MCP SERVER | NO CODE | CLOUD HOSTED

Storage Bitrate Balancer MCP for AI Agents

Achieve perfect file sizes and bitrates for all video platforms

The Storage Bitrate Balancer calculates maximum allowed video bitrates and predicts final file sizes, all while factoring in overhead safety margins. It ensures your media assets meet strict platform requirements—like YouTube or Instagram limits—before you even start encoding.

A+ Quality Score 100/100

bitrate | video | encoding | storage | optimization

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vinkius.com/mcp/storage-bitrate-balancer

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.

Storage Bitrate Balancer MCP

3 tools available
Cloud-hosted on Vinkius

Creating video content for multiple platforms means constant math: What bitrate works for Twitter? How big can it be for Vimeo? These calculations are complex because they have to account for audio tracks, container overhead, and the specific rules of every single hosting service. This MCP lets your AI client perform these precise encoding calculations on demand.

You never have to guess if your final video file will exceed a platform's limit. You can use this tool to determine the absolute highest bitrate you can afford for a given size cap, or predict exactly how large your finished file will be based on your desired quality. This accuracy saves massive amounts of time and prevents frustrating upload failures. It's an essential utility connector that integrates into any workflow via Vinkius, giving your AI client access to professional-grade media encoding math right where you need it.

Core Capabilities

01 — Calculate maximum bitrate limits

Find the highest possible average video bitrate without exceeding a specific total file size limit.

02 — Predict final file size

Get an accurate estimate of how big your finished video will be, including all necessary overhead data.

03 — Check platform compliance

Verify if a planned video configuration stays within the known constraints of major platforms, automatically applying a safety margin.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/storage-bitrate-balancer** — connect your AI agent in three steps.

01 You provide your target file size limit and desired video parameters (like length or quality) to your AI client.

02 The MCP runs the necessary calculations, factoring in mandatory overhead and safety margins required by streaming platforms.

03 Your agent receives a precise output: either the maximum allowed bitrate, an estimated total footprint, or a definitive pass/fail compliance status.

The bottom line is that it takes complex media math out of your hands, giving you guaranteed file specs for any platform.

Built For

Anyone who uploads video content regularly faces this pain: uploading a piece only to find out the bitrate was too high or the size exceeded limits. This MCP is critical for digital asset managers, video editors, and marketing teams who rely on consistent, compliant media output.

Video Editor

Determines the optimal encoding settings for a client's final cut to ensure it meets specific platform file size requirements.

Digital Asset Manager (DAM)

Calculates and verifies asset specifications across dozens of potential distribution channels, maintaining technical compliance globally.

Content Marketing Specialist

Pre-checks video content against social media platform rules before launch, preventing failed uploads or quality downgrades.

What Changes When You Connect

01 Avoid failed uploads entirely. By using `verify_compliance`, you guarantee your video specs pass platform limits like YouTube's, saving time when deadlines are tight.

02 Stop guessing your encoding settings. Need to know the absolute maximum quality? Use `calculate_bitrate_ceiling` to find the highest bitrate that fits within a strict file size budget.

03 Gain total predictability over your content library. `estimate_total_footprint` gives you a solid number for final file size, letting you plan storage and bandwidth accurately.

04 Account for overhead automatically. All calculations inherently include a mandatory 10% safety margin for audio and container data, so you don't have to manually calculate that extra buffer.

05 Maintain quality while respecting limits. You can scale back your bitrate just enough to pass compliance checks without sacrificing visible video quality.

Real-World Applications

Preparing a campaign for multiple social platforms

A marketing manager needs one video asset to work on Instagram, LinkedIn, and TikTok. They ask their agent to use `verify_compliance` against all three platform rules. The MCP immediately reports the correct bitrate ranges needed for each channel, so they only have to render three optimized versions instead of guessing.

Optimizing a long-form documentary video

A filmmaker has a massive raw file and must deliver an encoded version under 5GB. They use `calculate_bitrate_ceiling` to find the absolute maximum bitrate they can afford over the run time, ensuring the final master quality is maintained while staying within budget.

Testing pre-release video content

Before sharing a preview with a client, a producer wants to know if their chosen 8Mbps bitrate for a 120-second clip will pass the Vimeo limit. They run `verify_compliance`, and the MCP confirms it's compliant, giving them confidence before the final render.

Managing video content on tight bandwidth

A small business needs to upload dozens of short clips daily with strict storage limits. They use `estimate_total_footprint` first to get a projected size, then adjust their bitrate until the prediction fits safely within their allocated cloud space.

Patterns to Avoid

Ignoring platform overhead

✗ AVOID

Only calculating video data based on desired quality and length. This often leads to uploads failing because it forgets the extra bytes for audio tracks or container formatting.

✓ INSTEAD

Always use `estimate_total_footprint`. This tool automatically includes the mandatory 10% safety margin, ensuring your calculation accounts for all necessary overhead.

Calculating only one bitrate

✗ AVOID

Picking a single bitrate and hoping it works everywhere. What looks good on YouTube might be too large or too small for Instagram.

✓ INSTEAD

Run `verify_compliance` against multiple platforms simultaneously. This ensures your final video configuration meets the specific rules of every intended distribution channel.

Using a static, generic bitrate

✗ AVOID

Setting a fixed 5 Mbps bitrate for all content regardless of length or target platform. This wastes bandwidth on short clips and fails uploads on long ones.

✓ INSTEAD

Start by using `calculate_bitrate_ceiling` with your specific file size limit to determine the mathematically optimal, highest permissible average bitrate.

The Right Fit

Use this MCP if your process involves converting media files for distribution across multiple channels. If you frequently encounter upload errors because of file size limits or complex encoding math, this is your tool. You'll use `calculate_bitrate_ceiling` when you have a hard byte limit and need to know the maximum quality

bitrate. Use `estimate_total_footprint` when you're planning storage space and need an accurate pre-render number. Finally, run `verify_compliance` anytime you are unsure if your current settings meet the rules of platforms like Instagram or Vimeo. Don't use this if you just need to trim a video; it's purely for encoding calculations. If all you need is simple trimming or basic format conversion without checking file limits, a simpler utility will suffice.

Storage Bitrate Balancer MCP: Mastering Video Encoding Math

Today, most video professionals manually juggle spreadsheets filled with complex formulas. They have to cross-reference platform guidelines—YouTube's rules are different from Vimeo's—and constantly calculate how audio overhead and container data will impact the final file size. This process is tedious; it involves endless copy-pasting of specifications just to find out if a render will fail.

With this MCP, that manual spreadsheet work vanishes. You feed your desired specs into your agent, and it handles the entire mathematical burden. It doesn't just give you an estimate; it provides tested, compliant numbers that guarantee your video delivers exactly as intended.

Storage Bitrate Balancer MCP: Ensuring Cross-Platform Video Compliance

The biggest time sink is the iterative testing. You render a clip, upload it to a test account, get an error message saying 'file too large,' and then you start over with new settings. This cycle of rendering, checking, failing, and re-rendering kills productivity.

Now, your agent runs `verify_compliance` before the first click. It checks against known standards for multiple platforms at once. You get a pass/fail report immediately; no guesswork means zero failed uploads.

3 Video Utility Tools for Media Encoding Compliance

Use these tools to calculate optimal bitrates, predict file sizes, and verify media assets against multiple platform standards before publishing.

#	TOOL	DESCRIPTION
01	`calculate_bitrate_ceiling`	Calculates the maximum average bitrate you can use for a video without going over a specific byte limit.
02	`estimate_total_footprint`	Predicts the total expected size of the final video file, including all necessary overhead data.
03	`verify_compliance`	Checks whether your specific video configuration will stay within a platform's established size constraints.

See It in Action

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

U I need to post a 90-second video, and the max size I can use is 35MB. What's the highest bitrate I should target?

Video Bitrate Calculation Report

Based on your constraints, here are the specs:

- **Target Max Size:** 35 MB
- **Duration:** 90 seconds
- **Maximum Allowed Average Bitrate:** 27.4 Mbps (This is the highest rate you can use.)

Please note: This calculation includes a mandatory safety buffer for audio and container data.

U If I encode at 8Mbps for a 15-minute video, how big will the file be? Include overhead.

Estimated File Footprint

PARAMETER	VALUE
Bitrate:	8 Mbps
Duration:	15 minutes (900 sec)
Total Estimated Size:	~1,270 MB

This estimate includes the necessary safety margin for successful encoding and playback.

U Will a 6Mbps video of 180 seconds work on Instagram's current size rules?

Compliance Check: Instagram Profile

- ✅ **Status:** Compliant
- **Estimated Footprint:** ~95 MB
- **Platform Limit:** 120 MB
- **Buffer Remaining:** 25 MB (Plenty of headroom!)

The configuration passes. You can proceed with this bitrate.

Frequently Asked Questions

01 **How does the Storage Bitrate Balancer help me avoid failed video uploads?**

It ensures your file meets platform rules before you even upload it. By running a compliance check, it verifies that your bitrate and size are within the accepted limits for YouTube or other sites.

02 **What is the 'safety margin' when I use the Storage Bitrate Balancer?**

The safety margin accounts for hidden data like audio tracks and container overhead. It guarantees that even after all necessary additions, your video will stay under the platform's strict size limit.

03 **Can this MCP tell me what bitrate I should use for different social media platforms?**

Yes. You can run compliance checks across several major channels at once. It tells you exactly which bitrates are recommended to keep your content compliant everywhere, saving you time.

04 **If I know my file size limit, how do I find the maximum bitrate I can use?**

You simply input the file size limit into the tool. It then runs a calculation and tells you the highest average bitrate your video can use without exceeding that hard cap.

05 **Is this better than just guessing my video's final size?**

Definitely. Guessing is risky. This MCP gives you highly accurate, mathematically derived predictions of the total file footprint, letting you plan storage and bandwidth with certainty.

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 `"storage-bitrate-balancer": { "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

Storage Bitrate Balancer 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

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Platform	Vinkius Cloud for AI Agents
Endpoint	`https://edge.vinkius.com/{token}/mcp`

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