MCP SERVER | NO CODE | CLOUD HOSTED

Stretch Factor Calculator MCP for AI Agents

Calculating Pixel Distortion and Aspect Ratio Matching for Digital Assets

The Stretch Factor Calculator MCP handles precise pixel math for digital content scaling. It tells you exactly how much a source image will stretch or distort when moving from one resolution or aspect ratio to another display size.

A+ Quality Score 100/100

scaling | aspect-ratio | pixel-density | resolution | distortion

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vinkius.com/mcp/stretch-factor-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.

Stretch Factor Calculator MCP

3 tools available
Cloud-hosted on Vinkius

Need to know if your graphic looks weird on an iPad versus a desktop monitor? This MCP provides the exact mathematical analysis you need for digital assets. You can pinpoint pixel distortion, calculate accurate stretching multipliers, and determine precisely how many physical pixels a single source pixel covers.

For example, instead of just guessing that 1920x1080 will fit fine on a massive 4K display, your AI client uses this MCP to tell you the exact stretch factor. This capability means developers and designers can build assets knowing they'll look right, no matter the device. It’s much better than relying on general guidelines; it gives hard math. Because Vinkius hosts thousands of specialized connectors, connecting your preferred AI client here gives you access to this calculator along with 4,000+ other tools for every niche you encounter.

Core Capabilities

01 — Calculate stretch factors

Determines the horizontal and vertical multipliers that will apply when scaling a source resolution.

02 — Analyze aspect ratio match

Checks if two given dimensions share an identical aspect ratio and calculates any resulting distortion ratio.

03 — Measure pixel footprint

Calculates the physical display area, in pixels, that a single source image pixel will occupy.

One Click on Vinkius — From Prompt to Execution

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

01 You feed the MCP two sets of dimensions: the original (source) resolution and the target (display) resolution.

02 The system processes these numbers, performing multiple mathematical checks to identify stretch factors, aspect ratio mismatches, and physical pixel density.

03 It returns specific multipliers and ratios. You know if your content will distort or scale perfectly.

The bottom line is that you get concrete mathematical proof of how your pixels will behave when resizing assets across different screens.

Built For

This MCP is essential for front-end developers, graphic designers, and media engineers. If your job involves making sure visuals look consistent whether they're viewed on a mobile phone, tablet, or high-res desktop monitor, you need this tool.

Front-End Developer

Uses it to ensure that layout components and background images scale mathematically correctly across different browser viewport sizes.

Graphic Designer

Checks if artwork intended for multiple platforms (social media, web banners) maintains its correct aspect ratio without visible distortion.

Media Engineer

Calculates the necessary pixel density adjustments when preparing video frames or source images for various output resolutions.

What Changes When You Connect

01 Stop guessing about asset scaling. Using `compute_stretch_factors` gives you the exact multipliers needed to map a source resolution onto any target screen size.

02 Avoid visual errors by using `analyze_aspect_match`. This tool immediately tells you if your intended ratio differs from the display, giving you a distortion ratio.

03 Know exactly what pixels are doing. The `calculate_pixel_footprint` function lets you know how many physical display pixels each source pixel occupies at any given scale.

04 Save hours of manual testing. Instead of building and checking assets for dozens of device sizes, your agent runs the math instantly.

05 Build reliable web interfaces. You can confirm that components will look right regardless of whether they're viewed on a retina display or a standard monitor.

Real-World Applications

A website banner looks warped when moved from desktop to mobile views.

You ask your agent: 'What are the stretch factors for 1920×1080 source on a 360×640 screen?' The agent runs `compute_stretch_factors` and replies with precise multipliers, showing exactly how much the banner will shrink horizontally versus vertically. You can then adjust your design to fit those calculated ratios.

I need to confirm if my low-resolution image is going to look blocky on a high-DPI display.

You run the calculation for `calculate_pixel_footprint` (e.g., scaling 720p to 1080p). The agent reports that one source pixel covers 1.5×1.5 display pixels, immediately alerting you that your image density is low and needs upscaling.

I'm designing a piece of art that needs to work in multiple formats (e.g., 16:9 and 4:3).

You use `analyze_aspect_match` to compare the two ratios. The agent confirms they don't match and provides the distortion ratio (like 1.406), letting you know precisely how much skewing will occur, so you can preemptively adjust your source art.

Patterns to Avoid

Just resizing the asset in Photoshop

✗ AVOID

A designer uses a standard 'resize' function without checking the underlying math. The resulting image looks slightly squashed or stretched, but they assume it's fine because the dimensions match.

✓ INSTEAD

Don't rely on visual tools alone. Always use `analyze_aspect_match` first to confirm if the ratios are truly equivalent. Then, use `calculate_pixel_footprint` to verify the actual pixel density before finalizing the asset.

Hardcoding dimensions for responsiveness

✗ AVOID

A developer writes CSS that assumes a simple 2x or 3x scaling factor will work across all devices. When tested on an odd screen size, the component breaks unexpectedly.

✓ INSTEAD

Use `compute_stretch_factors` to get the precise multiplier (e.g., 1.406) for any given source/target pair. This ensures your code scales based on actual math, not assumptions.

Ignoring aspect ratio differences entirely

✗ AVOID

A media team prepares a video frame assuming it will display equally well in both portrait and landscape modes without checking the ratios.

✓ INSTEAD

Run `analyze_aspect_match` on all required dimensions. If the distortion ratio is anything other than 1.0, you know your content needs specific cropping or padding to look right.

The Right Fit

Use this MCP if your problem is fundamentally about mathematics: 'How does resolution X map *mathematically* onto resolution Y?' You need it when visual consistency across multiple device sizes (e.g., web, print, video) cannot be guaranteed by simple resizing or guesswork.

Don't use this if you just want a generic guideline for best practices; those are general standards. If your issue is purely about layout flow and spacing between elements, you need a different type of content management tool. However, if the core problem remains 'The visual asset itself is going to stretch or distort,' then calculating the factors via `compute_stretch_factors` or checking ratios with `analyze_aspect_match` is exactly what you're doing.

Stretch Factor Calculator MCP for AI Agents: Solving Image Distortion on Web Pages

Manually scaling assets across a website is tedious. You check the desktop version, then the tablet view, and finally the mobile view. For every single asset—banners, background images, hero shots—you have to constantly ask yourself: 'Is this going to stretch? Will it look squashed?' It’s a frustrating loop of checking dimensions and guessing if your visual math is sound.

With this MCP, you eliminate guesswork entirely. You just give the agent the original size and the target screen size. The tool runs `compute_stretch_factors` instantly and spits out the precise multipliers (like 1.5x or 2.0x). You get hard, verifiable math for your design specs, not educated guesses.

Stretch Factor Calculator MCP for AI Agents: Maintaining Pixel Density Across Devices

When moving assets between devices with wildly different pixel densities (say, from a standard monitor to a high-DPI retina screen), you spend

Now, using this MCP, running `calculate_pixel_footprint` gives you that answer immediately. It tells you exactly how many display

time calculating if your source pixels will look crisp. You're trying to figure out the actual coverage area of one small piece of artwork across multiple physical screens.

pixels each original pixel covers—whether it’s 1x1 or a much larger footprint. You know your density problem before the asset ever goes live.

Stretch Factor Calculator: 3 Tools for Aspect Ratio Analysis and Pixel Scaling

These tools allow you to mathematically compute stretch factors, check aspect ratio matches, and determine the precise physical footprint of any source pixel.

#	TOOL	DESCRIPTION
01	`analyze_aspect_match`	Determines if two aspect ratios match and calculates any resulting distortion ratio between them.
02	`calculate_pixel_footprint`	Calculates the physical area, in display pixels, that one single source pixel will cover at a given scale.
03	`compute_stretch_factors`	Calculates the precise horizontal and vertical scaling multipliers needed to map a smaller resolution onto a larger one.

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 stretch factors for an old-school 4:3 aspect ratio source on a modern 21:9 display?

Aspect Ratio Analysis

- Source Ratio: 1.33:
- Target Ratio: 2.33:
- Mismatch Detected.

We recommend running `compute_stretch_factors` to see the actual multipliers, but know that significant cropping or padding will be necessary because of this large mismatch.

U I need to check if a 1024×768 image is being distorted when scaled up to a 1920×1080 screen.

Distortion Check Results

The aspect ratios do not match.
- Source Ratio: ~1.33:
- Target Ratio: 1.78:
- Calculated Distortion Ratio: **1.34x**.

You'll see a noticeable stretch or squeeze on the narrower axis unless you crop it.

U How many display pixels does one source pixel cover when scaling from 720p to 1080p?

Pixel Footprint Calculation

Scaling from 720p (HD) to 1080p (Full HD):

- Horizontal Multiplier: 1.5x
- Vertical Multiplier: 1.5x
- Total Pixel Footprint per Source Pixel: **2.25 square display pixels**.

You know you need a higher density source image to look crisp enough.

Frequently Asked Questions

01 **How does the Stretch Factor Calculator MCP help me with website design?**

It lets you mathematically prove how your images will scale across different devices. Instead of guessing, you use it to run `compute_stretch_factors` and get precise multipliers for any screen combination, ensuring visual consistency.

02 **Can this MCP tell me if my artwork is going to look stretched?**

Yes. You can use the 'analyze aspect match' tool within the Stretch Factor Calculator MCP. It checks ratios and gives you a specific distortion ratio, telling you exactly how much your art will be skewed.

03 **Do I need this if my images look fine when I resize them in Photoshop?**

Maybe, but it's better to use the MCP. Photoshops visual resizing doesn't account for true pixel density changes across different display types. The MCP provides verifiable math you can trust.

04 **What kind of ratios does this calculator handle (e.g., 16:9, 4:3)?**

It handles any mathematical ratio you input. You just feed it the dimensions—whether they're standard formats or custom ones—and it gives you the precise math needed to compare them.

05 **Is the Stretch Factor Calculator MCP only for web development?**

No, it applies anywhere visual scaling matters. You can use it for media engineering, graphic design assets, or anything that moves from one physical resolution to another.

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 `"stretch-factor-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

Stretch Factor 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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