Carlo Preciado

carlop026@gmail.com| https://www.linkedin.com/in/carlo-preciado/

EDUCATION

University of Notre Dame College of Engineering | Major: Computer Science

RELEVANT EXPERIENCE

Slack Software Engineer, Distributed Systems **July 2023 - Present**

Relevant skills: Golang, Kubernetes, gRPC, Envoy, Consul, Linux

Service Mesh Optimizations

- Provided meaningful optimizations and maintenance to our in-house service mesh, which is responsible for providing information to our ingress and load balancing stack of 6000+ envoy proxy instances which serve billions of requests a day, as well as the 30,000+ service instances that make up slacks microservice architecture
- Helped improve propagation latency in service discovery from 120s to 5s in the 90th percentile by adding more concurrency in critical code paths and dropping stale updates, which directly improved slacks global reliability to an average of 99.999% availability
- Currently leading a large scale refactor of our service mesh to reduce network bandwidth and efficiency of service discovery updates, which requires deeply understanding envoy xDS documentation and designing a distributed systems solution that weighs the tradeoffs of providing reasonable eventual consistency, cpu load, and memory constraints

Service Discovery Kubernetes Controller

- Built a Kubernetes controller and reconciler to synchronize Slack kubernetes microservices over to consul datacenters for use by our service discovery systems at slack, and was involved in the code review process for correctly implementing an idempotent manager-worker system for providing updates
- Involved in the deployment, migration, and feedback process of moving Slack kubernetes service owners away from a consul sidecar architecture to rely on the synchronizing controller instead, resulting in reducing 25,000+ sidecar instances, and saving Slack upwards of a $1M annually

Monitoring Library for Service Owners

- Created a monitoring library to help the service owners of Slack monitor the ingress traffic from upstream envoy processes and increase discoverability and reliability of services
- Collaborated closely with other service owners to understand needs, pain points, and optimizations to design module library utilization and the creation of detailed documentation for service owners to use the library independently

RELEVANT PROJECTS

B Minor Compiler|**Compilers and Language Design** | C, x86, Bison, Flex **Fall 2022**

- Constructed a working compiler that transformed a C-like language into x86 assembly code, with major milestones being the successful implementation of a scanner, parser, source resolver, type checker, and code generator, with dabbles of compiler optimization
- Used the best practices of software engineering throughout the semester by extensively planning, making iterative progress, and creating unit tests to ensure that the development process was test-driven

Peer to Peer chat room| **Distributed Systems** | Python **Fall 2021**

- Developed a decentralized chat room in python which allowed peers to send global and private messages, while attempting to ensure consistency across the system by implementing chain replication
- Battle tested against common pitfalls discussed in the class to garner as much resiliency in the system as possible, such as ensuring the system would not crash if a single peer had left the system, expected or not

TECHNICAL SKILLS

Computing: Golang, C/C++, Python, ARM64, x86, Shell Scripting
Interests: Distributed Systems, Compilers, Programming Languages