

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

Completion Accessories Design MCP

Design precise downhole equipment for complex wellbore architectures.

Completion Accessories Design MCP gives your AI client the engineering logic needed to design downhole completion hardware. It handles the math and technical specifications for nipple profiles, landing depths, and sliding sleeve requirements. You can use it to verify that your equipment placement won't block future maintenance or intervention tasks.

A+ Quality Score 100/100

completion

nipple-profiles

sliding-sleeves

wellbore

intervention



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.

Completion Accessories Design MCP

4 tools available

Cloud-hosted on Vinkius

You can use this MCP to bridge the gap between high-level wellbore architecture and the physical placement of downhole equipment. Instead of manually calculating clearances or looking up profile standards, you can ask your agent to handle the technical heavy lifting. It provides the specific engineering logic required to determine nipple profiles and calculate the exact vertical positions for landing nipples.

When you are planning flow control, the MCP defines the necessary characteristics and placements for sliding sleeves. It also acts as a safety check by validating whether your designed accessory string will actually allow for the maintenance and intervention you have planned. This makes it a practical tool for moving from a conceptual well design to a functional, buildable completion string.

Core Capabilities

01 — Nipple Profile Selection

Your agent uses this to pick the right profiles based on well pressure and casing type.

02 — Depth Calculation

The AI calculates vertical positions for equipment while accounting for safety clearances.

03 — Flow Control Planning

Your agent defines the requirements for sliding sleeves within the wellbore.

04 — Maintenance Verification

The tool checks if the equipment layout permits future intervention tools to pass.

One Click on Vinkius — From Prompt to Execution

Available at vinkius.com/en/ai-agent-connect/completion-accessories-design — connect your AI agent in three steps.

- 01 Connect your AI client to Vinkius.
- 02 Provide wellbore parameters or design constraints to your agent.
- 03 The agent calls the specific engineering tools to perform calculations or lookups.
- 04 Receive technical specifications, depths, or compatibility checks directly in your chat.

You connect the MCP to your AI client and start asking engineering questions immediately.

Built For

This MCP is built for petroleum engineers working on well completion and wellbore design.

Completion Engineer

Uses the MCP to generate equipment specifications and depth calculations.

Wellbore Designer

Hands off architectural constraints to the AI to verify equipment placement.

Operations Engineer

Uses the tool to ensure designed strings allow for necessary maintenance access.

What Changes When You Connect

- 01 Automates the math for landing nipple depths and safety margins.
- 02 Reduces errors in nipple profile selection for high-pressure environments.

- 03

Prevents design flaws that would block future well interventions.
- 04

Connects wellbore architecture directly to physical equipment requirements.

Real-World Applications

High-Pressure Well Design

Select appropriate nipple profiles to ensure mechanical integrity in high-pressure zones.

Sleeve Configuration

Define the placement and characteristics of sliding sleeves for flow control.

Landing Nipple Placement

Calculate precise vertical depths for nipples while maintaining required safety clearances.

Intervention Planning

Verify that the chosen accessory string won't prevent future maintenance tools from reaching target depths.

4 Tools Available

#	TOOL	DESCRIPTION
01	calculate_landing_depths	This tool calculates the exact vertical depths where you should place landing nipples.
02	determine_sleeve_requirements	Use this to define the specific characteristics and placement needs for sliding sleeves.
03	get_nipple_specifications	This tool identifies the correct nipple profiles required for your specific completion design.
04	validate_intervention_access	This tool checks if your accessory string design leaves enough room for future maintenance.

See It in Action

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

U What nipple profiles do I need for a cased-perforated well with high pressure?



For a cased-perforated well under high pressure, you should use Medium and Heavy profiles to maintain mechanical integrity.

U Calculate the landing depths for nipples at 5000m and 7500m with a 50m clearance.



The nipple depths are 4950m and 7450m to maintain your 50m safety margin.

U Will a 2.5 inch tool fit in a completion with a 3.0 inch internal diameter?



Yes, the tool is compatible with the completion internal diameter.

Frequently Asked Questions

01 How do I use this MCP with Claude or Cursor?

You connect once through the Vinkius interface. After connecting, the tools appear in your AI client, allowing you to run engineering calculations directly in your existing workflow.

02 Can this MCP help with high-pressure well designs?

Yes. You can ask the agent to determine the necessary nipple profiles, such as Medium or Heavy profiles, to ensure mechanical integrity in high-pressure conditions.

03 Does it handle safety margins for nipple placement?

Yes. You can provide target depths and required clearances, and the tool will calculate the optimal landing depths to maintain those margins.

04 Will it tell me if my tools will fit in the wellbore?

Yes. You can check tool compatibility against the completion's internal diameter through your agent.

05 How does it help with future well maintenance?

The tool includes a validation function that checks if your designed accessory string allows for the intended future maintenance or intervention.

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>"completion-accessories-design": { "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

Completion Accessories Design 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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