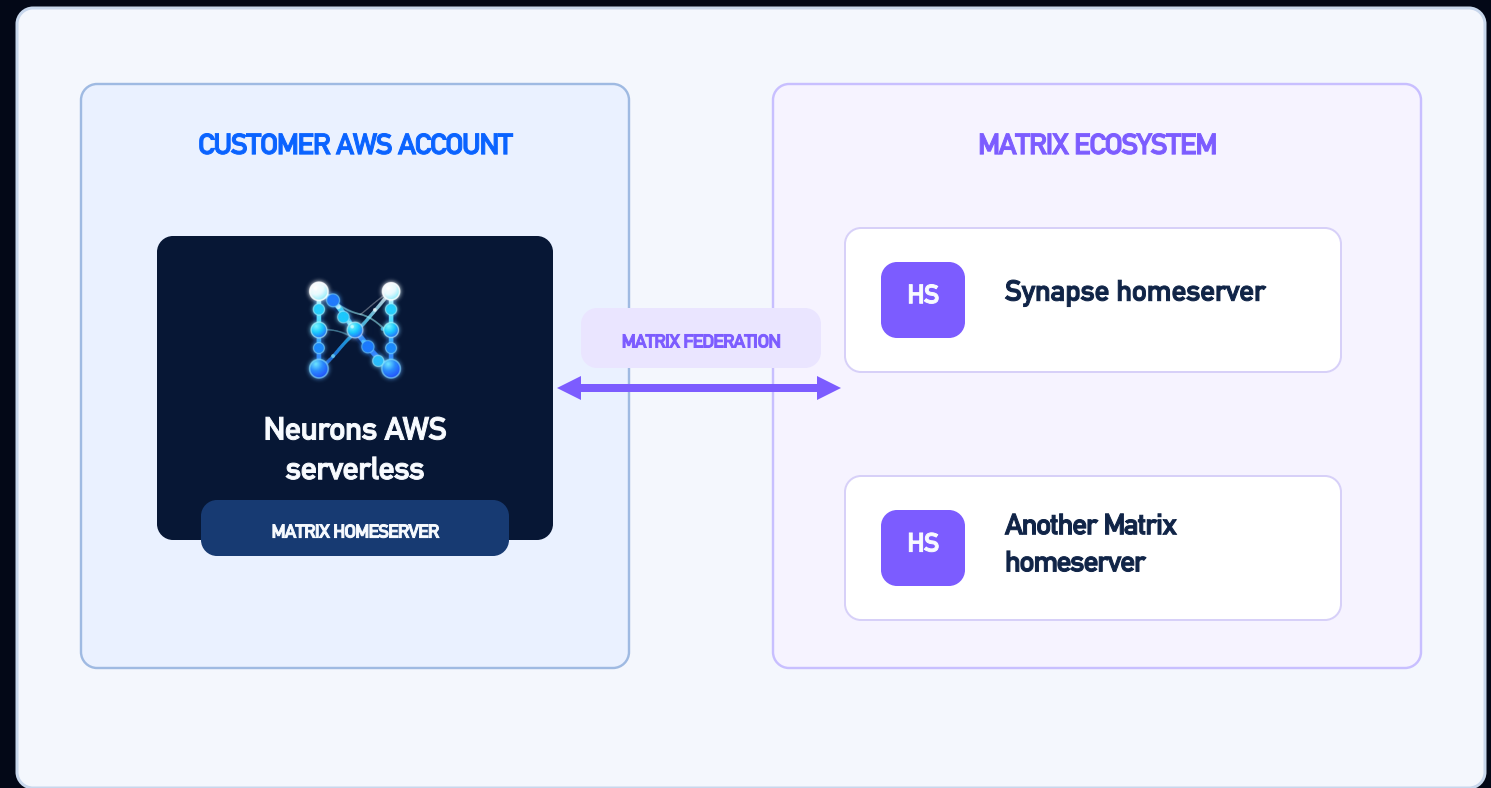
AppSync Events replaces long-polling /sync; implemented operations retain Matrix contracts and event formats. Source: docs.aws.amazon.com/appsync/latest/eventapi/

Standard Matrix APIs preserve open interoperability.

Federation uses the standard Matrix server-server API directly; implemented client operations retain standard client-server contracts and event formats.

WHAT THIS ENABLES

- Federated rooms and messages across organizations
- Direct interoperation with Synapse and other homeservers
- Standard client-server contracts with WebSocket push replacing /sync



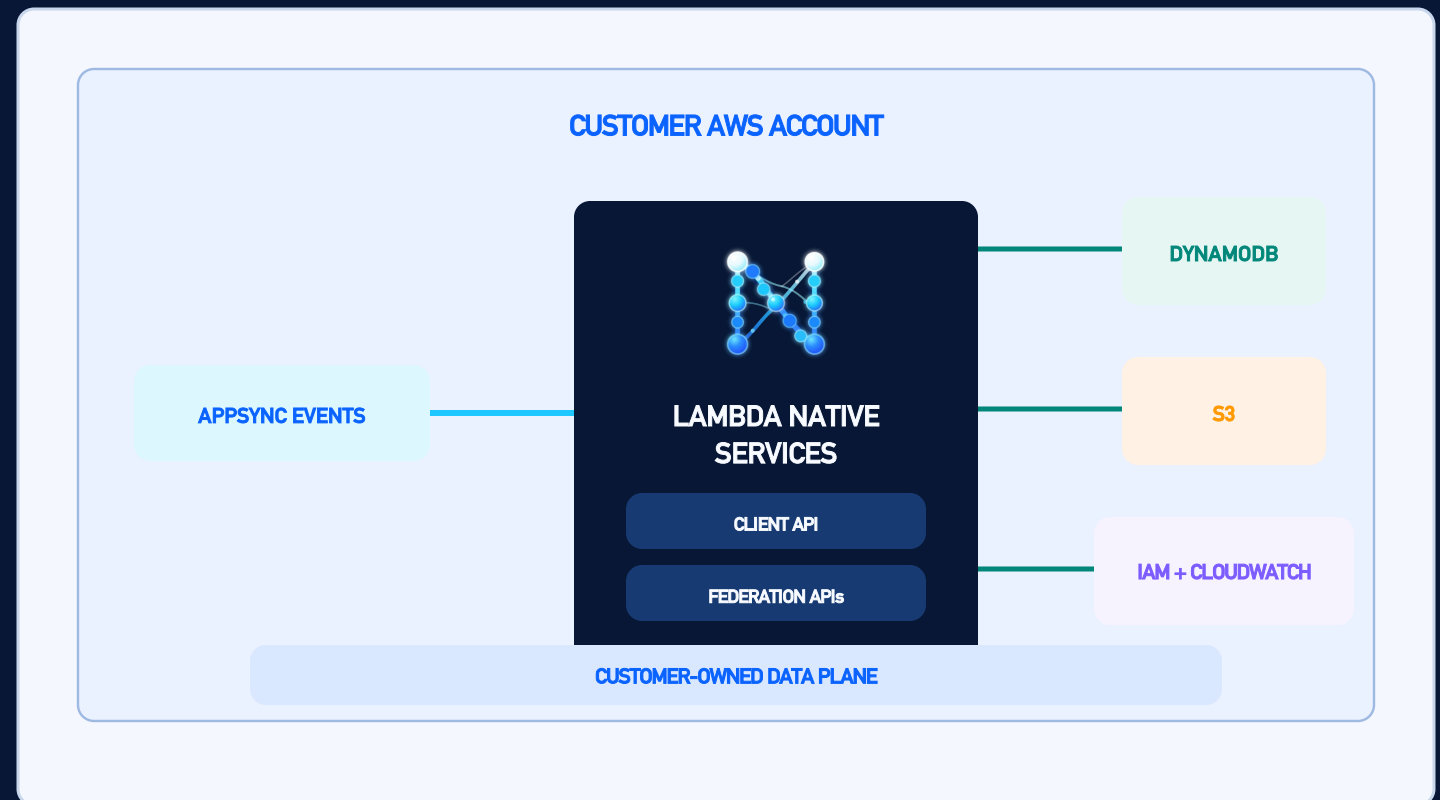
Client operations remain Matrix-native; AppSync Events replaces /sync. Federation uses the standard server-server API directly. Source: spec.matrix.org/latest/

Runtime services and data stay in the customer AWS account.

Dedicated deployment combines customer control with managed serverless operation.

AWS-NATIVE RUNTIME

- Java/Quarkus microservices deployed as Lambda functions
- AppSync Events for managed real-time delivery
- DynamoDB and S3 for event-driven storage
- IAM and CloudWatch for governance and operations



Scale, service limits and legal responsibilities depend on workload, AWS quotas, deployment configuration and the agreed operating model.

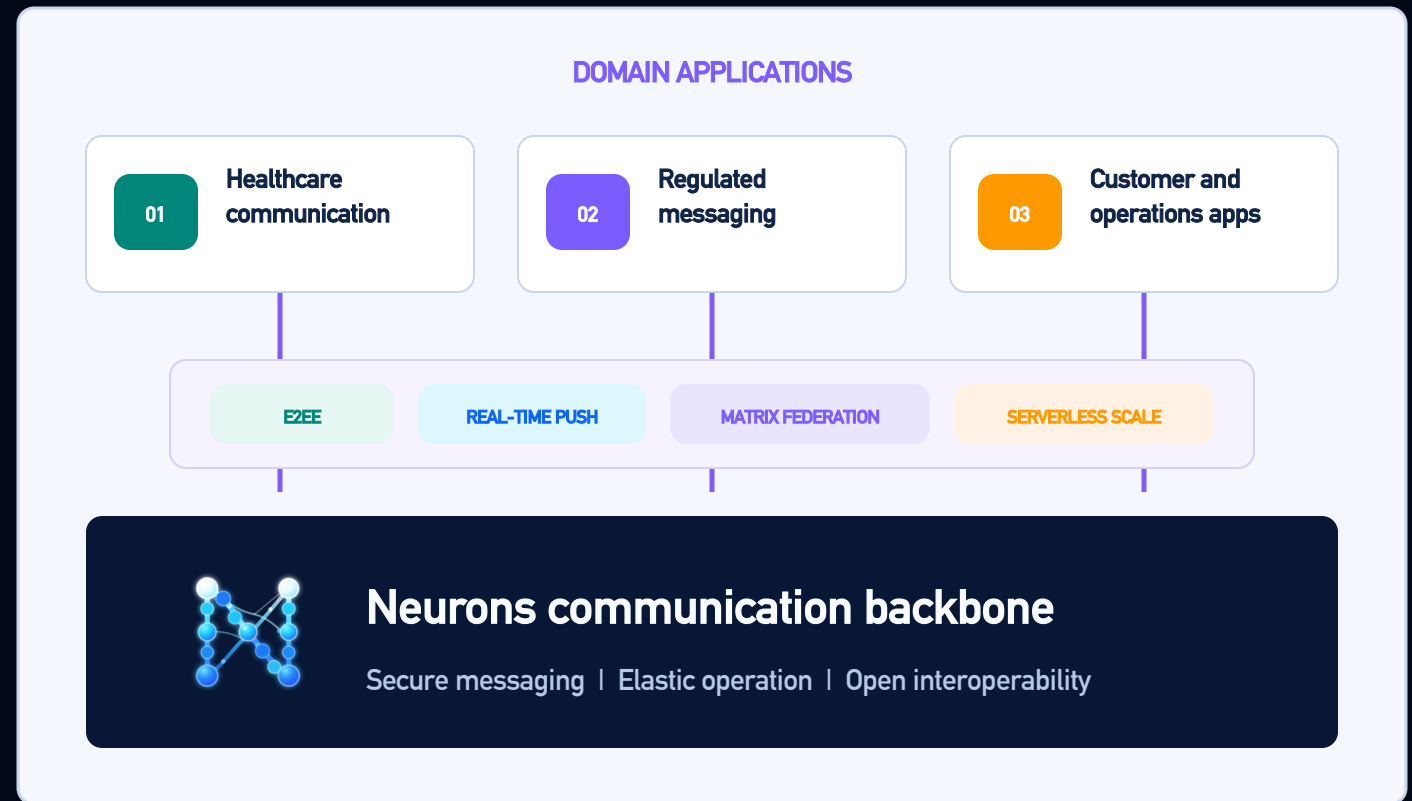
Build domain products on a secure communication backbone.

Specialized clients, identity, directories, policy workflows and integrations can build on the same encrypted, federated and real-time foundation.

A PUBLIC MATRIX PRECEDENT

Germany's TI-Messenger shows how a domain product can be built on Matrix infrastructure. A TI-Messenger-style healthcare product could use Neurons' AWS serverless backend as an alternative foundation to Synapse Pro.

Meeting applicable TI-Messenger specifications and approval requirements would remain part of the domain product.



Reference scope: a TI-Messenger-style product requires separate implementation, specification conformance and approval. Sources: github.com/gematik/api-ti-messenger; element.io/solutions/ti-messenger-gematik-matrix

Evaluate Neurons against a real communication need.

Applications are open for the September 2026 cohort, limited to five organizations. Each receives a paid, fixed-scope technical evaluation with agreed success criteria; feedback is considered for the product roadmap.

STRONG FIT

- Private encrypted communication
- Elastic AWS deployment
- Matrix interoperability or a domain product

EVALUATION INCLUDES

- 4-6 week technical evaluation
- Non-production AWS deployment
- E2EE, scale, push and federation validation

EARLY ACCESS BENEFITS

- Fee credited on production conversion
- Preferential first-year terms
- Second-year price protection

Completed deployment work is reused; customer-specific integrations and product specializations are quoted separately.

Evaluate secure, end-to-end encrypted messaging in your AWS account.

Neurons is selecting up to five organizations that need E2EE, elastic AWS serverless operation, Matrix federation, real-time push, or an extensible communication foundation.

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