

M C P S E R V E R

N O C O D E

C L O U D H O S T E D

Hiking Elevation Average MCP

Calculate trail steepness and analyze incline intensity instantly.

Hiking Elevation Average MCP gives your AI client the math needed to judge how hard a trail actually is. Instead of guessing based on total gain, you can use this tool to calculate precise incline intensity, compare different routes, and verify that your trail data makes physical sense before you head out.

A+ Quality Score 100/100

hiking

elevation

incline

trail-analysis

fitness-tracking



The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest
managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.

— Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256

Encryption at rest

Ed25519

PKI vault signatures

24h TTL

Ephemeral session keys

V8 Isolate

Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT`https://edge.vinkius.com/{token}/mcp`

Claude



Cursor



VS Code



Windsurf



Grok



Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

06 — Honeypot Trap System

Phantom credentials are injected into isolated environments. If a honeypot is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1)
Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

Get started at cloud.vinkius.com — connect your AI agent in under 60 seconds.

Hiking Elevation Average MCP

4 tools available

Cloud-hosted on Vinkius

Stop guessing how much a hike will actually hurt your legs. This MCP turns your AI agent into a specialized trail analyst by calculating the relationship between elevation gain and distance. You can determine the exact difficulty of a specific segment or compare two different routes to see which one is actually steeper. It also includes a validation step to make sure the data you're looking at isn't physically impossible, like a trail where the climb is longer than the total distance. Whether you're planning a training run or analyzing past hikes, this tool provides the mathematical backbone for understanding trail strenuousness.

Core Capabilities

01 — Incline Calculation

Your agent uses this to find the average steepness of any trail segment.

02 — Route Comparison

Your agent compares two different paths to see which one has a higher intensity.

03 — Data Validation

Your agent checks trail stats to ensure they are physically possible.

04 — Unit Scaling

Your agent adjusts incline intensity based on different distance units.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/hiking-elevation-average — connect your AI agent in three steps.

- 01 Connect your MCP-compatible client to Vinkius.
- 02 Provide your AI agent with elevation gain and distance data.
- 03 The agent uses the tools to calculate or validate the metrics.
- 04 You receive a clear answer about difficulty or route comparison.

You connect the MCP to your client and then provide trail data through natural language.

Built For

This MCP is built for anyone who needs precise mathematical data about terrain difficulty rather than just general estimates.

Trail Analysts

They hand off raw elevation and distance data to the AI to get standardized difficulty metrics.

Outdoor Enthusiasts

They use the AI to compare potential hiking routes for upcoming trips.

Fitness Coaches

They use the tool to quantify the strenuousness of routes for client training plans.

What Changes When You Connect

- 01 Converts raw elevation and distance into standardized difficulty labels.
- 02 Identifies impossible trail data before you rely on it.
- 03 Provides a mathematical way to compare different hiking routes.

04 Adjusts steepness metrics across different distance scales.

Real-World Applications

Route Selection

Compare two different trails to see which one fits your fitness level better.

Data Cleaning

Verify that GPS or map data for a new trail is actually realistic.

Training Planning

Determine the intensity of a specific segment to prepare for a climb.

Difficulty Labeling

Assign difficulty ratings to trails based on elevation gain per kilometer.

Patterns to Avoid

Relying on broken GPS data

❌ AVOID

You upload a trail file where the elevation gain is somehow higher than the total distance traveled.

✓ INSTEAD

Run your data through `validate_trail_metrics` first to catch impossible stats before you plan your trip.

Comparing mismatched distance units

❌ AVOID

You try to compare a trail measured in miles against one measured in kilometers without adjusting the scale.

✓ INSTEAD

Use `get_elevation_per_unit_scaling` to ensure your steepness metrics match your preferred distance units.

Guessing segment difficulty

❌ AVOID

You look at a total trail elevation and assume the whole thing is equally hard.

✓ INSTEAD

Use `get_incline_intensity` to find the actual average steepness for a specific segment instead of guessing.

The Right Fit

Connect this MCP if you need to turn raw elevation numbers into actionable difficulty ratings. If you only care about total distance and don't care about how steep the climbs are, you don't need this.

Hiking Elevation Average MCP Tools

These tools handle the math behind trail difficulty, from calculating segment steepness to validating terrain data.

#	TOOL	DESCRIPTION
01	compare_trail_steepness	This tool compares the incline intensity of two different hiking trails. It helps you decide which route offers a harder climb.
02	get_elevation_per_unit_scaling	This tool provides incline intensity adjusted for various distance scales. It ensures your steepness metrics match your preferred units.
03	get_incline_intensity	This tool calculates the average steepness for a specific hiking segment. It gives you a clear difficulty label based on the climb.
04	validate_trail_metrics	This tool checks if your provided trail data is physically plausible. It flags impossible stats like elevation gain exceeding total distance.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U What is the difficulty of a trail with 500m elevation gain and 5km distance?



The intensity is 100 meters per kilometer, which is classified as Moderate.

U Compare a trail with 200m gain over 2km to a trail with 600m gain over 10km.



The first trail has an intensity of 100 m/km, while the second has 60 m/km. The first trail is steeper by 40 m/km.

U Is a trail with 1200m elevation gain and 1km distance valid?



No, that trail is invalid because the elevation gain cannot exceed the total distance traveled.

Frequently Asked Questions

01 How does this MCP calculate trail difficulty?

It relates total elevation gain to the total distance traveled to determine incline intensity.

02 Can I use this to compare two different hikes?

Yes, you can use the comparison tool to evaluate the incline intensity of two different routes.

03 What happens if I provide impossible trail data?

The validation tool will flag the data if it is not physically plausible, such as if elevation gain is higher than the distance.

04 Which AI clients can use this MCP?

You can use this with any MCP-compatible client like Claude, Cursor, or Windsurf.

05 Does this work with different measurement units?

Yes, the scaling tool allows you to adjust incline intensity for different distance units.

06 How is incline intensity calculated?

Intensity is calculated by dividing the total vertical elevation gain (in meters) by the total distance traveled (in kilometers).

07 Can I compare two different trails?

Yes, you can use the `compare\_trail\_steepness` tool to find the difference in intensity between two trails and identify which one is steeper.

Go Live in 60 Seconds

Get your connection token from cloud.vinkius.com, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

`https://edge.vinkius.com/[TOKEN]/mcp`

CLIENT	WHERE TO CONFIGURE
 Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
 Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
 VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add <code>"hiking-elevation-average": { "url": "..." }</code>
 Windsurf	MCP Settings → <code>mcp_settings.json</code> → Add endpoint URL
 ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
 Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

-  Ask ChatGPT 
-  Ask Claude 
-  Ask Perplexity 
-  Ask Gemini 
-  Ask Grok 

READY TO CONNECT

Hiking Elevation Average is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and
start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

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