MCP SERVER | NO CODE | CLOUD HOSTED

BPM Calculator MCP for AI Agents

Precise Rhythmic Durations and Musical Tempo Classification

BPM Calculator converts beats per minute into precise musical data. It gives musicians instant breakdowns of rhythmic durations, note frequencies in Hertz, and formal tempo classifications like Adagio or Allegro.

A+ Quality Score 100/100

bpm | music-theory | metronome | rhythm | tempo

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vinkius.com/mcp/bpm-calculator

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.

BPM Calculator MCP

3 tools available
Cloud-hosted on Vinkius

Building a rhythm section or composing music means knowing your metrics inside and out. This MCP lets you take any BPM number and immediately understand the mathematical breakdown needed for performance. You'll get exact rhythms measured in milliseconds—not vague estimates. Want to know how long an eighth note lasts at 140 BPM? This tool calculates it instantly, along with its corresponding frequency in Hertz.

Beyond pure math, you can classify a tempo of any number into historical musical terms. Plus, the Vinkius catalog makes this easy; your agent connects once and gains access to dozens of specialized tools, making this rhythmic calculator one of many resources available when you need it most.

Core Capabilities

01 — Determine note durations and frequencies

Calculates the exact length in milliseconds and frequency in Hertz for every supported note value at a given tempo.

02 — Classify musical tempo terminology

Translates a raw BPM number into established, descriptive musical terms like Andante or Vivace.

03 — List available rhythmic patterns

Retrieves a complete registry of every note type and subdivision the calculator supports.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/bpm-calculator** — connect your AI agent in three steps.

01 Input the desired Beats Per Minute (BPM) number into your AI client.

02 The MCP processes this tempo against its internal musical database, calculating rhythmic durations for all note values and classifying the overall mood of the piece.

03 Your agent returns a structured breakdown listing specific note types, their millisecond length, and corresponding frequency in Hertz.

The bottom line is, you get an immediate, mathematically accurate musical blueprint from just a single BPM number.

Built For

This MCP serves composers, music theory students, and audio engineers who need precise rhythmic data. If you're tired of cross-referencing multiple online calculators to get consistent measurements for note lengths and tempi, this tool is what you need.

Composer

Uses the MCP to ensure all notes in a new piece maintain mathematically accurate durations and frequencies across different tempos.

Audio Engineer

Checks rhythmic data for syncing samples or setting up complex metronomes, ensuring perfect millisecond timing during production.

Music Theory Student

Translates numerical BPM assignments into formal musical terminology (like Allegro) and understands the mathematical relationship between notes.

What Changes When You Connect

01 Instead of guessing, you get exact millisecond durations for every note. The `calculate_all_durations` tool breaks down whole, half, quarter, eighth, sixteenth, and thirty-second notes with perfect accuracy.

02 Instantly translate numbers into language. Use the MCP to convert a raw BPM number into established musical terms like Andante or Vivace using `get_tempo_classification`.

03 Never worry about missing note types again. The `list_supported_subdivisions` tool gives you a definitive registry of every rhythmic pattern available for calculation.

04 Save time comparing different online calculators. This single MCP handles duration, frequency (Hz), and tempo classification all in one go.

05 Your agent processes the math so you don't have to. You just ask what durations or classifications you need, and it spits out a clean data set.

Real-World Applications

Determining rhythmic patterns for a new song

A composer needs to know the precise timing for complex sixteenth-note runs at 180 BPM. They ask their agent, and it uses `calculate_all_durations` to provide an immediate, detailed breakdown of millisecond timings, ensuring perfect sync.

Setting tempo labels for a piece

An audio engineer has recorded a track at 80 BPM but needs to label it for sheet music. They ask their agent to classify the tempo, and it uses `get_tempo_classification` to correctly identify it as Andante.

Checking all available note lengths

A student is learning composition theory and needs to know every type of note value supported by the system. They simply ask their agent to list subdivisions, and the tool provides a complete registry using `list_supported_subdivisions`.

Patterns to Avoid

Using general metronome apps

✗ AVOID

Relying on simple online metronomes or basic beat counters that only give you a single click-per-second count.

✓ INSTEAD

Use this MCP to get specific, multi-faceted data. For example, if you need the frequency and duration for both quarter notes and whole notes at 120 BPM, use `calculate_all_durations` instead of just counting beats.

Confusing tempo with rhythm

✗ AVOID

Assuming that a certain speed automatically corresponds to a specific musical mood or name.

✓ INSTEAD

Don't guess the classification. Use `get_tempo_classification` to let the tool accurately translate your raw BPM number into established terms like Allegro, which is far more reliable than manual lookup.

Ignoring note subdivisions

✗ AVOID

Thinking that 'notes' are all the same and only calculating based on quarter notes.

✓ INSTEAD

Always check `list_supported_subdivisions` first. This ensures your calculations cover every possible rhythmic pattern, from thirty-second to whole notes.

The Right Fit

Use this MCP when rhythm, timing, and musical terminology are critical parts of your workflow. For instance, if you're composing a piece that requires both precise millisecond timings (use `calculate_all_durations`) and proper historical labeling (use `get_tempo_classification`), this is the right tool. Don't use it if all you need is a basic click-track or simple counting; those require a different, simpler utility. If your primary goal is just checking if '80 BPM' is fast or slow, using `list_supported_subdivisions` is overkill, as that only lists note types, not tempo feelings.

BPM Calculator: Solving Rhythmic Measurement Pain Points

Manual rhythm calculation involves opening separate calculators for durations, frequencies, and tempo classifications. You copy a BPM number into one tool to get the duration, then open another tool to classify it, often losing sync or having to manually convert units between milliseconds and Hertz.

With this MCP, you feed your desired BPM once. The agent instantly executes all necessary calculations—it gives you the full note breakdown for every possible subdivision and provides the formal tempo classification in one clean response. You get a complete musical data sheet without opening five different tabs.

BPM Calculator: Mastering Musical Tempo Classification

Before this tool, assigning a proper musical label to a piece was guesswork. You might look up '80 BPM' and find conflicting results, or you might incorrectly assume that any slow tempo must be Adagio.

Now, simply ask for the classification. The MCP uses `get_tempo_classification` to provide an authoritative translation of your raw number into the accepted musical term, saving you time and giving your work professional credibility.

BPM Calculator: 3 Tools for Rhythmic Measurement

These tools allow you to calculate note rhythms, classify musical tempos, and list every supported subdivision needed for composition.

#	TOOL	DESCRIPTION
01	`get_tempo_classification`	Takes a number of beats per minute and returns its recognized descriptive musical term, such as 'Moderato' or 'Allegro'.
02	`list_supported_subdivisions`	Provides an exhaustive list of all note types that the calculator can process, including whole, half, quarter, and thirty-second notes.
03	`calculate_all_durations`	Calculates and returns a full breakdown of every supported note duration in both milliseconds and Hertz for a given BPM.

See It in Action

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

U What are the full durations and frequencies for 140 BPM?

Tempo: 140 BPM

NOTE VALUE	DURATION (MS)	FREQUENCY (HZ)
Whole Note	357 ms	2.8 Hz
Half Note	178 ms	1.4 Hz
Quarter Note	89 ms	0.7 Hz
Eighth Note	44 ms	0.35 Hz

U Can you classify a tempo of 62 BPM?

Tempo Classification

The tempo of 62 BPM falls under the **Lento** category, indicating a very slow and stately pace. This classification is ideal for reflective or dramatic passages.

U What kind of notes can I calculate durations for?

The system supports all standard rhythmic divisions:

- Whole Note
- Half Note
- Quarter Note
- Eighth Note
- Sixteenth Note
- Thirty-second Note

We also handle the dotted and triplet variations for these types.

Frequently Asked Questions

01 **How can I see the duration of a quarter note in milliseconds?**

Use the `calculate_all_durations` tool with your current BPM. It will return the duration in ms for all supported notes, including the quarter note.

02 **What does 'Adagio' mean in terms of BPM?**

You can use the `get_tempo_classification` tool to find the specific BPM range for Adagio or any other musical tempo marking.

03 **Does this calculator support triplet notes?**

Yes, the `calculate_all_durations` tool includes calculations for triplet versions of supported note values.

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 `"bpm-calculator": { "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

BPM Calculator 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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