

William Godfrey

Senior Software Engineer

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Professional Summary

- I am a *Senior Software Engineer* with deep experience in distributed systems, cloud architecture, high-availability systems, protocol design and long-term platform evolution. I value solutions that are not only **technically sound, but also understandable, maintainable, and built to last**.
- I enjoy taking complex and fragile systems apart and building simpler reliable systems with **clear architecture and separation of responsibilities**. I modernise legacy systems and design robust and durable systems.
- I've enjoyed learning new technologies and adapting as the industry changes. Outside of my core work, I like to explore new ideas in system architecture and system designs in the cloud-based world, which I express through **independent projects** and my collection of technical writing.
- I use **modern AI-assisted development tools** when appropriate, allowing me to focus on system design, understanding the problem and engineering judgment.
- I like helping less experienced developers get up to speed and understand the rationale behind engineering decisions.
- I tend to be calm and methodical when problems are difficult. I enjoy working collaboratively to find practical solutions.

Core Skills

- **Languages & Platforms:** C#, .NET Core, .NET 10, Python, SQL Server; Windows Server, Linux
- **Cloud & Infrastructure:** AWS, Azure, distributed systems, high-availability services
- **Architecture & Design:** API architecture, protocol design, microservices
- **Engineering Practices:** Git workflows, debugging, root-cause analysis, refactoring

Experience

Celaton (acquired by ADVT Group) — Senior Software Engineer

2007 – 2026

- Engineered core components of Celaton's intelligent automation platform using C#, Python, and SQL Server.
- Migrated the platform from a physical machine in a data center to AWS. This enabled improved scalability, reliability, and operational efficiency.
- Maintained services across Windows and Linux servers. Led architecting efforts to bring systems into a micro-service oriented architecture. Modernised legacy systems, reducing operational overhead and improving maintainability.
- Led investigations into complex customer issues, providing clear root-cause analysis and durable fixes.
- Introduced improved development workflows using git-based processes, structured debugging, clearer documentation, and raising engineering consistency across the team.
- Mentored junior developers and provided architectural guidance.

Bookham Technology — Embedded Systems Engineer

2002 – 2006

- Engineered low-level systems in C for hardware with constrained memory and strict industrial timing requirements.
- Collaborated with hardware engineers and field technicians to ensure stability under real-world electrical and environmental conditions.
- Deployed firmware across on-street substations, telecoms hubs, and factories.
- Delivered production-grade firmware across multiple product generations while maintaining backwards compatibility where needed.

Projects

HashBack — Server-to-Server Authentication

Designed and developed a protocol enabling mutual authentication between services without shared secret management, using two HTTP requests in opposite directions to complete the loop. Built a public demonstration service with a view to publishing the specification as an RFC. See [HashBack.dev](https://hashback.dev) for more information.

Monitor Service — Customer data on-boarding system

Refactored Celaton's fragile collection of single-machine bespoke polling services into a unified, distributed service that balances work across multiple servers. The service detects jobs on customer file services and injects them into the processing database. This service integrates with the provisioning system, which ensures that sufficient processing capacity is available when needed. Eliminated manual restarts, improved reliability, and enabled horizontal scaling.

Rendering Service — Automatic Document Conversion using Robotic Automation

Built a resilient document-rendering pipeline that generates consistent PDF documents from Office files, scanned white-mail, HTML, and email messages. Integrated with a separate OCR service to add text extraction and annotations to the output PDF files. The service seamlessly detects input file types and routes bad files that can't be processed back to the customer.

Intake-and-Act — Simplified Document Processing API

Designed and prototyped a new service API where customers may inject documents for data extraction (such as key fields from an invoice) and retrieve the results, without having to first be on-boarded as a Celaton customer. The interface was designed to shield users from the internal details of the underlying service and instead expose a simple web-based interface with public swagger documentation.

SixGate — IPv6 Public Gateway Proposal

Proposed SixGate as a mechanism for servers hosted on IPv6-only networks to be accessed by IPv4-only clients, using DNS for discovery. See billpg.com/sixgate for more information.

A Primer on Distributed Computing (2002)

Wrote an introduction to distributed computing projects such as RC5-64 and SETI@home. The document has been cited on Wikipedia and in academic papers.

SpartanHttpClient — NuGet Package

Developed my own HTTP client library when I found that the dot-net standard library's component would not let the caller control the IP address lookup, which was a requirement for my project. To resolve this I wrote this library, which speaks HTTP requests and responses directly over the standard library's TCP and TLS components. I later published this component on NuGet. See github.com/billpg/SpartanHttpClient for source code and documentation.

Sod's Law — Logic-Only Minesweeper

Designed a Minesweeper variant that removes all luck: every square opened must be provably safe from the numbers already on the board, enforced by a constraint solver. If no safe move exists, the board reveals one; if a player opens a square that could contain a mine, the board rearranges its remaining mines to place one there. See sodslaw.billpg.com for more information.

billpg.com — Technical Essays

A collection of essays on software engineering, distributed systems, protocol design, and long-term maintainability.