

MCP SERVER

NO CODE

CLOUD HOSTED

# Breadcrumb Generator MCP for AI Agents

## Generating Semantic Web Markup from URL Paths

The Breadcrumb Generator takes any URL path and instantly outputs three types of structured breadcrumbs: plain text, semantic HTML5 markup, or Schema.org JSON-LD schema. This lets web developers and SEO specialists ensure their site's navigation is crawlable and accessible to search engines.

**A+** Quality Score 100/100

breadcrumb

url-parsing

json-ld

html-generation

seo-tools



# 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

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## 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

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## 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

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## 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](https://cloud.vinkius.com) — connect your AI agent in under 60 seconds.

# Breadcrumb Generator MCP

3 tools available

Cloud-hosted on Vinkius

Building clean, navigable paths for your website used to mean manually writing out the structure three different ways—plain text for display, complex HTML markup for accessibility, and structured JSON-LD for Google. The Breadcrumb Generator automates that entire process. Just provide a URL path, and you get instant, ready-to-use code blocks tailored exactly for where they need to go. Whether you're optimizing visibility in search results or just improving the user flow on an internal page, this MCP handles the heavy lifting. When you access this through the Vinkius catalog, your AI client integrates the output directly into your workflow, letting you focus purely on content rather than code structure.

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## Core Capabilities

### 01 — Create simple visual breadcrumbs

It generates a clean, user-friendly text trail (e.g., Home > Category > Item) from any URL path.

### 02 — Generate structured HTML markup

It produces full semantic HTML5 code snippets needed for accessible navigation widgets on your site.

### 03 — Produce SEO-optimized JSON-LD schema

It outputs the required Schema.org format, which dramatically helps search engines understand your site hierarchy and improves listing visibility.

# One Click on Vinkius — From Prompt to Execution

Available at [vinkius.com/mcp/breadcrumb-generator](https://vinkius.com/mcp/breadcrumb-generator) — connect your AI agent in three steps.

- 01 You give your AI client a specific URL path (e.g., '/blog/tech-reviews').
- 02 Your agent decides which format you need—text, HTML, or JSON—and calls the appropriate function.
- 03 The MCP returns the fully structured, ready-to-paste markup code block for immediate deployment.

The bottom line is that it converts a simple path into multiple forms of optimized web code in one step.

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## Built For

Web developers and content strategists need this. If your job involves making sure search engines can read the structure of your site, you'll find this invaluable. It eliminates the tedious back-and-forth of validating different markup types.

### SEO Specialist

They use it to generate JSON-LD schema for every major page path, ensuring Google indexes correct site hierarchy.

### Front-End Developer

They rely on the HTML markup output to build accessible and semantic breadcrumbs into actual web templates.

### Content Manager

They use it to quickly generate simple text trails for internal linking or markdown content, without needing developer help.

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## What Changes When You Connect

- 01 Boosts SEO visibility by automatically generating JSON-LD schema, which signals your site's structure directly to Google search results. Use `generate_json_ld_schema`.

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- 02 Ensures accessibility compliance because it produces full semantic HTML5 markup via the `generate_html_breadcrumb` tool, making navigation clear for screen readers.

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  - 03 Saves development time by instantly creating plain text breadcrumbs using `generate_text_breadcrumb`, eliminating manual path writing for basic displays.

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  - 04 Reduces errors associated with copy-pasting code blocks. The system guarantees that the output markup matches the provided URL structure perfectly.

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  - 05 Improves user experience across all devices because the generated HTML is built with standard, relative links and proper navigation semantics.
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## Real-World Applications

### Updating a large e-commerce site's paths

A developer needs to update 50 product categories. Instead of manually creating the JSON schema for every single one, they ask their agent to run `generate_json_ld_schema` against the master path list, getting all required structured data instantly.

### Fixing broken site navigation during migration

The marketing team suspects some pages are missing structured data. They feed the agent a list of suspect paths and run `generate_json_ld_schema` to quickly identify exactly which markup is needed for recovery.

### Building a new blog template

A content manager is designing a new article page. They use the generator's HTML function to get the perfect `<nav>` structure and paste it directly into their CMS template, ensuring proper link semantics from day one.

### Creating documentation site breadcrumbs

A technical writer needs simple navigation guides for internal use. They ask the agent to generate a plain text breadcrumb, getting clean output like 'Home > Docs > API Reference' without any code formatting.

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# Patterns to Avoid

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## Generating only plain text paths

### X AVOID

Using simple text (e.g., Home > Blog > Post) in the footer or sidebar because it was fast to type, even though search engines can't read it.

### ✓ INSTEAD

Always use ``generate_json_ld_schema`` for anything meant to help Google understand the site structure. Use ``generate_html_breadcrumb`` when you need it visible on the page itself.

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## Copying markup from old sources

### X AVOID

Finding breadcrumbs online and pasting them into your site, which might use outdated HTML standards or incorrect link structures.

### ✓ INSTEAD

Let ``generate_html_breadcrumb`` build it fresh. It guarantees semantic HTML5 elements with proper relative links that match the current path structure.

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## Ignoring platform-specific requirements

### X AVOID

Building a schema for Google, but forgetting to add the corresponding visible navigation menu on the actual page.

### ✓ INSTEAD

Use both tools. Run ``generate_json_ld_schema`` for search engines and then use ``generate_html_breadcrumb`` to create the visual element users click.

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## The Right Fit

You should use this MCP if your main goal is making sure a URL path translates into structured, multi-format markup (HTML, JSON, plain text). It's perfect when you need compliance for both search engines and accessibility. Don't bother with this tool if all you need is to write a simple sentence that describes where the user came from; in that case, just use regular copy/paste or basic text fields. However, never rely on manual methods alone. If you only run `generate_text_breadcrumb`, you solve the visibility problem but ignore SEO structure entirely. Conversely, generating JSON-LD without also creating visible HTML markup leaves the site looking broken to the user. Use this when the path needs *all three* types of representation.

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## Breadcrumb Generator MCP for AI Agents: Solving Manual Web Markup Pain

Before having a dedicated tool like the Breadcrumb Generator, developers faced tedious manual work. Every time a page structure changed or new content went live, they had to remember which format was needed—the plain text version for simple display, the complex HTML tags for accessibility, and the specific JSON-LD vocabulary for search engines. This meant constant copy-pasting across different validators and CMS modules.

Now, you just give your AI agent the URL path. It instantly generates all three necessary formats: clean visible links via `generate_html_breadcrumb`, structured data for Google using `generate_json_ld_schema`, and simple text trails. You get perfectly matched code blocks in seconds.

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## Breadcrumb Generator MCP for AI Agents: Optimizing Site Navigation and SEO

The biggest time sink that disappears is the cycle of 'Build Markup -> Validate Schema -> Adjust HTML'. These three steps used to take an hour across different departments, requiring multiple handoffs between developers and SEO staff.

With this MCP, you get immediate confidence in your site's structure. The output isn't just code; it's a guarantee that the path is represented correctly for every single client—Google, screen readers, and human users alike.

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## 3 Tools for Generating Breadcrumb Navigation and SEO Markup

Instantly get the exact code you need—HTML, JSON-LD, or plain text—for structured breadcrumbs from any given URL path.

#	TOOL	DESCRIPTION
01	<code>generate_html_breadcrumb</code>	Creates a ready-to-use HTML snippet containing the full breadcrumb navigation markup.
02	<code>generate_json_ld_schema</code>	Outputs the necessary structured data in JSON-LD format for search engine visibility.
03	<code>generate_text_breadcrumb</code>	Provides a simple, clean text string representation of the path, useful for basic display.

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## See It in Action

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

**U** Generate JSON-LD schema for this product page: /electronics/laptops/ultrabook-x.



### BreadcrumbList Schema

```
`` json
{"@context": "https://schema.org", "@type": "BreadcrumbList", "itemListElement": [
  {"@type": "ListItem", "position": 1, "name": "Home", "item": "/"},
  {"@type": "ListItem", "position": 2, "name": "Electronics", "item": "/electronics"},
  {"@type": "ListItem", "position": 3, "name": "Laptops", "item": "/electronics/laptops"},
  {"@type": "ListItem", "position": 4, "name": "Ultrabook X", "item":
"/electronics/laptops/ultrabook-x"}
]}
```

This structured data tells search engines exactly how the page fits into your site's catalog.

**U** I need the HTML breadcrumb for my blog article path: /blog/travel/paris-guide. It needs to be fully accessible.



```
<nav aria-label="Breadcrumb"><ul class="breadcrumb"><li><a href="/">Home</a></li><li><a href="/blog">Blog</a></li><li><a href="/blog/travel">Travel</a></li><li>Paris Guide</li></ul></nav>
```

<p>This uses semantic HTML5, so it's perfect for modern web standards and screen readers. Just paste this entire block into your template.</p>

**U** What is the simple text breadcrumb format for a page under /services/finance/tax-writeoff?



Home > Services > Finance > Tax Writeoff

This plain text version works great when you need something quick and clean, like in an email newsletter or markdown documentation where full HTML isn't supported. It keeps the structure visible to the user instantly.

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# Frequently Asked Questions

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**01 How does the Breadcrumb Generator help with SEO?**

It helps by generating structured JSON-LD schema that search engines like Google recognize. This tells them exactly how your site is organized, which can improve your overall visibility in search results.

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**02 Is the markup generated by Breadcrumb Generator compatible with all CMS platforms?**

Yes, because it outputs standard HTML5 and widely accepted JSON-LD schema. You just need to paste the code block into the appropriate area of your Content Management System.

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**03 What is the difference between plain text and HTML breadcrumbs from Breadcrumb Generator?**

Plain text is simple and great for quick displays; however, HTML markup provides semantic structure, which is necessary for screen readers and full accessibility compliance.

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**04 Can I use this MCP to fix broken navigation on my website?**

Absolutely. If you find a page with incorrect or missing breadcrumbs, just provide the correct URL path, and the Breadcrumb Generator will give you the exact code needed to fix it.

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**05 Does using the Breadcrumb Generator improve user experience?**

Yes. By providing clear, predictable navigation paths (whether text or HTML), users never get lost. It makes navigating deep content much more intuitive for them.







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# Go Live in 60 Seconds

Get your connection token from [cloud.vinkius.com](https://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
 <b>Claude AI</b>	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
 <b>Cursor</b>	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
 <b>VS Code</b>	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add <code>"breadcrumb-generator": {   "url": "..." }</code>
 <b>Windsurf</b>	MCP Settings → <code>mcp_settings.json</code> → Add endpoint URL
 <b>ChatGPT</b>	Settings → Tools & plugins → Add MCP server → Paste endpoint
 <b>Gemini</b>	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

# Breadcrumb Generator 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](https://cloud.vinkius.com) →

[vinkius.com](https://vinkius.com) · [support@vinkius.com](mailto:support@vinkius.com)

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