MCP SERVER | NO CODE | CLOUD HOSTED

Options Greeks Calculator MCP for AI Agents

Quantifying Option Risk and Calculating Derivatives Valuation

Options Greeks Calculator uses the Black-Scholes model to calculate theoretical prices for Call and Put options. It quantifies complex market risks, letting you instantly measure how option values change based on underlying price movement, volatility, time decay, or interest rate shifts.

A+ Quality Score 100/100

black-scholes | options | greeks | derivatives | volatility | trading

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vinkius.com/mcp/options-greeks-calculator

SCAN TO VIEW

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.

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.

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.

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	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	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.

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.

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.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken 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.

Agent Activity

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

FinOps

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

Tool Health

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

Firewall & DLP

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

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.

Options Greeks Calculator MCP

3 tools available
Cloud-hosted on Vinkius

This MCP is a high-precision financial engine designed specifically for quantifying the risk inherent in European-style option positions using the Black-Scholes model. Instead of manually calculating sensitivity metrics across different market variables, your AI client accesses this tool to assess how underlying asset prices, volatility levels, time decay, and interest rates impact your portfolio's value. You can instantly gauge directional exposure by checking price movements, or you can determine theoretical fair values for Call and Put options. This level of granular risk assessment is vital for professional traders and quantitative analysts who need real-time data. Vinkius hosts this MCP within its catalog, giving your AI client access to a comprehensive suite of financial tools alongside the option Greeks calculator.

Core Capabilities

01 — Assess directional price impact

Determines how much an option's value reacts when the underlying asset's price moves up or down.

02 — Measure external factor sensitivities

Quantifies how outside elements—like passing time, changes in volatility, or shifts in interest rates—affect the option’s theoretical value.

03 — Calculate theoretical option prices

Runs Black-Scholes calculations to provide estimated fair market values for both Call and Put options.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/options-greeks-calculator** — connect your AI agent in three steps.

01 Specify the parameters: you tell your AI client the underlying asset price, the strike price, time remaining until expiration, current volatility, risk-free rate, and whether it's a Call or Put option.

02 The MCP invokes the necessary financial models to process these variables against the Black-Scholes framework.

03 Your agent returns a detailed breakdown, providing not only the calculated theoretical price but also key metrics like Delta, Gamma, Theta, Vega, and Rho.

The bottom line is that you get instant, multi-variable risk reports without having to run complex financial models manually or through separate software.

Built For

This MCP is built for quantitative analysts and experienced traders who deal with derivatives daily. If your job involves assessing market exposure or calculating theoretical valuations, this tool saves hours of manual spreadsheet work by providing instant risk metrics.

Quantitative Analyst

Uses the calculator to model various market scenarios and backtest trading strategies against historical data.

Derivatives Trader

Rapidly assesses options positions, checking how a sudden spike in volatility or time decay might impact their overall hedge.

Financial Risk Manager

Runs simulations to measure the portfolio's total exposure across multiple correlated assets and market factors.

What Changes When You Connect

01 Pinpoint directional exposure. Instead of guessing how a price drop impacts your options, the calculator uses `calculate_directional_risk` to give you precise Delta and Gamma metrics.

02 Understand market time decay. You can determine exactly how much value an option loses each day by running calculations for environmental sensitivities, which includes Theta.

03 Model complex scenarios instantly. Need to know how a rate hike or volatility shift affects your trade? The MCP measures this via `calculate_environmental_sensitivities` in seconds.

04 Get theoretical pricing immediately. Use the tool to perform black-scholes calculations and get estimated fair prices for both Call and Put options using `calculate_option_valuation`.

05 Reduce modeling time dramatically. By centralizing all these complex calculations, you cut down hours of spreadsheet work into single AI prompts.

Real-World Applications

Stress-testing a new hedge position

A trader needs to know if their current option spread is safe from sudden volatility swings. They ask their agent to run the calculator, checking environmental sensitivities for Vega and Gamma against a simulated market shock.

Calculating theoretical value for an audit

An analyst must provide a fair-market valuation for a large block of options expiring next month. They prompt their agent to run the calculation_option_valuation tool, generating verifiable Black-Scholes prices instantly.

Assessing immediate price risk

A hedge fund manager gets an alert that the underlying asset is moving fast. They immediately ask the MCP for directional risk metrics to determine how aggressively their current options positions are exposed to rapid price changes.

Patterns to Avoid

Treating volatility as a single number

✗ AVOID

Manually plugging in only one historical volatility figure without understanding its effect on the final option pricing, leading to inaccurate risk assessments.

✓ INSTEAD

Use the MCP's environmental sensitivities tool. It models how changes in volatility (Vega) impact the price, giving you a range of potential outcomes instead of a single point estimate.

Ignoring time decay

✗ AVOID

Assuming an option retains value over several weeks because the underlying asset hasn't moved much. Forgetting about Theta means misjudging true risk.

✓ INSTEAD

Always run environmental sensitivities to account for time decay (Theta). This shows you the actual, quantifiable loss of value that occurs just by letting time pass.

Mixing up Call and Put inputs

✗ AVOID

Attempting to calculate a Put option price using parameters designed only for a Call. The resulting valuation is completely meaningless.

✓ INSTEAD

Be precise when calling the tool. Always specify if you need a Call or Put calculation, as this changes the mathematical structure of the pricing model.

The Right Fit

Use this MCP if your core job requires calculating theoretical derivatives prices and quantifying risk exposure across multiple variables—specifically volatility (Vega), time decay (Theta), interest rates (Rho), and directional price swings. If you're dealing with simple stock purchases or bonds, you don't need it; a standard financial calculator will suffice. However, if your workflow involves options, never rely on gut feeling alone. You must use the environmental sensitivities tool to account for external factors that change everything. Don't try to calculate these values manually in Excel; this MCP handles the complex dependencies better and faster.

Options Greeks Calculator: Quantifying Derivatives Risk with Black-Scholes

Currently, assessing options risk means jumping between spreadsheets, running multiple sensitivity analyses, and constantly worrying about which variable you forgot to include. You have to manually track underlying price movement, time decay, volatility shifts, and interest rate changes—it’s slow, tedious, and highly prone to human error.

With this MCP, your agent handles all that complexity for you. Just give it the parameters, and it returns a full risk profile showing directional exposure, environmental sensitivities, and theoretical fair values instantly. You get immediate clarity on what risks are truly present.

Options Greeks Calculator: Mastering Options Valuation with AI Agents

The biggest time sink is the initial valuation itself. Manually calculating Call and Put option values across different expiration dates requires multiple, repetitive runs of the Black-Scholes formula. This process eats into valuable trading time.

Now, your agent takes care of the math. You simply ask for a theoretical price, and it returns the accurate numbers you need. It’s about moving from slow calculation to instant, verifiable knowledge.

Options Greeks Calculator: 3 Tools for Derivatives Risk Analysis

Use these tools within your AI agent to calculate complex metrics like directional price reactions, environmental factor sensitivities, and fair option pricing based on the Black-Scholes model.

#	TOOL	DESCRIPTION
01	`calculate_directional_risk`	Shows how much an option price changes if the underlying asset's price moves.
02	`calculate_environmental_sensitivities`	Measures how outside factors like time, volatility, and interest rates change the option’s value.
03	`calculate_option_valuation`	Calculates Black-Scholes theoretical prices for both Call and Put options based on inputs.

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 current theoretical value for a Call option if I use these parameters: underlying at 100, strike of 95, 3 months left, 25% volatility, and 4% interest rate?

Call Option Valuation Report

METRIC	VALUE
Theoretical Price (Call)	$8.12
Delta	0.75
Gamma	0.03

This indicates a strong positive directional exposure to the underlying asset.

U If I hold an option, how much will its value decrease just due to time passing over the next week?

Based on your parameters, the calculated Theta is -0.12. This means that, all else being equal, your option loses approximately $0.12 in theoretical value each day. Time decay is a significant factor here.

U Show me the total risk if volatility jumps to 35% and rates are 5%, assuming my current position.

Environmental Sensitivity Check

- **Impact of Volatility (Vega):** A jump to 35% would increase your option value by approximately $1.50.
- **Impact of Rates (Rho):** The change in interest rates has a minor impact, shifting the value by about $0.25.

Overall risk is highly sensitive to changes in market volatility.

Frequently Asked Questions

01 **How does the Options Greeks Calculator help me price options?**

It calculates the theoretical fair value for both Call and Put options using the Black-Scholes model. You input key market variables, and it gives you an estimate of what the option *should* cost based on established financial principles.

02 **Can this MCP tell me how much my trade is exposed to price changes?**

Yes. The calculator determines directional risk using Delta and Gamma metrics, which quantify exactly how much your options position will react if the underlying stock's price moves up or down.

03 **What are environmental sensitivities in the Options Greeks Calculator?**

This refers to external market factors. The MCP measures how things like time passing (Theta), volatility changes (Vega), or interest rate shifts (Rho) affect your option's value, giving you a holistic risk view.

04 **Is this tool only for advanced traders?**

No. While it handles complex models, the goal is to give clear answers. It takes highly technical inputs and outputs easy-to-understand metrics that help anyone assess market risk confidently.

05 **Does the Options Greeks Calculator handle different expiration dates?**

Yes. You can input varying time remaining until expiration, allowing you to compare how your options value changes as they approach their maturity date.

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 `"options-greeks-calculator": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → 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

Options Greeks Calculator 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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