Samir Patel

Staff Infrastructure Engineer

About Me

Staff Infrastructure Engineer with extensive expertise in cloud infrastructure automation, system architecture, and optimization. Proficient in Kubernetes, Terraform, Docker, Helm, Ansible, AWS, GCP, Node.js, Go and PHP. Proven track record in successfully migrating mission-critical applications, optimizing system performance, and reducing operational costs. Committed to enhancing observability and reliability through the implementation of monitoring solutions. Seeking to leverage technical skills and experience to drive innovation and efficiency for a dynamic organization.

Technical Skills

Infrastructure: Kubernetes, Terraform, Docker, Helm
Automation: GitHub Actions, Cloud Build, Circle CI, Jenkins
Cloud Providers: AWS, GCP
Configuration Management: Ansible, Packer
Languages: Typescript, PHP, Golang, HCL, YAML, Python, Bash

Work Experience

[Slingshot Aerospace](#) - Senior DevOps Engineer
May 2022 - **Sep 2023**

- Provisioned Anyscale using Terraform to run machine learning workloads in AWS.
- Led the migration of a mission-critical application from ECS to EKS using TypeScript, automating all AWS dependencies with Terraform and coordinating a seamless production cutover.
- Implemented DataDog logging and APM across all applications.
- Spearheaded an initiative to significantly reduce AWS cloud spending across all teams.
- Continuously monitored the log/alert stream from applications, assisting dev teams in resolving errors.
- Created dashboards and alerts in DataDog to monitor and notify team channels in Slack.
- Successfully migrated a Kafka-based application running on ECS to EKS using Helm, improving scalability and build times.
- Established a Terraform monorepo and provisioned AWS infrastructure for hosting mission-critical applications, transitioning from Pulumi code.
- Developed GitHub Actions workflow definitions for CI/CD pipelines.
- Upgraded and optimized a critical legacy application with multiple microservices using TypeScript to run in EKS.
- Modernized and upgraded aspects of a legacy application using Cassandra on ECS.
- Supported legacy Infrastructure as Code (IaC) orchestrating AWS resources using CDK in Node.js.
- Created and maintained template repositories using TypeScript, to assist developers in creating new microservices.
- Developed and maintained shared Helm charts that were used to onboard new applications into Kubernetes

[Optimize.ad](#) - Staff Infrastructure Engineer
May 2021 - **May 2022**

- Developed Ethereum ERC-721 NFT smart contract for luckygoat.org, enhancing digital asset ownership and authenticity using TypeScript.
- Created backend APIs and automation jobs to facilitate NFT minting and provenance tracking, ensuring transparency and trust in digital collectibles using TypeScript.
- Implemented a standardized CI/CD process across all services, streamlining development and deployment workflows for increased efficiency.
- Introduced Google Kubernetes Engine (GKE) to migrate and modernize existing applications, optimizing performance and scalability.
- Designed and deployed a service using TypeScript for outbound phone number dialing powered by the Twilio API, improving communication capabilities.
- Utilized PubSub for reliable and scalable execution of critical backend workloads, ensuring seamless

operations.

- Developed a smart router to facilitate information exchange between states by making API calls to backend services, enhancing data flow and processing using TypeScript.
- Managed edge caching and SSL for enhanced data security using Fastly, reducing response times and ensuring secure connections using VCL.
- Introduced DataDog to provide comprehensive visibility into system performance using dashboards that display StatsD metrics emitted by Kubernetes applications, aiding in monitoring and optimization.
- Leveraged the Istio service mesh to efficiently manage traffic routing and SSL certificates, improving network security and reliability.
- Implemented a high-volume event stream processor with TypeScript (Nest.js) and React (Next.js) for the backend and frontend respectively, enabling real-time data processing and analysis.
- Gained valuable insights into user activity by creating a map/reduce job using TypeScript to analyze Google Analytics provided sharded tables in BigQuery, informing data-driven decisions.

[FloSports](#) - Staff DevOps Engineer
Feb 2019 - **Apr 2021**

- Implemented Continuous Delivery using GitOps methodology, utilizing Cloud Build, Google Container Registry (GCR), and GKE, with automated Slack notifications for deployments.
- Created and managed Google Kubernetes Engine (GKE) clusters and Istio Service Mesh, ensuring optimal performance and reliability using Terraform.
- Developed a Golang service to capture request logs from Istio-managed Envoy proxies, enabling realistic traffic playback capabilities.
- Maintained and upgraded the DataDog agent in Kubernetes, creating associated dashboards and alerts for comprehensive monitoring.
- Converted high-traffic Lambda endpoints into Kubernetes-based services using TypeScript, significantly improving scalability and resource efficiency.
- Consolidated logs from applications running on various environments, including EC2, Lambda, and Kubernetes, into DataDog for centralized monitoring.
- Built continuously delivered workloads using TypeScript within Kubernetes, enhancing deployment efficiency.
- Outlined a technology vision and collaborated on the implementation for the full migration of existing services using TypeScript into Kubernetes, optimizing infrastructure.
- Assisted development teams in onboarding applications into Kubernetes by creating self-service documentation and providing in-person support.
- Established efficient processes and tooling for rapid CI/CD provisioning of Kubernetes services, using Google Cloud Build and GitOps for deployments into GKE clusters.
- Set best practices for future Kubernetes architecture through collaboration with Google Cloud Solutions Architects, ensuring a robust infrastructure.
- Initiated and managed support requests with AWS technical representatives, addressing infrastructure and service-related concerns efficiently.
- Created and managed AWS infrastructure using Terraform, streamlining resource provisioning and management.
- Utilized Terraform to create Fastly services for edge caching in existing webservices, improving response times and user experience.
- Developed a REST API in Typescript to enable clients to reliably run long-running containerized workloads, enhancing application flexibility.
- Collaborated with representatives from other teams to define future architecture and infrastructure requirements for upcoming initiatives.
- Added system and application-level metrics to charts on a dashboard, facilitating performance measurement and anomaly detection.
- Dynamically created live streaming backend servers using Terraform, Wowza, Ansible, and Packer, enabling real-time video streaming capabilities.
- Continuously defined an Infrastructure Roadmap by working closely with project managers on a regular basis, ensuring alignment with business objectives.
- Participated in an on-call PagerDuty rotation for production infrastructure and services, ensuring high availability and rapid incident response.

[FloSports](#) - Staff Software Engineer
Oct 2016 - **Feb 2019**

- Developed numerous API endpoints and real-time background jobs to meet specific product requirements for

mobile, web, and TV applications using TypeScript.

- Successfully transitioned a legacy API to a well-documented, low-latency, modern API while preserving backward compatibility and ensuring continuous data migration using TypeScript.
- Implemented a virtualized local development environment using Vagrant and Ansible, streamlining the onboarding process for new developers.
- Actively participated in code review processes, contributed to application architecture discussions, and engaged in the Pull Request review workflow.
- Engineered an automated caching mechanism, known as 'RoboCache,' for Doctrine entities using REDIS, enhancing data retrieval efficiency.
- Leveraged advanced concepts within the Doctrine Object-Relational Mapping (ORM) framework, such as discriminator mapping, event listeners, joined inheritance types, and the Doctrine Database Abstraction Layer (DBAL).
- Adhered strictly to PSR-1/PSR-2 coding standards and maintained a well-balanced testing pyramid, covering unit, functional, and integration tests effectively.
- Utilized Mockery to mock objects for focused unit testing, ensuring the performance and reliability of specific functionality.
- Collaborated with the infrastructure team to provision and set up Jenkins for deploying and building AWS infrastructure to support the application.
- Effectively communicated with product owners and developers to explain and refine application architecture and design, ensuring alignment with business objectives.
- Engaged in cross-team collaboration and whiteboarding sessions to collectively build new application features and functionalities.
- Managed the migration of several hundred terabytes of video content and database records, utilizing multiple job servers to parallelize workloads efficiently.
- Constructed a content search API using AWS CloudSearch and implemented continuous warming of the index through message queue-driven background jobs.
- Proactively investigated and resolved performance issues and errors reported by monitoring tools like New Relic, DataDog, ELK, Rollbar, CloudWatch, and PagerDuty, ensuring system reliability and performance optimization.
- Created a load testing service to demonstrate service scalability under realistic usage conditions using TypeScript

ReStream Solutions - Senior Software/Infrastructure Engineer
Apr 2016 - **Feb 2018**

- Developed Ansible playbooks to configure and provision a load-balanced cluster of web and job servers.
- Implemented Redis for PUB/SUB message queuing and caching, optimizing data processing.
- Automated local development environments with Vagrant, VirtualBox, and Ansible, streamlining the setup process.
- Designed a robust API using Symfony3 and PHP 7.0, hosted on Nginx, to ingest data from IoT devices, capturing scientific measurements like temperature, ORP, pH, pressure, tank levels, and flow rates.
- Created an intuitive web user interface with Bootstrap, providing insightful charts and reports derived from collected data.
- Established a global exception listener to efficiently manage different categories of thrown exceptions, ensuring prompt responses to errors.
- Orchestrated a horizontally scalable architecture encompassing web servers, job servers, Redis clusters, and both NoSQL and SQL databases using AWS services.
- Implemented comprehensive test cases with PHPUnit to guarantee system resilience and performance.

Whole Foods - Senior API Engineer
Feb 2015 - **Apr 2016**

- Led and managed the migration of a legacy API originally written in Node.js with Express to PHP using Symfony, resulting in improved performance and a seamless transition.
- Contributed to the development of Ansible playbooks for provisioning and deploying code within the AWS environment, streamlining development workflows.
- Designed and established an infrastructure for listing, deploying, and executing jobs to enhance asynchronous work processes using Node.js.
- Collaboratively developed an API client that serves multiple applications, promoting a unified approach to data access.
- Created and maintained internal Composer packages, fostering code reusability and efficiency across teams.

- Oversaw the migration of users from one platform to Salesforce through the implementation of an ETL job, ensuring a smooth transition of critical data.
- Implemented iOS wallet functionality, allowing digital rewards card management through an API endpoint, enhancing user engagement.
- Authored and managed multiple large-scale jobs responsible for generating rewards card numbers, associating identifiers, and synchronizing sensitive user information across various backend systems.
- Engineered a system for real-time email delivery through scalable background jobs, facilitating company-wide email marketing campaigns using Node.js.
- Played a significant role in the development of a system to securely store and consolidate user profile information across diverse backend systems, enhancing data management using PHP.
- Established a mechanism to encrypt sensitive user data at the field level using AWS Key Management Service (KMS), ensuring data security and compliance.
- Contributed substantially to the creation of database migrations using Phinx, tailored for PostgreSQL running on Amazon RDS, optimizing database management and data integrity.

[Austin Coding Academy](#) - PHP / Python Instructor
Sep 2015 - **Nov 2016**

- Taught Python and PHP for four semesters
- Gave public talks on bash, git, redis, resque, AWS etc
- Mentored junior developers and students

[LIN Digital](#) - Senior Software Engineer
Sep 2014 - **Feb 2015**

- Contributed to the implementation of new features in the Platform application using Node.js, which was undergoing a transition to a Ruby-based legacy system named Neuron.
- Focused on enhancing financial reports by transferring and optimizing metrics, resulting in improved report quality and accuracy.
- Elevated code quality by refactoring controllers and introducing a well-structured service layer, streamlining the application's architecture.
- Introduced unit and functional testing into the project using Codeception, ensuring the reliability and functionality of the application.
- Established a standard for interacting with the service container, improving code consistency and development practices.
- Implemented New Relic as a replacement for a custom MySQL-driven performance data collection and reporting system, enhancing monitoring capabilities.
- Created an Ansible playbook for provisioning a fully functional Vagrant virtual machine with a local development database, optimizing the development environment setup process.
- Transitioned the deployment process from an RPM/SCP-based approach to a more efficient Git-based deployment method using Ansible, reducing deployment times.
- Adopted a GitHub-centered Pull Request workflow to facilitate code reviews and collaboration, ensuring code quality and best practices were maintained.

[Sapling Learning](#) - Senior API Engineer
Jun 2014 - **Sep 2014**

- Developed a robust API using Symfony2 to facilitate interactions with external APIs, consolidating disparate external API calls into a unified and standardized API.
- Utilized Resque as an effective job queuing system to manage and defer the execution of resource-intensive processes, ensuring optimal performance and scalability.
- Established a central data broker responsible for communicating the status and relevant data of ongoing jobs to the web cluster, enhancing real-time data sharing and system efficiency.
- Leveraged polymorphism and the factory pattern to dynamically instantiate the required implementations at runtime, promoting flexibility and maintainability of the codebase.
- Utilized Doctrine as the Object-Relational Mapping (ORM) layer in conjunction with Symfony's Service Container, enabling loose coupling and dependency injection for clean and modular code design.
- Designed and executed a comprehensive suite of unit tests and functional tests using Codeception, ensuring the reliability and correctness of the application.
- Crafted a set of bash scripts to collaborate with Chef, automating various aspects of the workflow, including the setup and maintenance of state for job servers, streamlining operational processes.

[Frontgate Tickets](#) - Software Engineer
Sep 2013 - **Jun 2014**

- Led the migration of legacy code to a modern Symfony2 application, applying solid PHP5 object-oriented principles to enhance scalability and availability of the system.
- Designed and implemented robust caching mechanisms, ensuring efficient performance under heavy loads and horizontal scalability across a Memcached cluster. Local caching using APC was integrated to prevent data contention.
- Engineered a suite of classes (e.g., Order, Transaction, Cart, Tax, Shipping) that facilitated seamless order placement by employing abstraction, inheritance, polymorphism, dependency injection, singleton, and factory patterns.
- Pioneered the development of asynchronous jobs for various processes, including cart management, account operations, and order placement. These jobs provided bidirectional data exchange, offering real-time updates via standard JSON response objects.
- Mastered the creation and optimization of database queries, leveraging advanced joins, aggregate functions, range clauses, and conditional statements, leading to improved data retrieval and processing efficiency.
- Comprehensively documented codebase, including method signatures, return types, and exception handling details. Also provided class overviews and property descriptions by type and purpose, enhancing code maintainability and collaboration.
- Ensured adherence to industry-standard coding practices, conforming to PSR-1 and PSR-2 for coding standards and style. Additionally, followed FIG coding guidelines for naming conventions, logging, and autoloading.
- Contributed to the development of revenue-generating features that had a direct and measurable impact on the company's bottom line, highlighting the ability to drive business success through technical excellence.

[Red Ventures](#) - Software Engineer
Jun 2012 - **Feb 2013**

- Developed comprehensive reports utilizing a custom in-house reporting framework. The process involved the DataCollection class for generating report data, DataView class for presentation logic, and DataParameter classes that dynamically rendered filter data controls like drop-downs, multi-select boxes, check boxes, and date pickers.
- Created real-time dashboards employing technologies like Node.js and meta-refresh for displaying live business metrics. Data caching was achieved through Memcache, seamlessly integrating with the reporting framework. Dashboards were designed to subclass report DataView for easily extracting specific data points by configuring DataParameters stored in a MySQL database.
- Managed the development and maintenance of an extensive LAMP ERP and CRM system running on a load-balanced infrastructure with over 35 web servers. This system empowered a sales force of more than 1500 individuals, enabling them to generate millions of dollars in daily sales.
- Architected the Orvis application with a full Model-View-Controller (MVC) framework, enhancing maintainability and scalability, and utilizing a homegrown ORM.
- Designed object-oriented JavaScript components that initialize on page load using constructors and prototype extension. These objects executed public methods after DOM readiness, facilitating dynamic show/hide logic based on numerous parameters and dependencies to customize the customer experience.
- Implemented highly configurable functionalities based on data tables generated by administrators through in-house intranet applications. The application's dynamic behavior was driven by factors such as purchase history, credit score, and physical location.
- Crafted complex database queries that joined over 20 tables to efficiently aggregate data in real-time, enabling the rapid response to critical business questions. Proficient in optimizing query performance and debugging slow MySQL queries using the 'EXPLAIN' statement.
- Developed data import scripts that transformed information from multiple third-party vendors using SOAP and FTP connections. Implemented buffer concepts and Memcache for bulk query execution.
- Leveraged InnoDB-specific features in MySQL, such as transactions and foreign keys, to maintain data integrity for orders and related tables.
- Effectively employed inheritance, abstraction, and design patterns to simplify development, enhance code readability, and promote code reuse. Maintained comprehensive code documentation and adhered to established naming conventions.

[Industrial Distribution Group](#) - Software Engineer
Feb 2011 - **Jun 2012**

- Revamped IDG's eCommerce web presence at www.shopidg.com using Joomla (MVC), introducing over 100

new features and enhancements. The transformation significantly improved IDG's online presence and energized the sales force. Achievements included lightning-fast, relevant searches through Sphinx and implementation of SEF URLs.

- Developed a web-based iPad application with HTML5 and jQuery Mobile, featuring local WebDB SQL storage. The app seamlessly operates offline, loading assets from the local cache. Implemented auto-compilation of PHP to HTML for local caching, with server-side calls made through JavaScript.
- Created StoreRoom entirely in PHP, encompassing email notifications, SOAP calls for table-based auto-complete, business logic, and display separation. Introduced database abstraction, logging for action tracking, and an interface to view user interaction history. The entire interface was AJAX-enabled, minimizing page reloads. Leveraged object-oriented JavaScript for creating native objects by extending prototypes, stringifying, and converting multidimensional datasets to JSON. Objects were consumed using a generic handler for logic and insertion into MSSQL.
- Developed a Python application to receive documents from GMail via IMAP IDLE, utilizing threading. The application was compiled into a Windows executable using py2exe. It facilitated automatic document printing as a background batch process and featured RPC communication with a central server to synchronize users with application-level TTL to match GMail's IMAP timeout.
- Designed a Windows-based forms application in VB 6 to interact with the API for a symbol barcode scanner. The application scanned part numbers, sending the data directly to the shopping cart of the website. This streamlined repetitive mass ordering in a warehouse environment.
- Created a standards-compliant PHP/MySQL application for on-site customers at factory locations. It allowed customers to procure items by adding them to a queue in a storeroom. IDG Buyers interacted with the interface, triggering email notifications sent to multiple individuals in the manufacturing authority chain. They could accept or reject orders, initiating a complex approval process. Orders were submitted to the ERP via a SOAP-based web service.
- Developed over 20 SOAP clients and several SOAP servers to consume various data sets directly from the ERP. These interfaces retrieved real-time information on quantity on hand, pricing, attributes, items, customer part numbers, etc., directly from Infor's SX.e ERP system using PHP.
- Created an extensive import script to update the website from a local content management application. The script processed and wrote to over 12 related tables, consuming a large XML file with a multidimensional product-to-item structure. Automation was achieved through CRON, processing high-quality TIF images. The website was updated nightly with fresh products and information added daily by the content team. The script was entirely written in PHP.
- Developed a generic data collection handler for most web services to derive insights into application use, performance, and user experience based on meaningful clicks on the website.
- Designed CURL scripts using PHP and XPATH to automate the scraping of semi-structured data from competitors' websites. The scraped data was structured into data tables to facilitate automated analysis of competitor pricing and market dominance. The data was stored in MySQL and transformed into FileMaker for reporting purposes.

Alamark Technologies - PHP / CWP / Filemaker Developer
Oct 2008 - **Feb 2011**

- Developed custom front-end and back-end components, modules, and plugins for various projects, following the MVC pattern for TASA.
- Conducted custom development work for numerous small to medium-sized businesses, focusing on PHP, MySQL, and FileMaker development deployed on Linux web servers.
- Designed and deployed eBC applications for multiple clients, specializing in custom integration with SCPRO and automating content, vendor, and account imports from the ERP using PHP.
- Created a PHP application for Cure Solutions that enables users to manage database tables, fields, and records for securely storing sensitive customer network, machine, and application credentials.
- Built applications from the ground up using LAMP (Linux, Apache, MySQL, PHP) stack combined with FileMaker and AJAX technologies.
- Developed Bash scripts for various tasks, including backup, FTP transfers, and text search operations on Linux. Also worked on automation applications using .NET deployed on Windows platforms.
- Collaborated with cross-functional teams for application design and creative problem-solving, fostering a team-based approach to project development.

Dynapac - System Administrator / Application Developer
Oct 2007 - **Oct 2008**

- Developed and maintained Visual Basic DTS (Data Transformation Services) packages for efficient data

management and transformation.

- Modified and created Visual Basic 6 programs, enhancing their functionality and performance.
- Led the migration of legacy MS Access applications into modern ASP.NET versions, improving accessibility and usability.
- Designed and developed reporting applications utilizing existing data for executive-level trend analysis, providing valuable insights to decision-makers.
- Provided effective troubleshooting and resolution for issues related to malfunctioning hardware and software on networked Windows-based machines, ensuring the smooth operation of the IT infrastructure.

[The Rug Store](#) - E-Commerce Administrator
Oct 2005 - **Oct 2007**

- Developed and launched a dynamic ECommerce website utilizing Web Store technology, enhancing the company's online presence and sales capabilities. The website was built with PHP and MySQL, providing a user-friendly shopping experience.
- Planned and established a comprehensive company-wide network infrastructure, implementing access control rules and ensuring efficient inventory management, contributing to streamlined business operations.
- Orchestrated the synchronization of inventory and availability data across multiple physical locations, optimizing inventory control and customer service.

[Lloyd's Diamonds](#) - Digital Display Content Creator
Oct 2004 - **Oct 2005**

- Designed and developed a visually appealing online product catalog to drive product promotion and boost sales, enhancing the company's online presence.
- Implemented pixel-perfect, smooth content scrolling for an outdoor digital display, ensuring an engaging and seamless viewing experience for customers.
- Created and managed multiple marketing schedules for targeted marketing campaigns, optimizing promotional efforts and customer engagement.
- Provided technical guidance and recommendations to clients to streamline their business processes and network infrastructure, improving operational efficiency.

[Related Experience / Freelance Work](#) - Web Developer / Consultant / Network Engineer / System Administrator
Jan 2000 - **Oct 2004**

- Developed and launched multiple websites for individuals and small businesses, showcasing a diverse range of web development skills and creative design.
- Diligently diagnosed and tested malfunctioning machines, effectively identifying and resolving technical issues to ensure smooth operations.
- Analyzed complex problems and devised innovative solutions for Truman State University, contributing to the efficiency of academic processes.
- Designed and maintained a personal tutorial website and content management system (CMS) at solutionsamir.com, focusing on technical articles and self-promotion.
- Led the ground-up design of theillbeat.com, a music mix upload platform for hobbyist musicians, demonstrating expertise in web development and UI/UX design.
- Engineered an AJAX-driven web application for mystery shoppers, employing object-oriented programming principles such as inheritance, composition, and polymorphism on consumerimpressions.com.
- Developed a user-friendly web application for globalfasteners.com, allowing content creators to upload technical part information and enabling clients to efficiently filter and order items.

Education

University of Texas at San Antonio -Information Systems
Jan 2005 - **Jan 2007**
San Antonio College -General Business
Jan 2003 - **Jan 2005**
Truman State University -Computer Science
Jan 2001 - **Jan 2003**