

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

Centralizer Placement Optimization MCP

Get precise spacing and count for effective wellbore cementing.

Centralizer Placement Optimization MCP provides technical decision support for wellbore cementing operations. It calculates optimal spacing and quantity of centralizers based on your specific hole deviation, casing size, and standoff requirements to ensure successful primary cement jobs.

A+ Quality Score 100/100

cementing

wellbore

centralizers

drilling

optimization



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.

Centralizer Placement Optimization MCP

4 tools available

Cloud-hosted on Vinkius

You can use this MCP to handle the math and geometry involved in wellbore cementing. Instead of manual calculations, your AI client can determine exactly how many centralizers you need and where to place them to maintain required standoff. It accounts for hole deviation and casing dimensions to prevent deployment risks. You can weigh the pros and cons of bow-spring versus rigid options or check if a specific centralizer type will even fit the hole geometry you are working with. It's a technical tool designed to keep your cement jobs within geometric boundaries and ensure the casing is properly positioned.

Core Capabilities

01 — Spacing Calculations

Your agent calculates the distance between units to maintain standoff.

02 — Deployment Risk Assessment

The AI checks if centralizer types are compatible with hole geometry.

03 — Strategy Comparison

Your client compares bow-spring and rigid centralizer performance.

04 — Standoff Boundary Checks

The tool identifies theoretical standoff limits for casing and hole combinations.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/centralizer-placement-optimization — connect your AI agent in three steps.

- 01 Connect your MCP-compatible client to Vinkius.
- 02 Provide hole size, casing size, and deviation to your AI agent.
- 03 The agent calls the necessary tools to calculate spacing or check compatibility.
- 04 Receive precise technical outputs for your cementing plan.

Connect your AI client to Vinkius to start running technical cementing calculations immediately.

Built For

This MCP is built for petroleum engineers and drilling specialists who need to automate cementing design calculations.

Petroleum Engineer

Hands off hole deviation and casing data to the AI to get spacing counts.

Drilling Specialist

Uses the tool to verify if centralizer types are compatible with wellbore geometry.

Cementing Engineer

Relies on the AI to determine the total quantity of centralizers needed for a job.

What Changes When You Connect

- 01 Calculates exact centralizer counts based on standoff requirements.
- 02 Identifies deployment risks before hardware is sent downhole.

- 03

Compares different centralizer types for specific well scenarios.
- 04

Provides theoretical standoff limits for casing and hole combinations.

Real-World Applications

Primary Cementing Design

Determine the number of centralizers needed to maintain standoff in a new wellbore.

Risk Mitigation

Check if a chosen centralizer can actually be deployed in high-deviation holes.

Hardware Selection

Decide between bow-spring or rigid centralizers based on deviation and clearance.

Geometric Verification

Verify the maximum possible standoff for a specific casing and hole size.

4 Tools Available

#	TOOL	DESCRIPTION
01	compare_strategies	This tool compares bow-spring and rigid centralizer strategies for your specific well scenario.
02	evaluate_compatibility	Use this to check if a specific centralizer type can physically fit into your current hole geometry.
03	get_limits	This tool retrieves the maximum and minimum theoretical standoff limits for a given casing and hole combination.
04	calculate_spacing_and_count	This tool calculates the exact distance between centralizers and the total number required to hit your standoff targets.

See It in Action

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

- U** Calculate the centralizer spacing for a 12-inch hole with 8.5-inch casing at a 30-degree deviation, requiring 70% standoff over 500 feet using rigid centralizers.



For a 12-inch hole and 8.5-inch casing at 30 degrees, the required spacing is 45 feet, requiring a total of 12 rigid centralizers to maintain a 70% standoff.

- U** Is a rigid centralizer suitable for a 9-inch hole with 7-inch casing and 45-degree deviation?



The deployment risk for rigid centralizers in this scenario is high due to the 45-degree deviation and limited clearance.

- U** What are the theoretical standoff limits for an 8.5-inch hole and 5.5-inch casing?



The maximum theoretical standoff is 0.85 and the minimum theoretical standoff is 0.00.

Frequently Asked Questions

01 How do I use this MCP with Claude?

You connect your Claude desktop app to Vinkius, which hosts the MCP. Once connected, you can ask Claude to perform any of the centralizer calculations directly.

02 Can this tool help with high-deviation wells?

Yes, it uses hole deviation data to assess deployment risks and calculate the necessary spacing to maintain standoff.

03 What kind of centralizer types can it compare?

The tool can perform side-by-side comparisons between bow-spring and rigid centralizer strategies.

04 Does it calculate the total number of centralizers needed?

Yes, the `calculate_spacing_and_count` tool determines both the distance between units and the total quantity required.

05 What data do I need to provide for a calculation?

You typically need to provide the hole diameter, casing size, wellbore deviation, and your required standoff percentage.

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>"centralizer-placement-optimization": { "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

Centralizer Placement Optimization 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	<code>https://edge.vinkius.com/{token}/mcp</code>

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