MCP SERVER | NO CODE | CLOUD HOSTED

Encounter Difficulty Calculator MCP for AI Agents

Determine combat difficulty tiers and TPK risk for any tabletop RPG setting

Encounter Difficulty Calculator analyzes combat intensity for D&D 5e or PF2e encounters. It calculates adjusted XP, determines if a fight is Easy, Medium, Hard, or Deadly, and estimates Total Party Kill (TPK) risk. Use this MCP to balance your game sessions quickly, ensuring the action feels right without spending hours on math.

A+ Quality Score 100/100

dnd | pf2e | ttrpg | encounter-builder | combat-difficulty | game-master

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vinkius.com/mcp/encounter-difficulty-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.

Encounter Difficulty Calculator MCP

3 tools available
Cloud-hosted on Vinkius

Running an RPG session shouldn't mean agonizing over combat math before the dice even roll. This MCP takes care of that heavy lifting. Instead of guessing if a group is facing too much or too little challenge, you input your monsters' experience points and the party details. The tool then immediately classifies the encounter intensity—whether it lands in the 'Medium' zone or hits 'Deadly.' Furthermore, it provides accurate multipliers based on how many creatures are involved. You can also check the XP budget boundaries for any given level to set clear goals for your game. When you connect this MCP via Vinkius, your agent handles all the calculations, giving you instant feedback and specific recommendations on adjusting monster counts or values so your next session is perfectly balanced.

Core Capabilities

01 — Analyze combat intensity

Runs a complete analysis of an encounter to classify its difficulty tier and estimate Total Party Kill risk.

02 — Determine XP budget boundaries

Retrieves the specific experience point range for Easy, Medium, Hard, and Deadly encounters at any given party level.

03 — Calculate encounter scaling factors

Looks up the correct multiplier used to adjust a combat encounter's XP value based on creature count.

One Click on Vinkius — From Prompt to Execution

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

01 First, tell your AI client what you are running: input the total experience points of all monsters and specify the party's level and size.

02 Next, if you need to know what a specific group size means for scaling, request the encounter multiplier. Alternatively, ask for the XP thresholds based on the party's current level.

03 Finally, the MCP delivers a comprehensive report detailing the difficulty tier (e.g., Hard), the Adjusted XP value, and recommendations to hit your target challenge.

The bottom line is that you stop doing math and start running the game.

Built For

This MCP is built for Game Masters (GMs), TTRPG organizers, and creative writers who are tired of spending hours balancing combat encounters. If your prep work feels more like advanced algebra than storytelling, this tool saves your sanity.

Game Master

A GM uses the MCP to vet every encounter before a session, ensuring that the difficulty hits the 'Hard' or 'Deadly' mark when they want it, and doesn't accidentally fall into 'Easy'.

TTRPG Organizer

An organizer uses this tool to plan multi-session arcs, checking how the cumulative XP from several encounters will affect the party's overall level progression.

Story Writer/Author

A writer uses the MCP to set scene difficulty for their own tabletop campaigns, ensuring that conflicts feel appropriately scaled to the characters' current power level.

What Changes When You Connect

01 Instantly classify encounter difficulty. Instead of guessing, you know exactly if a fight is Easy, Medium, Hard, or Deadly just by running the analysis.

02 Stop worrying about Total Party Kill (TPK) risk. The tool estimates TPK chances so you can adjust monsters preemptively and keep the session going.

03 Set clear goals for your game with `get_party_thresholds`. You'll know precisely what XP range constitutes a 'Hard' encounter for a party of five at level 10.

04 Accurately scale combat math. Use `lookup_encounter_multiplier` to adjust the total monster XP when you have an unusually large or small group fighting.

05 Save prep time. You eliminate manual math and cross-referencing rulebooks, allowing you to spend your time on world-building instead of arithmetic.

Real-World Applications

The party is bored in the middle of a session

A GM realizes the current dungeon crawl feels too easy. They ask their agent to analyze the remaining monsters and find out how many more low-level creatures they need to add to hit a 'Medium' difficulty tier, preventing player boredom.

The villain fight seems too deadly

A writer plans a climactic boss battle but worries the monster XP is overkill. They run `analyze_encounter` and receive recommendations on reducing the total creature count or lowering specific enemy values to bring the risk down from 'Deadly' to manageable.

Planning for level progression

An organizer wants to ensure their campaign leads to a balanced climax. They use `get_party_thresholds` to map out the required XP increases over several months, making sure the final boss fight will be appropriately challenging.

Scaling for unusual group sizes

A GM has an encounter with a large swarm of minor enemies. Instead of guessing the scaling factor, they use `lookup_encounter_multiplier` to get the precise multiplier needed for 15 creatures, making the math accurate.

Patterns to Avoid

Using XP totals without context

✗ AVOID

The GM just adds up all monster CRs and thinks they know the difficulty. They get a single number that means nothing for party balance.

✓ INSTEAD

Always run `analyze_encounter` with your total XP, party level, and size combined. This gives you the critical 'Adjusted XP' value and tells you if it’s safe or deadly.

Ignoring encounter multipliers

✗ AVOID

The GM sees 8 monsters and assumes a simple multiplier of 1.5, leading to an incorrect difficulty rating.

✓ INSTEAD

Check the precise scaling factor first using `lookup_encounter_multiplier`. This ensures you’re basing your difficulty calculation on the correct mathematical foundation.

Setting goals without boundaries

✗ AVOID

The GM just says, 'We need a Hard fight.' But they don't know if that means 3000 XP or 6000 XP for this specific level.

✓ INSTEAD

Use `get_party_thresholds` to set concrete targets. It provides the exact range of XP required for any difficulty tier at your party’s current level.

The Right Fit

Use this MCP if you need precise, mathematical balancing for TTRPG combat encounters. If you are calculating Adjusted XP, TPK risk, or specific difficulty boundaries (Easy to Deadly), this tool is essential. Don't use it if you simply want creative ideas for monster names or lore—that’s a world-building tool. You also shouldn't rely on it for rules interpretation; the MCP only handles math based on provided stats. If your primary need is determining how many players are involved, and not the difficulty of the fight itself, you might be better off using a simple character roster management system instead.

Encounter Difficulty Calculator: Balancing TTRPG Combat Math

Today, preparing for an RPG session involves tedious manual calculations. You're adding up monster XP, trying to cross-reference group size multipliers from the rulebook, and then guessing if that final number is 'just right.' You spend more time on arithmetic than you do actually building a story.

With this MCP, you simply provide your monster stats and party details. The system runs `analyze_encounter` and gives you an immediate report: the difficulty tier, the Adjusted XP value, and TPK risk—all in one place. You get actionable data without touching a calculator.

Encounter Difficulty Calculator: Setting Precise XP Boundaries for Campaigns

Manual campaign planning often means forgetting what the appropriate challenge level is for future sessions. Are you aiming for an 'Hard' fight in Month 3, but your current party progress only supports a 'Medium' encounter? Tracking these boundaries feels like keeping separate spreadsheets.

By using `get_party_thresholds`, you establish concrete XP goals. You know exactly what the math requires—for example, that a level 10 group needs between 3600 and 4800 XP for their climactic battle. The planning becomes predictable.

Encounter Difficulty Calculator: 3 Tools for D&D Combat Balancing

These tools let your agent analyze combat encounters by calculating required XP thresholds, determining scaling multipliers, and running full TPK risk assessments.

#	TOOL	DESCRIPTION
01	`analyze_encounter`	Performs a complete analysis of an encounter, giving you difficulty tiers and TPK risk estimates.
02	`get_party_thresholds`	Retrieves the specific XP boundaries needed for different difficulty levels based on party size and level.
03	`lookup_encounter_multiplier`	Provides the exact scaling factor used to adjust combat experience points based solely on the number of creatures present.

See It in Action

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

U My party of three is at level 7. I want the combat to feel like a serious challenge, but not deadly. What should the total monster XP be?

Level 7 Party (3 Players)

DIFFICULTY	MAX ADJUSTED XP RANGE
Easy	Up to 1000 XP
Medium	Up to 2500 XP
Hard	**Up to 4000 XP**
Deadly	Above 4000 XP

To hit 'Hard', aim for a total Adjusted XP between 3000 and 4000. This range gives you room to adjust the fight up or down.

U I have one CR 5 monster (1800 XP) and three CR 2 monsters (600 XP each). The party is level 5, size 4.

Encounter Analysis Report

- **Total Base XP:** 3600 XP
- **Party Level / Size:** Lvl 5 / Group of 4
- **Calculated Multiplier:** 1.8 (for a group of 4)
- **Adjusted XP:** 6480 XP
- **Difficulty Tier:** Deadly

TPK Risk: *High.* Recommendation: Reduce the number of CR 2 monsters or swap one for lower-level threats.*

U What is the multiplier if I have a large group, say eight creatures fighting my party?

Encounter Multiplier Lookup

The scaling factor applied to combat encounters increases with creature count. Here are some common multipliers:

- 2-3 Creatures: 1.5x
- 4-6 Creatures: 2.0x
- 7-9 Creatures: 2.5x
- **8 Creatures: 3.0x**

Using the multiplier helps you keep your math consistent, regardless of how many monsters show up.

Frequently Asked Questions

01 **How does the Encounter Difficulty Calculator work for D&D 5e encounters?**

The system analyzes your monster XP and party level to classify the fight as Easy, Medium, Hard, or Deadly. It provides an Adjusted XP total, which is the critical number you need to know if the combat is balanced.

02 **Can I use this MCP to figure out how many monsters are needed for a hard encounter?**

Yes. You can use the tool's boundaries to see exactly what range of XP points your party needs to face a 'Hard' challenge at their current level, helping you plan monster counts.

03 **Does Encounter Difficulty Calculator help me with TPK risk?**

Absolutely. The MCP estimates the Total Party Kill (TPK) risk based on your inputs. This gives you a heads-up if your encounter is too lethal before you even roll initiative.

04 **Is this tool just for basic XP counting, or does it handle multipliers?**

It handles complex math. The MCP accounts for group size and provides specific scaling factors to adjust the total monster XP accurately, which is key to proper difficulty balancing.

05 **What if my party level changes mid-campaign? Can I still use Encounter Difficulty Calculator?**

Yes. You can always run a new analysis with updated party levels and sizes. The MCP recalculates the XP thresholds instantly, keeping your campaign balanced as the story progresses.

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 `"encounter-difficulty-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

Encounter Difficulty 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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