NEXA PLATFORM

Enterprise SaaS Release Notes & System Changelog

Release Metadata

Version:	**v4.8.0**
Date:	July 24, 2026
Track:	**General Availability**
Build:	`#nexa-4.8.0-r89412`

1. Executive Summary & Highlights

Q3 Infrastructure Milestone

Nexa Platform Version 4.8.0 represents our most significant architectural update of Q3 2026. This release delivers our next-generation Real-Time Streaming Analytics Engine (v2), Zero-Trust Automated API Key Rotation, and high-concurrency GraphQL Subscriptions over HTTP/2. Designed for high-throughput enterprise workloads, v4.8.0 improves ingestion throughput by 54% while reducing P99 API latency across global edge points of presence.

+54%
Ingestion Rate
Up to 185k events/sec

-60%
P99 API Latency
Reduced from 48ms to 19ms

99.999%
SLA Target
Multi-region active-active

0 ms
Migration Downtime
Zero-downtime schema rollout

2. Core Feature Deep Dives

Technical Architectural Upgrades

2.1 Real-Time Streaming Analytics Engine v2

The streaming engine has been re-architected around a zero-copy memory layout and asynchronous event pipelines. Built on Apache Flink and Rust-native micro-workers, Engine v2 supports dynamic partition reassignment without dropping inflight WebSocket client connections.

Key Architectural Improvements:

- **Sub-millisecond State Evaluation:** In-memory sliding windows now evaluate up to 10M keys/sec per node.
- **Adaptive Backpressure Management:** Automatically throttles downstream sinks during downstream cloud service degradation without failing upstream requests.
- **Native Parquet Storage Sync:** Direct stream-to-S3/GCS archival with automatic snappy compression and partition pruning.

Example Streaming Analytics Pipeline Definition (`nexa-stream-v2.json`):

```
{
"pipeline_id": "pl_analytics_realtime_v2",
"source": { "provider": "kinesis", "stream_name": "nexa-events-prod" },
"window_spec": { "type": "tumbling", "duration_seconds": 60 },
"transformations": [
{ "type": "enrich_geoip", "cache_ttl_seconds": 3600 },
{ "type": "aggregate", "metrics": ["count", "p95_latency", "error_rate"] }
],
"sink": { "target": "timescale_db", "auto_create_table": true }
}
```

2.2 Zero-Trust API Key Lifecycle & Scope Enforcer

To strengthen security compliance (SOC2 Type II, ISO 27001), Nexa v4.8.0 introduces automated short-lived API tokens and granular privilege scope enforcement. Administrators can now mandate automatic 30-day token expiration cycles with zero client disruption via grace-period overlap keys.

- **Dual-Key Overlap Window:** Old API keys remain valid for a configurable grace period (e.g., 24 hours) after new key generation.
- **Fine-Grained Scopes:** Over 85 granular permission strings (e.g., `analytics:read`, `cluster:deploy`, `billing:admin`).
- **Audit Logging:** Every key generation, rotation, and revocation event is signed with SHA-256 and pushed to immutable audit ledgers.

3. Detailed Version Changelog (v4.8.0)

Complete Categorized Updates

Platform Core & Infrastructure

- `+ ADDED` **Distributed Caching Layer:** Integrated Redis 7.2 cluster topology with automatic primary failover detection and pre-warmed cache hydration upon container boot.
- `+ ADDED` **Multi-Region Read Replicas:** Introduced read-replica routing for Database Gateways in Frankfurt (`eu-central-1`) and Tokyo (`ap-northeast-1`).
- `IMPROVED` **Serverless Edge Boot Time:** Reduced cold-start container initialization latency from 140ms down to 42ms via optimized V8 isolate snapshots.
- `FIXED` **TCP Pool Exhaustion:** Resolved intermittent socket starvation under sustained burst traffic exceeding 250,000 requests per second.
- `SECURITY` **TLS 1.3 Enforced by Default:** Deprecated TLS 1.1 and legacy cipher suites across all inter-service gRPC communication backbones.

API Gateway & Developer Tools

- `+ ADDED` **GraphQL Subscription Multiplexing:** Allows up to 10,000 client queries to share a single upstream WebSocket connection.
- `IMPROVED` **CLI Dry-Run Schema Diffing:** The `nexa deploy` command now displays a full side-by-side colorized diff before committing production migrations.
- `FIXED` **CORS Preflight Header Stripping:** Fixed an edge case where custom domain proxies stripped CORS preflight headers.
- `BREAKING` **Standardized Error Payload Schema:** The top-level REST response key `error_message` has been renamed to `message` across all v2 endpoints.

Control Plane & Analytics Dashboard

- `+ ADDED` **Customizable Dashboard Widgets:** Drag-and-drop metric cards with real-time refresh rates down to 500ms.
- `IMPROVED` **Frontend Bundle Optimization:** Reduced initial Javascript bundle size by 32% through aggressive tree-shaking and dynamic component loading.
- `DEPRECATED` **Legacy Telemetry Endpoint v1:** Endpoint `/v1/telemetry/metrics` is officially marked deprecated and will be sunset in Version 5.0.

4. Historical Release Log (v4.7.x – v4.6.x)

Previous Product Iterations

Version 4.7.2 (Maintenance Release – June 12, 2026)

- `FIXED` Memory leak in Redis connection pool under long-running async background jobs.
- `SECURITY` Patched OpenSSL library dependency to address CVE-2026-3891.
- `IMPROVED` Enhanced export speed for CSV/Parquet bulk data downloads by 28%.

Version 4.7.0 (Minor Feature Release – May 03, 2026)

- `+ ADDED` Native Cloud Data Warehouse export connectors for Snowflake, Nexa BigQuery, and ClickHouse.
- `+ ADDED` Automated SSL certificate provisioning for custom white-label enterprise domains.
- `IMPROVED` Upgraded internal Kubernetes ingress controller to Envoy 1.28.

Version 4.6.0 (Enterprise Auth Milestone – March 18, 2026)

- `+ ADDED` Enterprise Single Sign-On (SSO) with Okta, Azure AD, and generic SAML 2.0 / OIDC identity providers.
- `+ ADDED` Role-Based Access Control (RBAC) supporting custom user role definitions and team namespace isolation.

5. Breaking Changes & Migration Matrix

Deprecation & Upgrade Schedule

Please review the following table carefully before updating production clusters to Version 4.8.0. Breaking changes are isolated to legacy endpoints and specified payload fields.

Affected API / Component	Deprecated	Removal In	Required Migration Action
`/v1/telemetry/metrics`	v4.8.0	v5.0.0	Migrate to `/v2/telemetry/stream` using WebSockets or SSE streaming.
`error_message` field	v4.8.0	v4.9.0	Update JSON response parsers to read top-level key `message`.
Basic Auth Header	v4.6.0	v4.8.0	Replace with `Authorization: Bearer <Nexa_API_Token>`.
SDK Node.js v2.x	v4.5.0	v4.8.0	Upgrade to `@nexa/sdk@3.1.0` or higher via `npm install`.

API Payload Migration Example (Before vs After):

Legacy Payload Format (v4.7.x)

```
{
"status": "error",
"error_code": 403,
"error_message": "Invalid token"
}
```

Standardized Payload Format (v4.8.0+)

```
{
"status": "error",
"code": "UNAUTHORIZED_ACCESS",
"message": "Invalid token",
"request_id": "req_8921dfa92"
}
```

6. Performance Benchmarks

Empirical Load Testing Results

Load testing conducted on standard production hardware clusters (16-node Kubernetes cluster, 8 vCPU, 32GB RAM per node, AWS `c6i.2xlarge`).

Metric / Benchmark Scenario	v4.7.2 Baseline	v4.8.0 Release	Net Improvement
Event Ingestion Throughput	120,000 req/sec	185,000 req/sec	+54.1%
P95 API Response Latency	22 ms	9 ms	-59.0%
P99 API Response Latency	48 ms	19 ms	-60.4%
Cluster CPU Utilization (Idle)	18.2%	11.5%	-36.8%
Memory Footprint per Node	4.2 GB	3.1 GB	-26.2%
Cold-Start Initialization Time	142 ms	42 ms	-70.4%

7. Upgrade & Deployment Protocol

Step-by-Step Production Guide

> ⚠ **Production Deployment Caution:** Before executing the upgrade, ensure all active database backups are verified. While schema changes are non-destructive, database key rotation requires clients to update SDK versions to avoid authorization drops.

Recommended CLI Upgrade Sequence:

```
# 1. Verify current cluster version
$ nexa-cli cluster info
Current Version: 4.7.2-r77102 (Healthy)

# 2. Run pre-flight compatibility check
$ nexa-cli cluster check-upgrade -target 4.8.0
[SUCCESS] Database schema compatible.
[SUCCESS] All worker nodes report ready status.

# 3. Execute rolling zero-downtime deployment
$ nexa-cli cluster upgrade -version 4.8.0 -strategy rolling -max-surge 25%
Updating control plane... [DONE]
Updating edge router pods... [DONE]

# 4. Verify deployment status
$ nexa-cli cluster status
Cluster Status: HEALTHY (16/16 Nodes running v4.8.0)
```

Need Assistance or Enterprise Upgrade Support?

Our Dedicated Solutions Engineering team is available 24/7 for zero-downtime deployment planning and custom migration audits.

Contact Support

Documentation