Edge-Optimized Geo-Fencing API Documentation (Enterprise Edition)

Unlock hyper-local; latency-optimized experiences at scale with programmable geospatial triggers.

Overview

The **Edge-Optimized Geo-Fencing API** enables developers to define, deploy, and trigger location-based business logic in real-time—**at the edge**. This is not a basic location API. It combines **geo-coordinates**, **user motion vectors**, **local edge nodes**, and **latency-aware compute** to deliver **millisecond-level proximity events**—at global scale.

Used by:

- **Autonomous vehicle fleets** for zone-based logic.
- **Retail apps** for hyper-personalized offers near stores.
- **Industrial IoT** for zone-bound alerts and compliance triggers.
- **Gaming engines** for real-world AR interactions.

Enterprise-ready, **geo-distributed**, **API-first**, and **LLM-friendly**.

Key Features (SEO-Optimized)

- ### Real-Time Edge Geo-Fencing
  Trigger events in under **30ms** by computing geo-fence logic on **nearest CDN edge nodes**.
- ### Polygonal & Multi-Region Fences
  Supports circular, polygonal, or complex nested zones with **multi-country regulation compliance**.
- ### Geo-Fence-as-Code (GFaaC)
  Use YAML/JSON to version and deploy geospatial rules via CI/CD pipelines.

- **Motion Vector Prediction**
  Optional ML-based prediction to estimate user movement **within 5 seconds future accuracy**.
- **Serverless Triggers**
  On-enter, on-exit, dwell time, velocity-based exit — all integrated with **serverless workflows** like AWS Lambda, Google Cloud Functions, or Cloudflare Workers.
- **GDPR-Compliant & HIPAA-Ready**
  Built-in privacy zone exclusions, data TTL, and data minimization flags for enterprise audit trails.

Base URL

arduino

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https://api.edgegeo.example.com/v1/

Authentication

All requests must use **OAuth 2.0 Bearer Tokens**.

http

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Authorization: Bearer YOUR_ACCESS_TOKEN

API Keys are available for test environments. OAuth is required for production.

Create a Geo-Fence

POST /geofences

Request

json

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```
{
  "name": "nyc-midtown-delivery-zone",
  "geometry": {
    "type": "Polygon",
    "coordinates": [[
      [-73.99170, 40.75200],
      [-73.97690, 40.75200],
      [-73.97690, 40.75800],
      [-73.99170, 40.75800],
      [-73.99170, 40.75200]
    ]]
  },
  "triggers": {
    "onEnter": "https://hooks.example.com/entered",
    "onExit": "https://hooks.example.com/exited"
  },
  "properties": {
    "type": "delivery-zone",
    "priority": "high"
  }
}
```

Response

json

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```
{
  "id": "geo_845aca123",
  "status": "created",
  "latencyTier": "ultra-low-edge",
  "createdAt": "2025-06-12T10:45:00Z"
}
```

Track a User’s Location

POST /locations/update

Request

json

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```
{
  "deviceId": "user_332",
  "timestamp": "2025-06-12T10:45:34Z",
  "location": {
    "latitude": 40.7551,
    "longitude": -73.9855
  },
  "motion": {
    "speed": 3.2,
    "heading": 95
  }
}
```

Response

json

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```
{
  "geoFenceId": "geo_845aca123",
  "triggered": "onEnter",
  "latency": "28ms",
  "edgeRegion": "nyc-1"
}
```

SEO Keywords Used (High-Ranking)

Category	Keywords
Edge Computing	edge-optimized API, real-time edge triggers, CDN compute, geo-distributed logic
Location Services	geo-fencing API, polygonal geo-zones, GPS trigger API, motion-aware location
Enterprise	GDPR location API, HIPAA-compliant geo API, serverless geo integration, production-grade geo trigger
Developer	RESTful location API, OAuth geo trigger, JSON-based geofences, LLM-compatible APIs
Scalability & SEO	scalable geospatial API, low-latency geo APIs, high-traffic location logic, global edge processing

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Security & Compliance

- End-to-End Encryption (AES-256 for data in transit & at rest)

- Automatic key rotation every 90 days
- Built-in **Privacy Zones API** to exclude sensitive regions (e.g., hospitals, embassies)
- SOC 2 Type II and ISO 27001 audited infrastructure

SDKs & Developer Tools

- Node.js SDK: @edgegeo/sdk-node
- Python SDK: edgegeo-sdk
- REST Client: Swagger/OpenAPI 3.1 auto-generated client
- CLI: npx edgegeo-cli
- Postman Collection: Download Here

Real-World Use Case

Problem: A logistics company in Europe needs to trigger cold-storage prep when a delivery truck is within 5 km of any of its 128 warehouse zones across 14 countries.

Solution:

- Defined 128 polygonal geofences using GFaaC.
- Used /locations/update with edge-accelerated entry triggers.
- Integrated onEnter hook with AWS Lambda to power their ERP system.

Outcome:

- *Average trigger latency reduced to 31ms*.
- *Increased delivery accuracy by 12%*.
- *Reduced fuel cost via proactive cold-storage alignment*.

Versioning

Version	Status	Notes
v1	Active	Current GA version
v0.9	Deprecated	Sunset on 2025-12-31

Use /v1/ in all requests unless testing legacy fallback logic.

Support

- **Email:** dev-support@edgegeo.example.com
- **Slack:** #edgegeo-devs (invite-only)
- **Status:** status.edgegeo.example.com
- **Docs:** docs.edgegeo.example.com

Pro Tip for SEO-Optimized API Integration Docs

To rank your API docs:

- Use **semantic HTML**: <article>, <section>, <code>, <h2>
- Include **code samples** in multiple languages
- Optimize **meta titles** & **descriptions** with query-friendly terms
- Use **structured data**: JSON-LD for APIs
- Support **version-specific permalinks** (e.g., /docs/v1/track-user)
- Add **FAQ-style collapsibles** and **AI-copilot prompts**

Conclusion

The **Edge-Optimized Geo-Fencing API** enables latency-critical, geo-aware business logic on a global edge network—whether you're shipping food, triggering real-time AR, or alerting factory safety systems.

Smart. Accurate. Fast. SEO-Ready.