



neurons

PRODUCT OVERVIEW

Secure private real-time 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

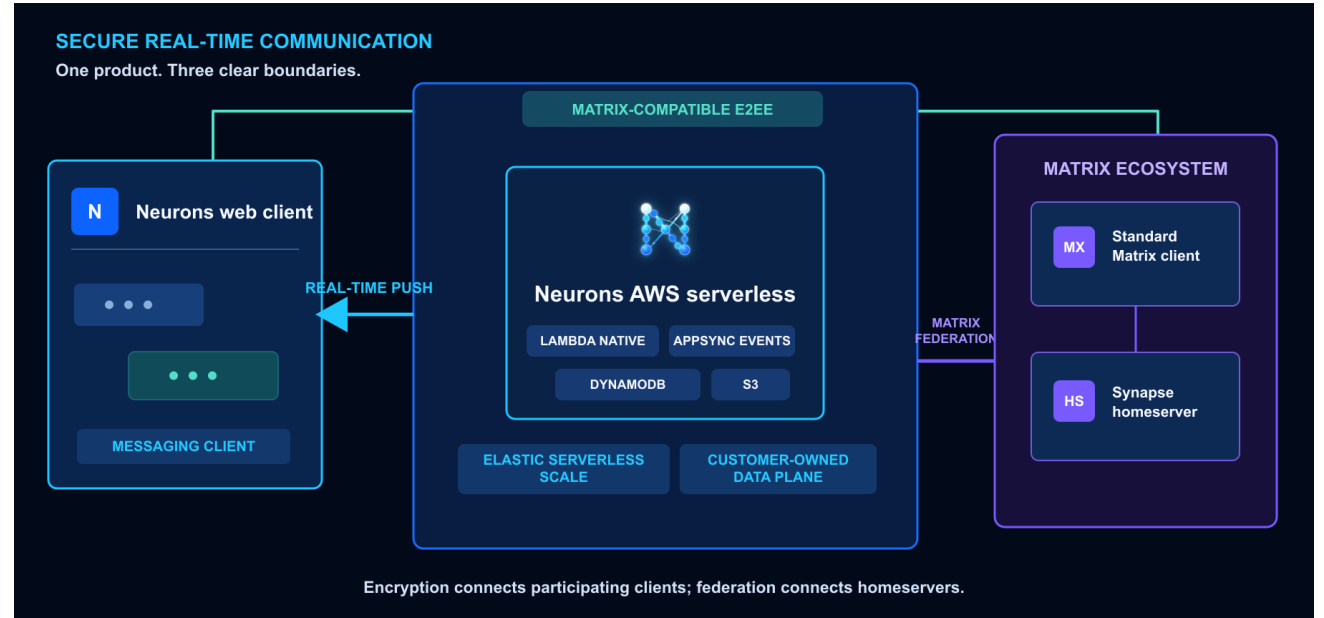
E2EE for messages and attachments

ELASTIC AND REAL TIME

Serverless scale with push delivery

OPEN AND CUSTOMER-OWNED

Matrix federation in your AWS account



Secure real-time communication still forces difficult trade-offs.

TRADITIONAL SELF-HOSTED STACK

- Always-on server capacity must be sized and operated
- Scaling, resilience and upgrades remain operational work
- Polling-heavy synchronization adds persistent connection overhead

GENERIC MESSAGING SAAS

- Communication data lives in a shared provider environment
- Deployment and security controls are less customer-specific
- Closed interoperability limits federation and vertical products

Neurons combines content privacy, workload elasticity, real-time push, and Matrix interoperability in a customer-owned AWS deployment.

Neurons is an integrated messaging platform.

The Neurons web client and AWS-native backend are delivered together as a product, not as a library or SDK.

01

End-to-end encrypted

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

02

Elastic serverless scale

Managed AWS services respond to workload without a pre-provisioned server fleet.

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.

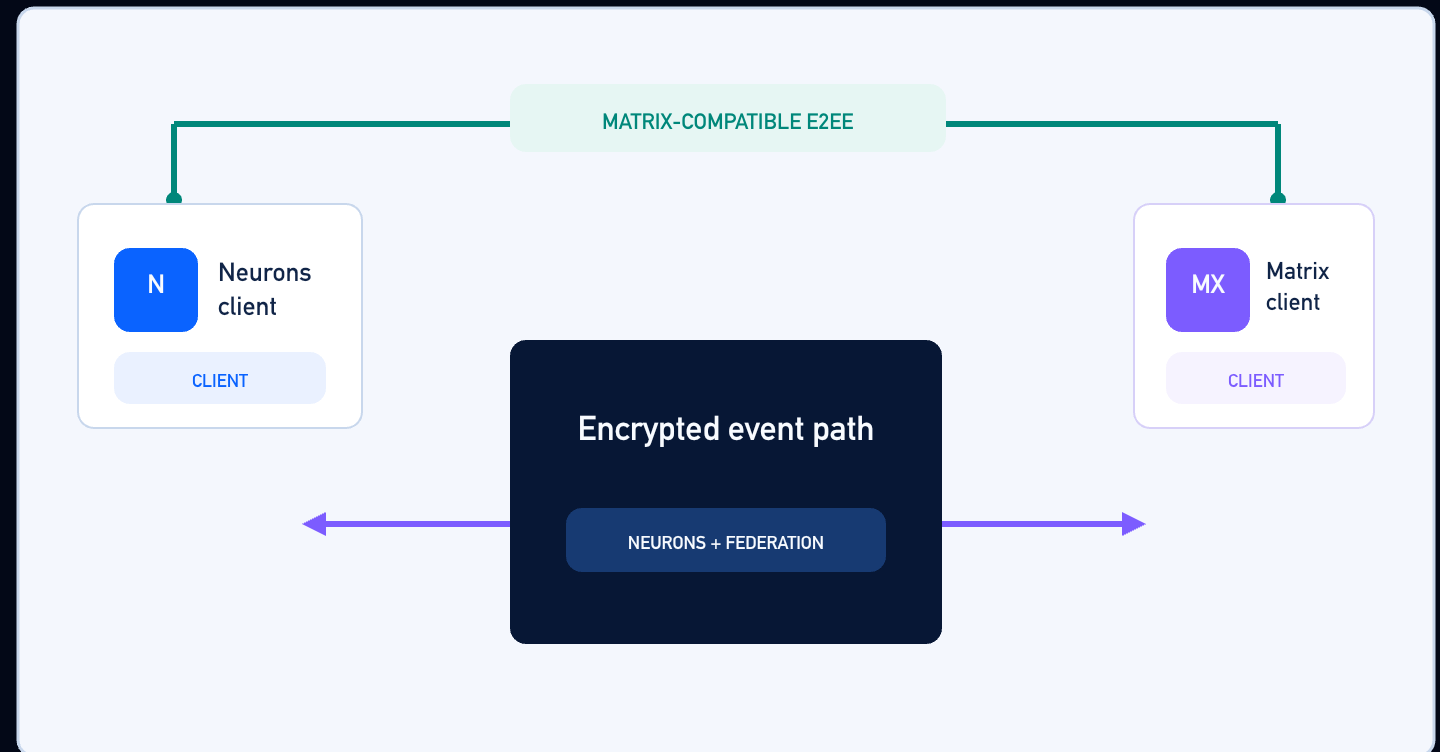
Runtime components and customer data stay in the customer AWS account; the same foundation can support domain applications beyond chat.

Message content and attachments stay encrypted between participating clients.

The Neurons web client uses matrix-sdk-crypto for Matrix-compatible end-to-end encryption of messages and attachments across local and federated rooms.

WHAT E2EE MEANS IN NEURONS

- Encryption and decryption happen at participating clients
- Messaging servers relay encrypted events and attachments without requiring plaintext content
- Endpoint security, identity and metadata remain explicit security responsibilities

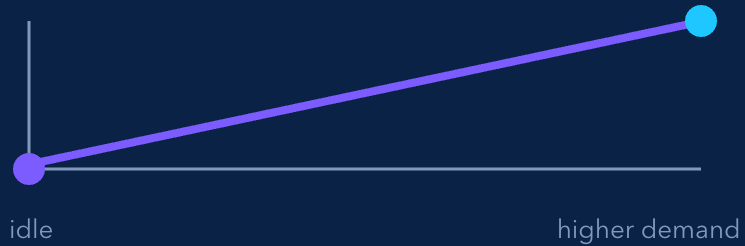


Security boundary: E2EE protects message content and attachments; it does not remove endpoint-security, identity, access-governance or metadata responsibilities.

Scale with demand. Deliver updates without polling.

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

ELASTIC SERVERLESS RUNTIME



- No pre-provisioned homeserver fleet
- Capacity follows workload within configured AWS quotas

REAL-TIME PUSH DELIVERY



- Events arrive as they happen
- Neurons client required because sync intentionally differs

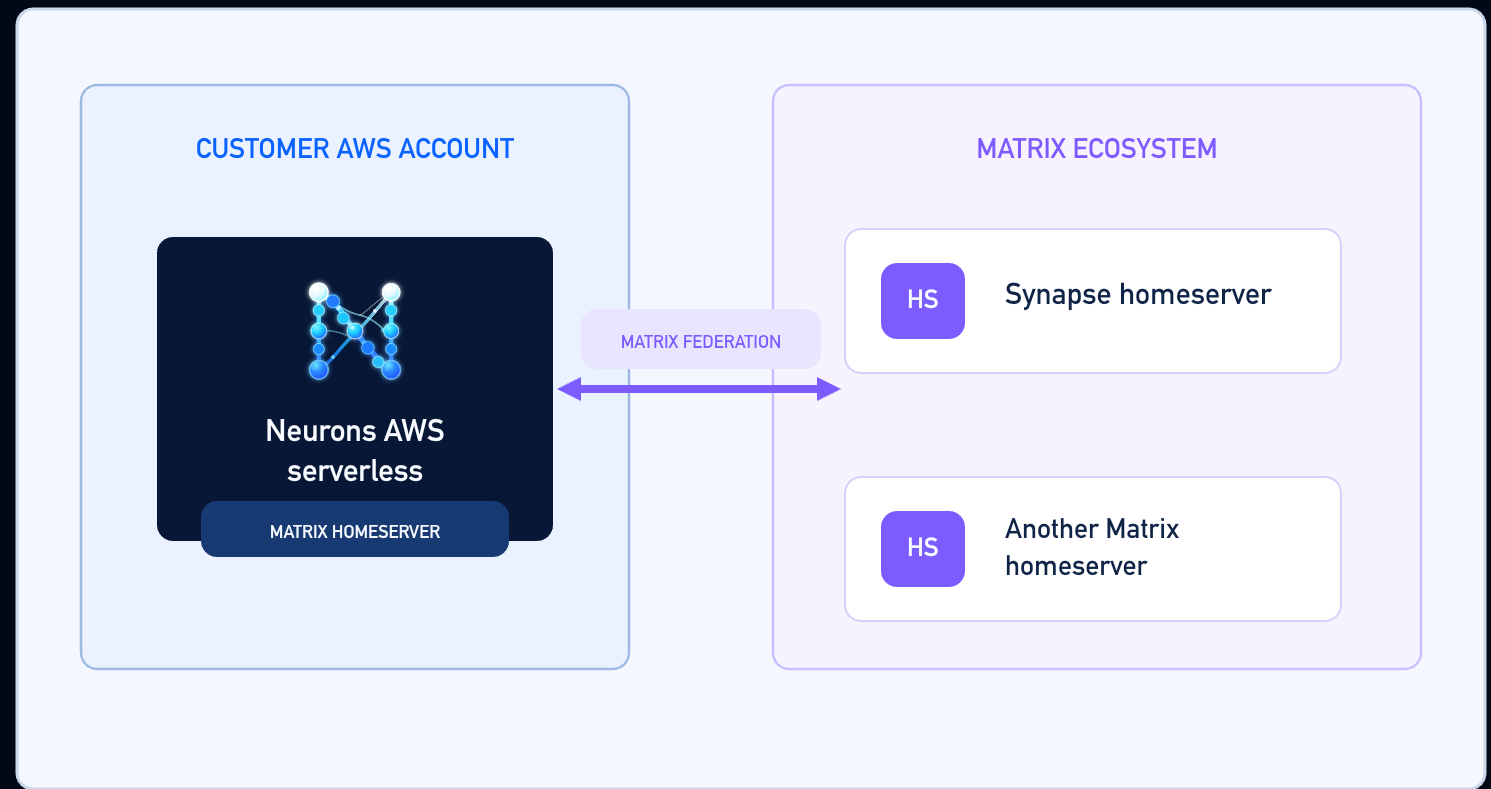
AWS AppSync Events replaces Matrix long-polling sync for the Neurons client. Source: docs.aws.amazon.com/appsync/latest/eventapi/event-api-welcome.html

Matrix federation preserves open interoperability.

Neurons implements Matrix server-server compatibility so rooms and messages can cross organizational boundaries with Synapse and other homeservers.

WHAT THIS ENABLES

- Federated rooms across organizations
- Interoperation with established Matrix deployments
- A serverless alternative to a Synapse-style homeserver stack



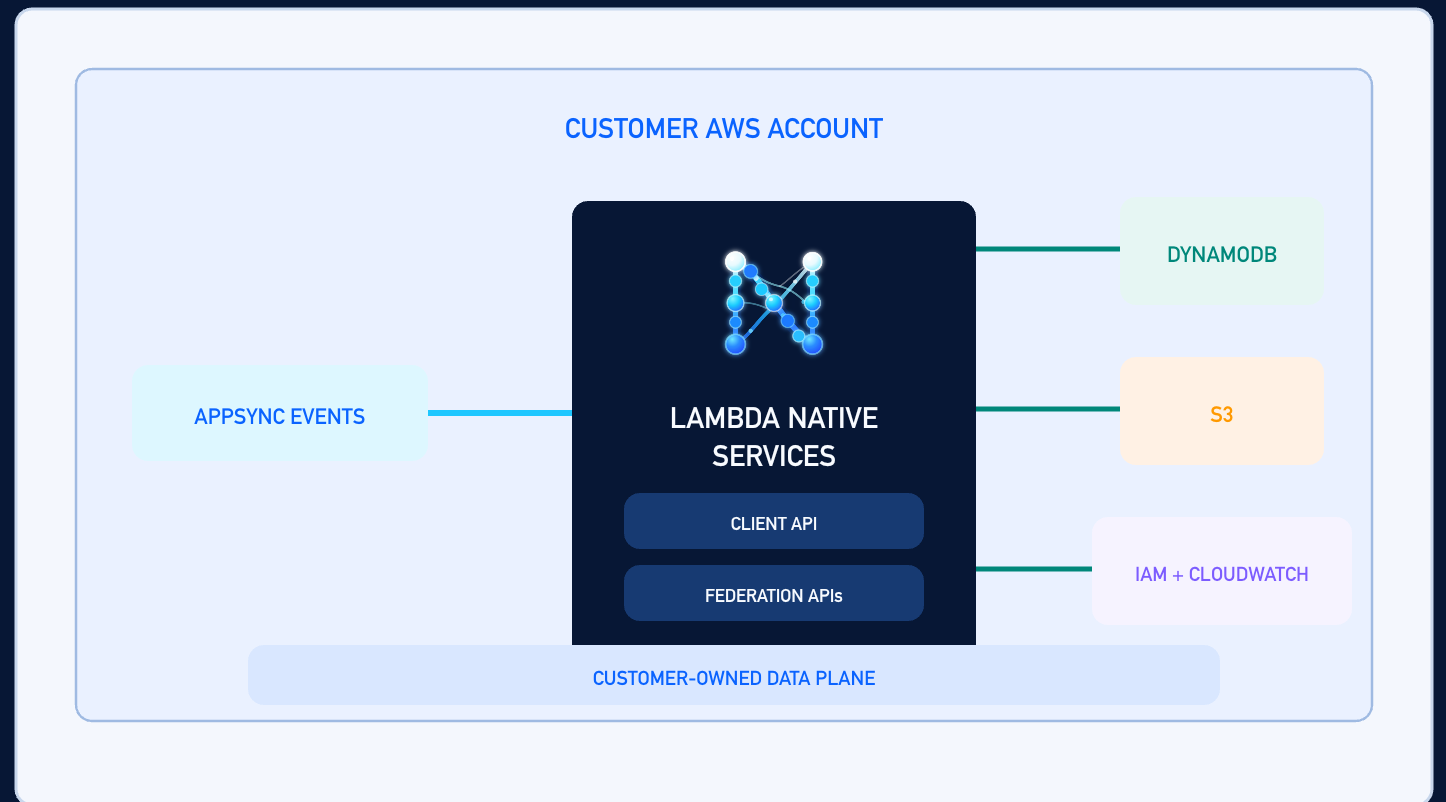
Scope: Matrix server-server federation. Neurons does not claim drop-in Matrix client-server compatibility. Source: spec.matrix.org/latest/server-server-api/

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.

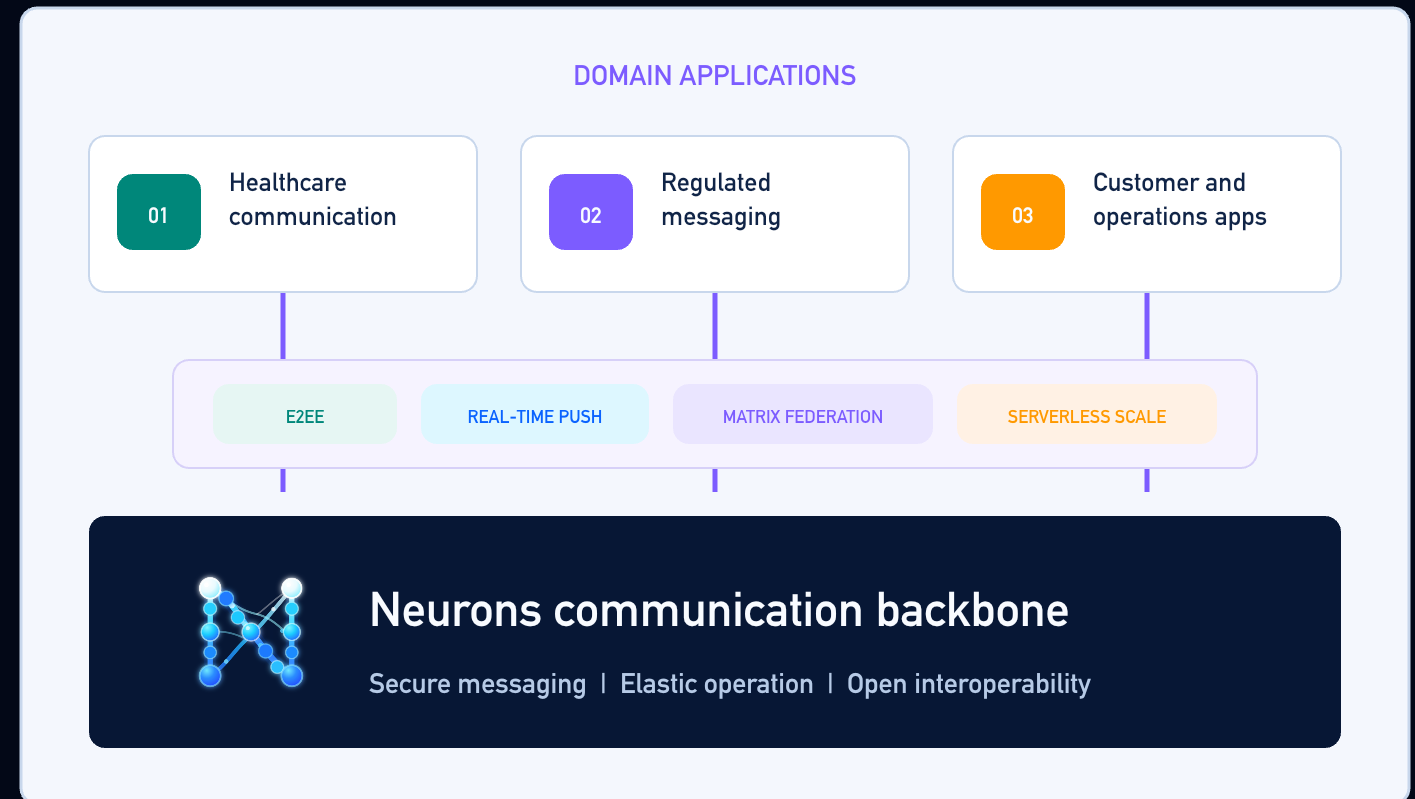
Neurons is a secure communication backbone for domain products.

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 only: Neurons is not represented as TI-Messenger compliant. 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; this is not a co-development engagement.

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 real-time messaging in your AWS environment.

Neurons is selecting up to five organizations that need private encrypted messaging, elastic serverless operation, Matrix interoperability, or a specialized communication platform.

[APPLY FOR EARLY ACCESS](#)

www.neurons.run



BUILT BY



devFlorence

Senior-led software architecture and product engineering from Florence, Italy.