Matthew S. Dippel

Senior Software Developer with 20+ years experience crafting web, embedded and cloud solutions.

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Skills

Languages: C#, SQL, TypeScript, JavaScript, Python, Shell (zsh/bash/posh)
Frameworks/Tech: ASP.NET, Microsoft SQL, Postgres, Entity Framework, Dapper, Angular, React, FastAPI, many others
Cloud: Azure (comprehensive), Azure Custom SSO, Alexa, MS Graph/Teams, DevOps, Serverless, AWS, Atlassian Products (API Integration and UI)
Misc: Agile/Scrum, Git, APIs for JotForm, OnShape, Jira
AI/ML: Paddle Framework, Surya OCR, Model fine-tuning/training, training DONUT models for KIE, RAG text generation, Mistral, LLaVA, LocalAI, InvokeAI

Work Experience

Scout (Virtual Advantage) — Senior Software Engineer
Troy, MI (Remote) — Sep 2021 — Oct 2024

Hired from Vectorform contract to bring .NET Framework 4.7.1 ASP.NET/EF6 web app to .NET 7/EF Core, resolve performance issues and implement Azure AD B2C Custom SSO:

- Developed GPU local OCR using Paddle/Surya OCR to fine-tune a DONUT Transformer model for Key Information Extraction for an LLM RAG workflow. This was done using stateless ephemeral Docker services deployed to Azure Spot Instances with GPUs due to customer data security requirements.
- Developed Single Sign-on via Azure AD B2C (Entra) using a hand-developed "Custom XML" process which improved upon the Microsoft defaults by auto-selecting the target directory, Scout tenant host, and transparently migrated accounts on first-login.
- Created a bidirectional connector with JotForm that allowed forms to be designed by us or customers and the data from those forms mapped (maintaining types) to fields within cases using an administrative interface.
- Wrote an end-to-end query debugging component for Entity Framework/ADO.NET which resulted in the discovery of thousands of redundant database calls per page-load. Improved performance of database services server-wide causing some page loads to drop from several seconds to sub-250ms.

Vectorform (now NTT Data) — Senior Solution Developer
Royal Oak, MI — Feb 2017 — Sep 2021

Developed Web Applications and IoT Software:

- Rewrote an application that admitted certain dial-in users to a conference without an authenticated user present. Since authentication is used to prevent fraud, the system was opt-in per conference and only allowed users with Caller ID numbers matching a white-list could start a conference.
- Participated in the development of the first version of the Shark Ion robotic vacuum.
- Lead developer for the first version of Gripshape - an in-browser three.js wrapped in React configuration tool providing an interface for non-CAD users to design print-on-demand gripper fingers for industrial robotics.
- Rewrote the Leaderboard for Jeep Badge of Honor from 30-minute sync to a real-time leaderboard for any combination of month/year/trail using indexed views and columnstore indexes to manage the several million rows of data from which the Leaderboard was generated. After deployment, database utilization was reduced by 30% peek and 80% off-peak due to the elimination of the Leaderboard synchronization code.
- Wrote many and supported all of the Alexa and Google Assistant integrations for several global IoT products.

Modality Systems, Ltd Senior Consultant Developer
Norwich, UK (Remote) Jan 2015 — Feb 2017

Developed applications for Unified Communications:

- Rewrote an application that admitted certain dial-in users to a conference without an authenticated user present. Since authentication is used to prevent fraud, the system was opt-in per conference and only allowed users with Caller ID numbers matching a white-list could start a conference.
- Assisted in the development of a toold designed to transparently replace Lync Enterprise "Conferencing" with a PGi's traditional "Conference Bridge".
- Developed a complex distributed call blocking tool for Exxon Mobil: it required keeping a global, regional and individual "block list" in sync across multiple call manager servers frequently located in conflict regions with unreliable networks.
- Worked with customers to refine product designs and assist in sales
- Developed a custom "conference room experience" application that interacted with the Skype for Business back-end but presented a UI and features appropriate for a shared conference room or advanced private desk phone.

Level 3 Communications (formerly Global Crossing) Infrastructure Architect (Principal Developer)
Southfield, MI (Remote) Jan 2011 — Jan 2015

Promotion to lead development of major corporate initiatives:

- Part of small team responsible for IT systems integration activities between Global Crossing and Level 3 for "Day 1" of merger.
- Developed software to integrate both companies AD systems on merger "Day 1", including rewriting Lync SIP URIs for Global Crossing staff, integrating both companies' on-prem Exchange Services and ensuring users from each domain could access resources from both companies transparently.

- Extended auditing/access tool from prior position to cover Level 3 services while decommissioning assets while decommissioning the COTS product Level 3 had deployed throughout the company. Audit completion took approximately 12 hours, an improvement of seven days from Level 3's existing system. **This tool continued to be the only auditing tool until CenturyLink acquisition and continues to be used at Lumen, today.**
- Implemented a web-based "single pane of glass" change management application which took a multi-day process involving several manual interactions with various IT systems to a process where all interaction could be done via desktop or mobile device in Lync/Skype for Business, E-Mail or its web app. After implementation, daily change meetings went from 30 to 5 minutes, approvals/denails rarely exceeded 6 hours while maintaining uptime and audit requirements.
- Secure Code Review for aspects of our conferencing software written in C++

Global Crossing, Ltd — Principal Software Engineer - Unified Communications

Southfield, MI (Remote) — Oct 2007 — Oct 2011

Promotion to work Unified Communications/Conferencing Projects. Microsoft Super TAP and Microsoft Developer TAP Representative for OCS/Lync:

- Complete responsibility from conception to installation of a "Visitor Access Kiosk" that allowed a visitor to talk to an employee, receive a printed visitor badge with photo eliminating the need for lobby reception staff.
- Designed an "Approval / Denial" bot REST-based service which allowed other applications to send HTML formatted data to a person in our Lync environment and wait for a set of responses. This bot was used to "approve the printing of a visitor badge" when an employee interacted with a visitor on the Kiosk and was integrated into several other approval processes where "approval lag time" affected delivery.
- Continued to support the access request, audit, grant and revoking tool developed in my prior position

Global Crossing, Ltd — Principal Software Engineer

Southfield, MI (Primarily Remote) — Oct 2007 — Oct 2011

Projects:

- Developed a multi-threaded service which attached to our Active Directory domains, discovered/collected all users, groups and endpoint details including ACLs of server filesystems, all accessible PC and server local groups and users, Microsoft SQL database ACLs and several in-house application permissions in order to audit the entire environment within the 24-hours required by the new terms we were required to operate under after exiting bankruptcy. It was later extended to support granting/revoking access via REST service.
- Developed the MyRequests tool to automate the requesting of access and replace a complicated form that often required Helpdesk assistance to complete. The app logged the user in transparently and used internal data sources to make most requests "single checkbox", revealed the interface progressively before PWAs, tied into an approval system that resulted in the request being granted access as soon as the approval requirements were received. On release, it managed

1,200 different kinds of access requests more conveniently than the prior form-to-mail form managed fifteen.

Global Crossing, Ltd — Network Computing - Analyst
Southfield, MI (Primarily Remote) — Jun 1998 — Aug 2005

Accolades and Key Projects

Stay Frosty - Method Highlighter Visual Studio Extension
Provides a rich set of visualization for (full) Visual Studio - Extension Store Link

Diagonactic Enums - High-performance Extension Methods for Enums (and delegates)
Provides a generic set of extension methods for fluently working with enums with near native performance. Due to C# language limitations when this was written, the project is a combination of C#, C++/CLI and CIL. It was not migrated to non-Framework versions due to improvements in .NET (formerly Core) affecting reflection and `enum` performance concerns

Visitor Access Kiosk - OCS R2/Lync/Skype for Business Unattended Lobby Kiosk (ISE North East Region Finalist)
Solo project which involved selecting and sourcing the hardware, hardening the OS for use in an unsecured lobby, network isolation including a DMZ for the back-end server/database. Developed for the OCS 2008 R2 Developer TAP / Super TAP program, it allowed visitors to contact an in-office employee from a kiosk. Written in C# and C++ (all interactions with the camera hardware and connecting video to the UC Client API), once contacted the employee received a one-way video conference call where they could approve the visit. The kiosk would then take a picture of the visitor and print a barcoded badge which can be used to sign out on exit and was deployed to the two largest corporate locations.

Education

University of Phoenix — Program: IT, Networking/Telecommunications
Oakland University — Program: Management Information Systems
Eisenhower High School — High School Diploma
Recipient of the Computer Science Award for Graduating Class