

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

Avalanche Risk Assessment MCP

Get real-time snow stability and terrain hazard data.

Avalanche Risk Assessment MCP gives your AI client the ability to analyze snowpack stability and terrain dangers. It calculates slope safety, identifies terrain traps, and generates safe navigation routes based on specific aspect profiles and weather conditions.

avalanche

snow

terrain

safety

weather



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.

Avalanche Risk Assessment MCP

4 tools available

Cloud-hosted on Vinkius

You can use this MCP to bring technical snow science into your AI chat. Instead of guessing if a slope is stable, you can feed your agent specific data like slope angle, snow depth, and recent snowfall to get a calculated stability reading. It helps you understand how the direction of a slope affects wind slab or solar exposure by pulling aspect risk profiles. If you are looking at a specific area, the MCP evaluates how terrain traps might make an avalanche more dangerous. You can also ask your agent to map out a path that avoids high-risk zones using generated safe routes. It turns your AI client into a specialized tool for backcountry safety and terrain analysis.

Core Capabilities

01 — Slope Stability Analysis

The AI calculates physical stability using snow depth and recent weather data.

02 — Terrain Trap Assessment

Your agent identifies how specific geography increases avalanche consequences.

03 — Safe Route Planning

The MCP provides navigation guidance to steer clear of high-risk zones.

04 — Aspect Risk Profiling

It analyzes how slope direction impacts wind and sun exposure.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/avalanche-risk-assessment — connect your AI agent in three steps.

- 01 Connect your client to Vinkius.
- 02 Select the Avalanche Risk Assessment MCP.
- 03 Provide snow or terrain data to your AI agent.
- 04 The agent uses the specific tools to run calculations.
- 05 Receive stability, risk, or route data in your chat.

Connect the MCP to your AI client and start asking technical snow questions.

Built For

This MCP is built for professionals and enthusiasts who need technical snow data integrated into their AI workflows.

Backcountry Guides

They hand off terrain data to the AI to double-check stability calculations.

Search and Rescue Teams

They use the tool to evaluate terrain hazards and plan safe approach routes.

Snow Safety Researchers

They use the aspect and stability tools to model risk profiles.

What Changes When You Connect

- 01 Calculates slope stability using specific snowpack metrics.
- 02 Identifies terrain traps that increase avalanche severity.
- 03 Generates navigation paths to avoid dangerous areas.

04 Provides aspect-specific risk data for wind and sun exposure.

Real-World Applications

Pre-Trip Planning

Use the stability and aspect tools to check if a planned route is safe before heading out.

Route Optimization

Generate safe paths that bypass high-risk zones identified by the AI.

Real-time Hazard Check

Ask your agent about a specific gully or slope to see if terrain traps are present.

Wind Slab Analysis

Check how wind direction interacts with slope aspect to predict slab formation.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_slope_stability	This tool determines how stable a specific slope is based on current snow conditions.
02	evaluate_terrain_consequences	It assesses the danger level of a location by checking for terrain traps that worsen avalanche outcomes.
03	generate_safe_route	Your agent uses this to find navigation paths that avoid high-risk areas.
04	get_aspect_risk_profile	This tool provides data on how a slope's direction influences wind slab and solar risks.

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 stability of a 35-degree North slope with 50cm of snow and 10cm of recent snowfall?



The slope stability is currently moderate with a risk level of 3. There is a moderate probability of a weak layer due to the recent snowfall.

U I am facing a steep gully. Is it safe to proceed?



Avoid Area. The presence of terrain traps in a steep gully significantly increases the consequence severity to High.

U What is the wind slab risk for a Southeast aspect when the wind is blowing from the West?



The wind slab risk is High because the wind is blowing directly onto the leeward side of the slope.

Frequently Asked Questions

01 How do I use this MCP with Claude?

You connect your Claude client to Vinkius once, and the MCP tools become available for your agent to use immediately.

02 Can this MCP predict wind slab?

Yes, by using the aspect risk profile tool, your agent can determine how wind direction affects specific slopes.

03 Does it help with navigation?

Yes, the generate_safe_route tool provides guidance to help you avoid high-risk areas.

04 What data is needed for stability checks?

You can provide slope angle, snow depth, and recent snowfall amounts to get a stability calculation.

05 Is this for professional use?

The tools are designed for technical analysis of slope stability and terrain consequences, making them useful for guides and safety professionals.

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>"avalanche-risk-assessment": { "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

Avalanche Risk Assessment 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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DOCUMENT INFORMATION

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Platform	Vinkius Cloud for AI Agents
Endpoint	https://edge.vinkius.com/{token}/mcp

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