MCP SERVER | NO CODE | CLOUD HOSTED

Number Base Converter MCP for AI Agents

Convert large integers and fractions between bases 2 to 36 with high precision.

Number Base Converter. This MCP handles high-precision conversions for integers and fractions between any bases from 2 to 36. It supports BigInt for massive numbers and includes a trace tool to show the actual math steps, making it a reliable choice for developers working with custom encodings or complex positional notation.

A+ Quality Score 100/100

base-conversion | bigint | precision | mathematics | encoding

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vinkius.com/mcp/number-base-converter

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.

Number Base Converter MCP

3 tools available
Cloud-hosted on Vinkius

You're often stuck with numbers that don't fit into standard calculator inputs. Maybe you're working with massive integers that require BigInt support or trying to map out a custom encoding system where the math gets messy. This MCP handles the heavy lifting of base conversion for you. Instead of hunting for online tools that cap out at certain digits, you can just tell your AI client to convert a value from base 10 to base 36, and it'll give you the exact result. It handles fractions too, so you won't lose precision on the decimal side of things. If you're trying to learn the logic behind the math, it can actually walk you through the division and multiplication steps. It's a solid way to keep your data accurate when moving between binary, hex, or custom positional notations. You'll find it's a reliable part of the Vinkius catalog for any dev work involving low-level data representation.

Core Capabilities

01 — Convert large integers

Turn massive numbers into any base from 2 to 36 without losing precision.

02 — Handle fractional numbers

Convert decimals between bases while maintaining your specific precision requirements.

03 — Generate math traces

Get a step-by-step breakdown of every division and multiplication in a conversion.

04 — Validate custom alphabets

Check if your custom symbol set actually works for a specific base size.

05 — Support high-precision math

Use BigInt logic to ensure accuracy for numbers that exceed standard limits.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/number-base-converter** — connect your AI agent in three steps.

01 Tell your AI client which number to convert and which bases to use.

02 The MCP processes the value using high-precision BigInt math.

03 You get the final converted value or a full step-by-step trace.

The bottom line is you get precise numeric conversions without worrying about overflow or rounding errors.

Built For

This is for developers building custom encodings, data scientists working with non-standard bases, and students learning number theory. It's for the person who needs to know why a specific bit shifted the way it did.

Backend Engineer

Converting large unique IDs between different storage formats or custom encoding schemes.

Cybersecurity Researcher

Decoding custom obfuscated strings or validating custom alphabets in security protocols.

Math Student

Visualizing the long division process of base conversion for homework or personal study.

What Changes When You Connect

01 No more rounding errors on big numbers because it uses BigInt logic for every conversion.

02 See the math clearly with get_conversion_trace so you can verify every step of the process.

03 Save time on custom encoding by using validate_alphabet_compatibility to check your symbols instantly.

04 Handle complex fractions without losing accuracy by setting specific precision levels.

05 Move between any base from 2 to 36 without hunting for specialized online calculators.

Real-World Applications

Custom Encoding Validation

A developer wants to know if a specific set of 10 symbols is valid for a base-11 system. They ask the agent to check the alphabet.

Educational Math Walkthroughs

A student asks for the step-by-step division needed to convert the number 13 into binary to understand the remainder logic.

BigInt Data Migration

An engineer needs to convert a massive 20-digit integer from decimal to hex for a legacy system and needs to ensure no digits are dropped.

Fractional Base Conversion

A researcher needs to convert a precise decimal value to a base-12 system while keeping exactly 8 decimal places of accuracy.

Patterns to Avoid

Using standard floats for huge numbers

✗ AVOID

Trying to convert a 50-digit integer and getting a rounded or scientific notation result.

✓ INSTEAD

Use convert_number which utilizes BigInt to maintain every digit of the original value.

Guessing alphabet validity

✗ AVOID

Manually checking if a symbol list has enough unique characters for a base-36 system.

✓ INSTEAD

Use validate_alphabet_compatibility to get an instant confirmation of your symbol set.

Accepting a black box result

✗ AVOID

Getting a converted number but not knowing how the AI reached that specific result.

✓ INSTEAD

Call get_conversion_trace to see the actual division and multiplication steps for the conversion.

The Right Fit

Use this if you need to handle numbers larger than what a standard 64-bit float can hold or if you need to see the actual math steps. It's the right choice for custom positional notation and high-precision fractional work. Don't use it if you just need a simple base-10 to base-16 converter for small numbers; a basic calculator is faster. Use this when accuracy and the why behind the math matter more than raw speed.

Number Base Converter for High-Precision Numeric Encoding

Manually converting large numbers between bases is a headache. You have to find a calculator that doesn't round your results, copy-paste massive strings, and hope the tool doesn't cap out at a certain number of digits. If you're working with custom alphabets, you're even more likely to run into errors where your symbol set doesn't match the base size.

This MCP changes that by letting your AI client handle the math directly. You can feed it a massive integer or a complex fraction, and it returns the exact converted value. It's built to handle the heavy lifting of BigInt math, so you don't have to worry about losing data or dealing with scientific notation.

Number Base Converter for Mathematical Trace Analysis

Instead of just getting a final answer, you can actually see the work. You can request a full breakdown of the conversion, showing every

You get a clear path from input to output. It turns a black box calculation into a transparent process you can verify in seconds.

single division and multiplication step. This is huge for debugging custom encodings or teaching someone the underlying logic of base systems.

Number Base Converter: 3 Tools for Precise Base Conversion

Convert large integers, handle fractional precision, and get step-by-step math traces for any base from 2 to 36.

#	TOOL	DESCRIPTION
01	`convert_number`	Converts a value from one base to another with high precision for fractions.
02	`get_conversion_trace`	Provides a step-by-step breakdown of the math used in a conversion.
03	`validate_alphabet_compatibility`	Checks if a custom set of symbols is valid for a target base.

See It in Action

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

U Convert the decimal number 1048576 to base 36.

The decimal number 1048576 in base 36 is: **2Y000**

BASE	VALUE
Decimal	1048576
Base 36	2Y000

U Show me the conversion steps for converting 25 to base 3.

Here is the step-by-step breakdown for converting **25** from base 10 to base 3:

1. **25 / 3** = 8, remainder **1**
2. **8 / 3** = 2, remainder **2**
3. **2 / 3** = 0, remainder **2**

Reading the remainders from bottom to top, the result is **221**.

U Is the alphabet 'ABC' valid for base 3?

Yes, the alphabet **'ABC'** is a valid sequence of 3 unique symbols for base 3. It contains exactly 3 unique characters, which matches the requirements for a base-3 system.

Frequently Asked Questions

01 **Can the Number Base Converter handle very large numbers?**

Yes, it uses BigInt logic to handle integers that are far too large for standard calculators or basic programming floats.

02 **Does the Number Base Converter support fractions?**

It does. You can convert fractional numbers between bases while specifying the precision you need to keep the results accurate.

03 **How do I see the math steps for a conversion?**

You can ask your AI client to provide a conversion trace. It will then show you every division and multiplication step used to reach the final result.

04 **What bases can the Number Base Converter handle?**

It supports any base from 2 all the way up to 36.

05 **Can I check my own custom alphabet with the Number Base Converter?**

Yes, you can use the validation tool to check if your custom symbol set is compatible with a specific base size.

06 **Will it round my numbers during conversion?**

It is designed for high precision. You can configure the precision for fractions to ensure the output matches your requirements exactly.

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 `"number-base-converter": { "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

Number Base Converter 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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