MCP SERVER | NO CODE | CLOUD HOSTED

Irrigation Water Optimizer MCP for AI Agents

Precision Calculations for Garden and Field Watering Needs

Irrigation Water Optimizer calculates exactly what your garden needs to survive drought or thrive in wet seasons. It takes inputs like plant water demand, soil texture, and garden area to determine total weekly water needs, how often you need to run the system, and the specific flow rate for every single irrigation session. This means no more guessing on watering schedules.

A+ Quality Score 100/100

irrigation | water-management | garden-care | precision-farming | automation

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vinkius.com/mcp/irrigation-water-optimizer

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.

Irrigation Water Optimizer MCP

3 tools available
Cloud-hosted on Vinkius

Figuring out your garden's precise watering schedule used to be a nightmare of manual calculations and lookup tables. You had to check soil type against plant needs, then calculate weekly totals, and finally divide that into usable daily or bi-weekly session volumes. The Irrigation Water Optimizer changes that. Instead of wrestling with spreadsheets, you simply ask your agent what your garden requires. It analyzes everything—from the size of your beds to whether you've got sandy or loamy soil—and tells you the exact liters needed per week, how many times your system should run, and the precise volume for each blast. By connecting this MCP through Vinkius, you give your AI client access to professional-grade horticultural calculations without ever touching a formula sheet again.

Core Capabilities

01 — Determine total weekly water needs

Calculates the full volume of water required for an entire garden area over a seven-day period.

02 — Predict optimal watering frequency

Estimates how many times per week your irrigation system should operate based on current conditions and plant life cycle.

03 — Calculate single session water volume

Determines the exact amount of water, in liters, necessary for one specific run or watering event.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/irrigation-water-optimizer** — connect your AI agent in three steps.

01 You provide your agent with key details: the garden's surface area, soil type (sandy, loamy, clay), and the general water demand of the plants you have planted.

02 The MCP runs these inputs against established horticultural models to calculate both the total weekly volume needed and the optimal number of times that watering should happen.

03 You receive a structured output detailing the grand total for the week, the ideal run schedule, and the precise dosage (liters) for each individual session.

The bottom line is you get actionable, calculated watering plans instantly, so your garden gets exactly what it needs—no more guesswork.

Built For

Anyone managing a significant planted area—be it a residential backyard or commercial farmland—needs this. If manually balancing water usage against plant survival feels like an afternoon chore, this MCP is for you. It moves the calculations from your clipboard into your agent's workflow.

Landscape Designer

Determines initial planting plans and specifies appropriate watering schedules for new commercial client gardens.

Horticultural Technician

Adjusts existing irrigation systems mid-season based on sudden weather changes or plant health assessments, needing precise real-time dosage calculations.

Farm Manager

Manages large-scale crop watering schedules, ensuring minimum water waste while meeting the specific needs of different crops in varying soil types.

What Changes When You Connect

01 Pinpoint accuracy: Stop over- or under-watering. Use `calculate_weekly_requirement` to know the precise total liters needed, preventing root rot or drought stress.

02 Saves time: Instead of cross-referencing soil charts and plant guides in five different tabs, your agent handles all the complex calculations instantly.

03 Schedules intelligently: The `estimate_irrigation_frequency` tool tells you exactly how many times per week to run the system, keeping plants alive without wasting resources.

04 Controls flow rate: Use `calculate_session_dosage` when making adjustments. You'll know the exact volume needed for a single cycle, allowing fine-tuning of your equipment.

05 Reduces waste: By matching water output to actual plant demand (low/medium/high), you cut down on wasted runoff and save money on utility bills.

Real-World Applications

Diagnosing a new garden setup

A client has just planted a large mixed-soil garden. The agent runs the inputs to `calculate_weekly_requirement`, providing the initial total water volume needed for the first month, ensuring proper establishment.

Responding to unexpected drought conditions

A sudden heatwave hits a farm. Instead of guessing, the agent uses the MCP to `estimate_irrigation_frequency`, recommending an immediate increase in runs per week to keep crops stable.

Tuning existing drip irrigation systems

The system is running but seems inefficient. The agent uses `calculate_session_dosage` to determine if the current run volume is too high or too low for peak plant health.

Planning seasonal changes for diverse plantings

Moving from a wet season to a dry season. The agent first runs `calculate_weekly_requirement` and then uses `estimate_irrigation_frequency` to adjust the entire schedule, matching water needs to plant life cycles.

Patterns to Avoid

Using only total volume estimates

✗ AVOID

A user calculates a 100-liter weekly need but doesn't know how to divide that into daily sessions, leading to guessing the run time.

✓ INSTEAD

First, use `calculate_weekly_requirement` for the total. Then, follow up immediately with `estimate_irrigation_frequency` and finally `calculate_session_dosage`. This gives you the full picture.

Ignoring soil type variables

✗ AVOID

Assuming all garden areas need the same watering schedule regardless of whether the soil is sandy or loamy, wasting water.

✓ INSTEAD

Always feed the soil texture (sandy, loamy, clay) into the calculation. This adjustment prevents over-watering and ensures accurate results from `calculate_weekly_requirement`.

Calculating frequency without dosage

✗ AVOID

The agent suggests running 7 times a week, but doesn't tell you how long or how much water to use in each session.

✓ INSTEAD

Use `estimate_irrigation_frequency` first. Then, always verify the output by feeding that number into `calculate_session_dosage` for specific volumes.

The Right Fit

Use this MCP if your watering schedule depends on multiple variables: plant type, soil composition, and area size. It's perfect when you need to know not just the total water volume, but also the optimal timing (frequency) and the precise output for each run (dosage). Don't use it if you simply want a general 'good enough' watering schedule; this tool provides calculated precision. If your core problem is managing a simple, single-crop field with uniform soil, basic manual calculations might suffice. But if you have diverse plantings or fluctuating conditions, the combination of `estimate_irrigation_frequency` and `calculate_session_dosage` makes this MCP necessary.

Irrigation Water Optimizer: Calculating Precision Watering Needs for Gardens

Today, managing garden water is a tedious mix of experience and math. You're staring at multiple tabs—one for soil permeability, one for plant life stages, and another for local climate averages. You copy-paste data into spreadsheets, manually adjusting coefficients until the total weekly need seems right enough.

With this MCP, you just tell your agent what you have planted and what kind of soil it's in. It handles every calculation instantly, delivering a precise number for how many liters you need per week. You get an accurate starting point without opening a single spreadsheet.

Irrigation Water Optimizer: Setting Optimal Watering Frequency and Dosage

The worst part is that knowing the total volume isn't enough. You have to figure out how many times you should run the system and what specific amount of water each session needs—a process prone to human error and guesswork.

This MCP solves that by giving you two distinct numbers: the perfect number of runs per week, and the exact liters for every single one. It’s a complete, actionable watering plan, not just a rough estimate.

Irrigation Water Optimizer: 3 Tools for Precision Water Scheduling

These tools allow you to calculate the total water needed, predict ideal run times, and determine precise dosages for any watering cycle.

#	TOOL	DESCRIPTION
01	`estimate_irrigation_frequency`	Determines how many times per week your garden system should run to keep plants healthy.
02	`calculate_session_dosage`	Figures out the exact volume of water needed for a single, specific irrigation event.
03	`calculate_weekly_requirement`	Provides the total amount of water your garden needs over an entire seven-day period.

See It in Action

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

U What's my total water need this month? I have 80m2 of mixed herbs in loamy soil.

Garden Watering Plan Summary

Total Weekly Requirement: *145 Liters*
- **Optimal Frequency:** 3 times per week
- **Session Dosage:** Each session needs to deliver approximately 60-70 liters of water.

Keep monitoring the soil; if it dries faster, you might need to increase this dosage.

U My succulents are struggling. How often should I run the sprinklers?

Succulent Watering Recommendations

Given low plant demand and sandy soil, over-watering is the biggest risk.

- **Recommended Frequency:** 1 time every 7 days (once per week).
- **Session Dosage:** Start with a conservative 20 liters. Monitor moisture levels closely.

U I need to water large tropical plants in clay soil for the next two weeks.

Tropical Plant Watering Schedule (Clay Soil)

- **Weekly Requirement:** You'll need 210 Liters per week.
- **Frequency:** Run 5 times a week.
- **Dosage Calculation:** Each of the five sessions should deliver about 42 liters. This ensures deep, consistent saturation for tropical growth.

Frequently Asked Questions

01 **How does the Irrigation Water Optimizer help me figure out if I'm watering enough?**

It gives you concrete numbers instead of vague advice. By calculating your total weekly requirement, you know exactly if your current setup is falling short or wasting water.

02 **Do I need to worry about my soil type when using the Irrigation Water Optimizer?**

Yes, absolutely. Soil texture (sandy, loamy, clay) is critical because it dictates how fast water drains and how much the plants can absorb. The MCP factors this in for accurate results.

03 **Can I use Irrigation Water Optimizer to adjust my watering schedule during a drought?**

Yes. You feed your agent the current conditions, and it adjusts both the optimal frequency and the required session dosage to conserve water while keeping plants alive.

04 **What if my garden has mixed plant types? Does Irrigation Water Optimizer handle that?**

It handles it. You specify the different plant demands (low, medium, high), and the MCP calculates a weighted average for your total weekly needs, so you don't have to plan multiple schedules.

05 **Is this better than just following general gardening advice?**

It is. General advice is generic. The Irrigation Water Optimizer provides calculations based on specific inputs—like the exact size of your garden and whether you're using loamy soil—making the results actionable.

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 `"irrigation-water-optimizer": { "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

Irrigation Water Optimizer 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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