MCP SERVER | NO CODE | CLOUD HOSTED

Board Repair Estimator MCP

Get instant technical and financial repair assessments.

Board Repair Estimator provides your AI client with the data needed to evaluate circuit board repairs. It calculates repair costs, estimates labor time, and determines if a repair is economically viable based on damage type, board age, and local labor rates. Use it to decide whether to fix a component or scrap the board.

A+ Quality Score 100/100

circuit-board | repair-cost | electronics-repair | viability-analysis | technical-estimation

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vinkius.com/en/ai-agent-connect/board-repair-estimator

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.

Board Repair Estimator MCP

4 tools available
Cloud-hosted on Vinkius

You can use this MCP to turn your AI client into a technical estimator for electronics repair. Instead of guessing if a repair is worth the effort, you provide the agent with specific details about the damage, the age of the board, and the local labor market. The MCP handles the math, factoring in how much a specific type of damage will cost to fix and how long it will take. It also checks the economic viability of a job by comparing the estimated repair cost against the value of the board. This helps you avoid wasting time on repairs that cost more than the hardware is worth. Whether you are dealing with a trace break or liquid damage, the tool provides a clear picture of the technical difficulty and the final price tag.

Core Capabilities

01 — Cost Estimation

Your agent calculates the total financial requirement for a specific repair job.

02 — Complexity Scoring

The MCP evaluates the physical difficulty of a repair based on damage size and type.

03 — Economic Viability

Your AI client determines if a repair is worth the investment relative to the board's value.

04 — Labor Rate Lookup

The tool retrieves local hourly labor rates to ensure accurate cost modeling.

05 — Temporal Planning

The agent estimates the amount of time needed to complete a repair task.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/en/ai-agent-connect/board-repair-estimator** — connect your AI agent in three steps.

01 Connect the MCP to your client like Claude or Cursor via Vinkius.

02 Provide your agent with details about the board damage and value.

03 The agent calls the necessary tools to calculate costs and complexity.

04 Your agent delivers a clear repair estimate and viability verdict.

Connecting this MCP to your AI client gives your agent immediate access to specialized engineering math.

Built For

This MCP is built for professionals in the electronics repair and engineering sectors who need to make fast, data-driven decisions.

Electronics Repair Technician

Uses the MCP to quickly quote customers on repair jobs.

Hardware Engineer

Uses the tool to assess the feasibility of repairing legacy hardware.

Repair Shop Manager

Uses the economic viability checks to manage shop profitability.

What Changes When You Connect

01 Reduces time spent manually calculating repair quotes.

02 Prevents losses by identifying non-viable repairs before work begins.

03 Provides consistent cost estimates based on local labor data.

04 Factors in board age and damage type for technical accuracy.

Real-World Applications

Customer Quoting

Generate a quick cost and time estimate for a client with damaged hardware.

Salvage Assessment

Decide if a piece of equipment is a total loss or worth fixing.

Labor Budgeting

Use local labor rates to plan the profitability of repair services.

Technical Difficulty Analysis

Determine how much time to allocate for complex component failures.

4 Tools Available

#	TOOL	DESCRIPTION
01	assess_damage_complexity	This tool determines how difficult a repair will be based on the physical characteristics of the damage.
02	calculate_repair_estimate	This tool provides a full breakdown of the expected costs and time required for a repair job.
03	check_viability_threshold	This tool checks if a repair is worth doing by comparing the cost to a custom cost-to-value ratio.
04	get_labor_rate	This tool pulls the estimated hourly labor rate for a specific geographic location.

See It in Action

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

U How much will it cost to fix a 5cm² trace break on a $200 board in an urban area?

The estimated repair cost is $45.00, and it is expected to take 2 days to complete. The repair is considered viable.

U Is it worth repairing a $50 board with liquid damage covering 10cm²?

No, the estimated repair cost is $65.00, which exceeds the board's value. This is considered a total loss.

U What is the complexity of a 2cm² component failure on a 10-year-old board?

The complexity score is 6.5, with an estimated 4 hours of labor required due to the age of the components.

Frequently Asked Questions

01 **How does the MCP determine if a repair is worth it?**

It uses the check_viability_threshold tool to compare the estimated repair cost against a specific cost-to-value ratio.

02 **Does this MCP account for different locations?**

Yes, it uses the get_labor_rate tool to factor in local hourly labor rates for more accurate estimates.

03 **Can I use this with Cursor or Windsurf?**

Yes, this MCP is compatible with any MCP-compatible client including Cursor, Windsurf, and VS Code.

04 **What factors influence the repair complexity score?**

The complexity is determined by the physical characteristics of the damage, such as size and type, as well as the age of the board.

05 **How is the repair cost calculated?**

The calculate_repair_estimate tool combines damage type, size, board age, and local labor rates to produce a total cost.

06 **How accurate are the repair cost estimates?**

Estimates are generated using specialized models that factor in damage type, size, board age, and regional labor rates via `get_labor_rate` to provide a realistic financial outlook.

07 **Can I use this to decide if a board is a total loss?**

Yes. By using `check_viability_threshold`, you can determine if the repair cost is economically sensible compared to the board's total value.

08 **Does the tool account for DIY repairs?**

Yes, the `calculate_repair_estimate` tool includes an option to indicate if you are DIY capable, which significantly reduces the predicted labor costs.

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 `"board-repair-estimator": { "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

Board Repair Estimator 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

INDEPENDENT PLATFORM DISCLAIMER

DOCUMENT INFORMATION

Generated	September 2026
MCP Server	Board Repair Estimator MCP
Server ID	`01a07b8c-7f88-72e5-98a6-dce3f9f79ba8`
Platform	Vinkius Cloud for AI Agents
Endpoint	`https://edge.vinkius.com/{token}/mcp`

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