PDF Reporter MCP

Technical Overview & Demo Report

February 17, 2026

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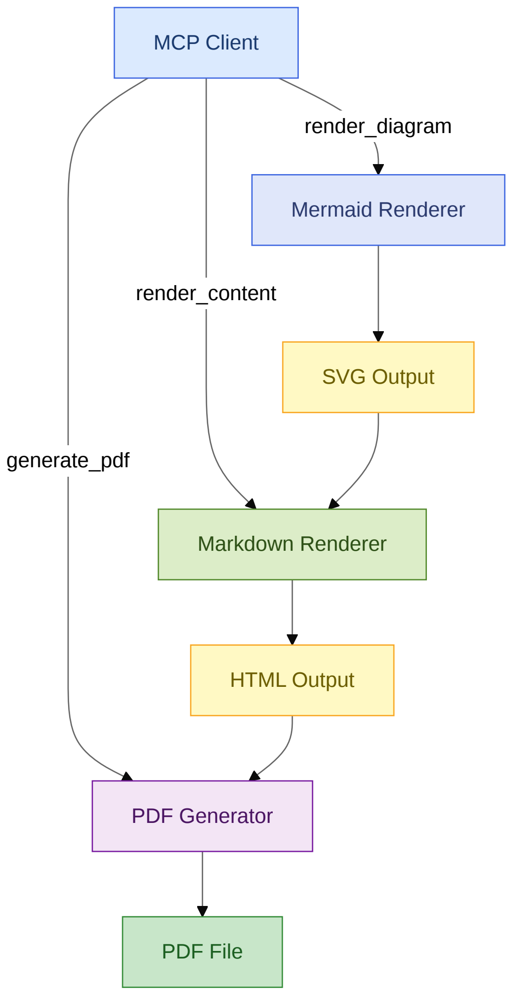
PDF Reporter MCP — Overview

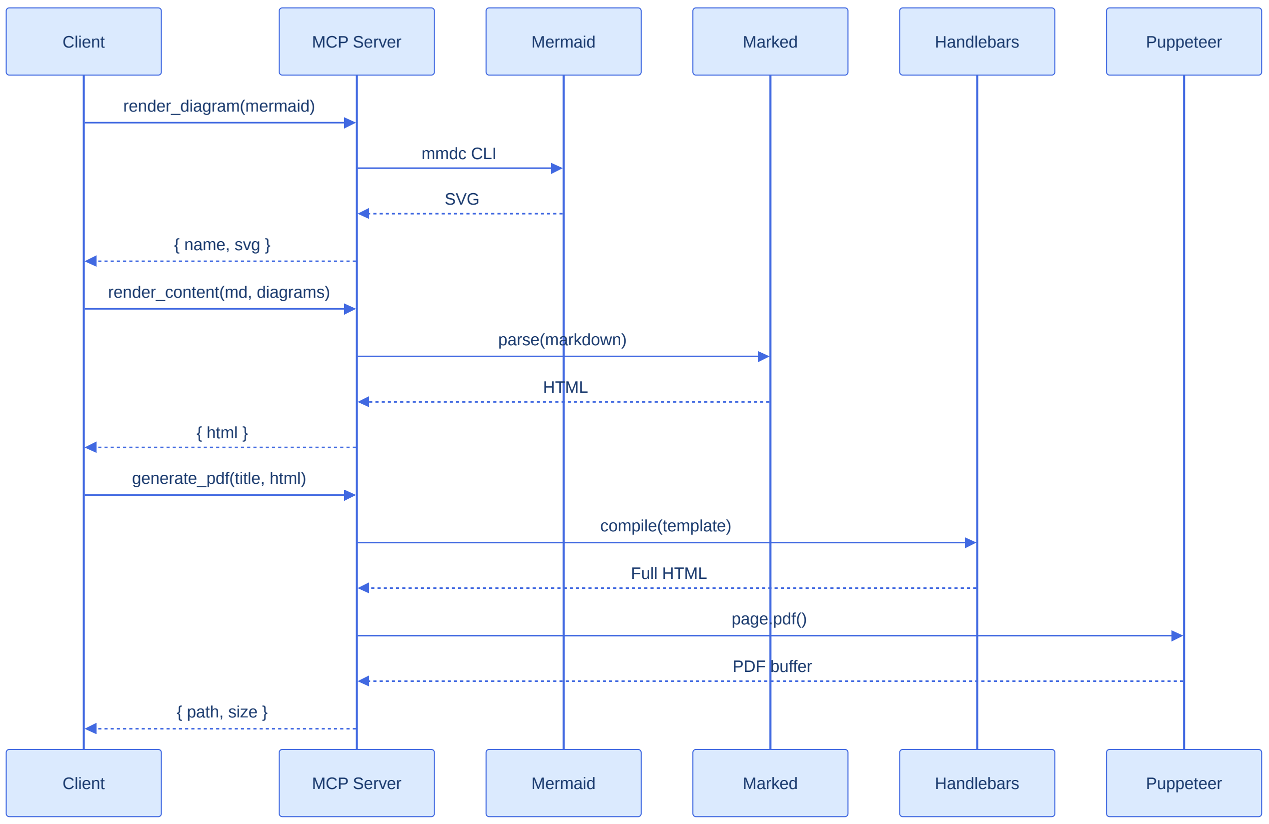
Architecture

The system is built as a modular MCP server with three main tools that can be composed together:



How It Works

The pipeline follows a clear sequence of operations:



Key Features

Callout Blocks Showcase

The system supports 9 types of callout blocks for rich document formatting:

💡 **Creative Insight**

Every great report starts with a clear structure. Use **headings** for navigation, **callouts** for emphasis, and **diagrams** for visualization. The combination creates documents that are both informative and visually engaging.

🤖 **Automation Opportunity**

This entire report was generated programmatically through MCP tools. The workflow can be integrated into any CI/CD pipeline:

1. Collect data from APIs
2. Render diagrams from metrics
3. Generate PDF automatically
4. Distribute via email or Slack

⚠️ Browser Dependency

Puppeteer requires Chrome/Chromium to be installed. In Docker, the Dockerfile handles this automatically. Locally, Puppeteer downloads Chrome on `npm install`.

✅ All Tests Passing

The project achieves **77 tests** across 7 test suites with 100% pass rate. All tests run fully offline using mocked dependencies — no external services required.

ℹ️ Architecture Decision

The MCP server exposes three granular tools instead of one monolithic function. This allows AI assistants to build reports **incrementally** — rendering diagrams first, then composing content, and finally generating the PDF.

🔴 Security Consideration

User-provided content is rendered through Handlebars with HTML escaping enabled by default. However, the `content` field accepts raw HTML — always sanitize untrusted input before passing it to `generate_pdf`.

💰 Return on Investment

A single MCP server replaces custom PDF generation code in every project. **One deployment** serves unlimited clients — reducing development time from days to minutes per new report type.

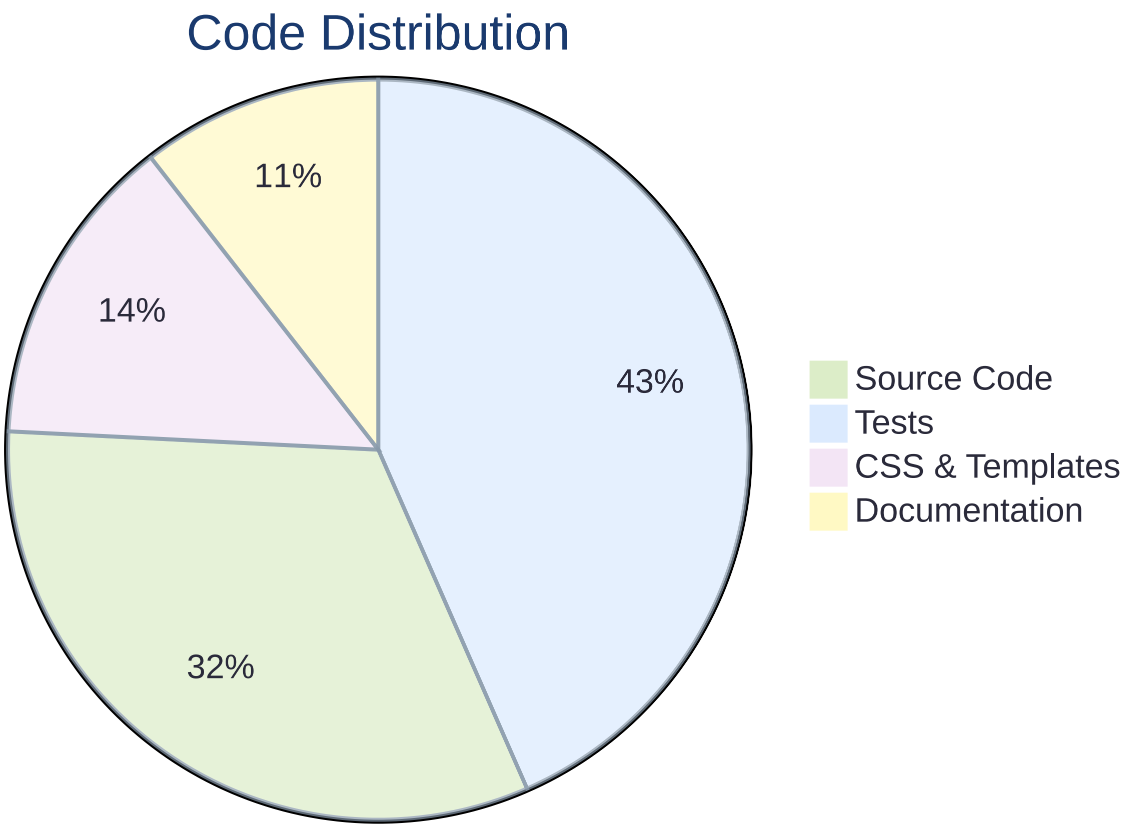
🔍 Technical Deep Dive

The callout parser uses a two-phase approach: first, fenced code blocks are identified and protected from processing. Then, `:::type` blocks are extracted via regex, their body content is recursively rendered through `marked`, and the result is wrapped in styled HTML divs with inline CSS for print reliability.

💎 **Best Practice**

Use `render_diagram` separately to pre-render each diagram, then pass the SVG results to `render_content`. This gives you full control over the rendering pipeline and makes debugging easier.

Code Distribution



Code Highlighting

The system supports syntax highlighting in code blocks:

```
// Example: Using the MCP tools
const diagram = await renderDiagram({
  name: 'flow',
  mermaid: 'graph TD; A-->B',
});

const content = await renderContent({
  markdown: '# Report\n{{diagram:flow}}',
  diagrams: [diagram],
});

const pdf = await generatePdfFromHtml({
  title: 'My Report',
  content: content.html,
});
```

Technical Stack

Component	Technology	Purpose
Runtime	Node.js 20	Server platform
Language	TypeScript (strict)	Type safety
PDF Engine	Puppeteer	Chrome-based PDF generation
Diagrams	Mermaid CLI	Diagram rendering
Templates	Handlebars	HTML templating
Markdown	marked + highlight.js	Content rendering
Protocol	MCP SDK	Tool interface
Tests	Vitest	77 tests, all offline

Summary

PDF Reporter MCP transforms markdown content into professional PDF documents with:

- **Royal Blue themed** cover pages and table headers
- **9 callout types** for structured information blocks
- **Mermaid diagrams** rendered to crisp SVG
- **Syntax-highlighted** code blocks
- **Configurable themes** via environment variables
- **Docker-ready** deployment with GitHub Actions CI