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Leong Shengmin

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Work Experience

Senior Software Engineer	Grab	Aug 2021–Present
Observability	Singapore	

- PIC for Grab's logging stack – Manage >1PiB Opensearch clusters and logging pipeline.
  - (Cost Savings) Responsible for managing the logging stack's budgeting and internal unit cost. Involves routinely looking for cost savings opportunities, evaluating the cost breakdown for projects.
  - (Service Reliability) Responsible for ensuring logging stack's SLAs are met. Involves setting up monitoring and testing to ensure platform stability.
- (Service Reliability) Added synthetic testing to the logging pipeline to measure indexing, query latencies and data completeness of archived and real-time logs to verify data reliability from service teams' perspective. SLAs are defined based on these SLI metrics.
- (Service Reliability) Setup AWS Playground subaccount replicating the existing production subaccount setup with the ability to multiplex live logs or replay old logs for testing. Involves setting up a pipeline to upload ansible build artifacts and deploying via ansible push onto the test environment.
- (Service Reliability) Added log buffering layer in Azure to improve reliability of logs sent cross-cloud from Azure to AWS.
- (Service Reliability) Identified and fixed performance bottlenecks e.g. created Opensearch query WAF to prevent expensive queries on the cluster which allowed us to open the cluster for programmatic querying and reduced p95 query latencies by >50%, optimized LDAP authorization flow in the security plugin which reduced p95 Kibana login time by >50%
- (Cost Savings) Identified and drove cost savings initiatives e.g. enabled Kafka rack awareness which reduced cross-AZ costs by 50%, switched Opensearch, Logstash to Graviton-based workloads which reduced total cluster costs by ~20%
- (Misc) Migrated >1PiB logging clusters from Elasticsearch + Opendistro to Opensearch without downtime due to Opendistro EOL. This involved planning, budgeting and executing.
- (Misc) PIC for migrating tenant organization from GCP to AWS in a new region. This involved architecting, evaluating costs for supporting logs streamed from multiple AWS regions and executing.
- (Misc) Setup log archiving pipeline to sink logs into S3 for longer retention. Also setup self-serve backfilling pipeline for engineers to rehydrate logs into Opensearch from S3 log archives for adhoc log exploration.
- (Misc) Developed self-serve pipeline for engineers to create metrics and monitors from logs. Also setup common log monitors to capture critical events that may not be caught by metrics. This includes automatically created log dashboards and alerting to facilitate investigation of alert cause.
- (Misc) Manage logging agents on VMs and K8S. This involves maintaining the ansible roles / helm charts for the respective logging agents.
- (Misc) Setup automation to update AMIs for stateless and stateful workloads to reduce toil from CVE tickets. This involves setting up scheduled AMI builds, automatically verifying and applying Terraform plans to update referenced AMIs and gracefully rotating instances with older AMIs out.

Software Engineer Intern (Backend)	Shopee	Jan 2021 – June 2021
Payments team	Singapore	

- Created Prometheus metrics to trace performance bottlenecks when connecting to upstreams
- Developed pre-deployment validation for stored credentials to prevent configuration errors when connecting to partner APIs

Software Engineer Intern (Full Stack)	Ninja Van	Apr 2020 – Aug 2020
Drivers team	Singapore	

- Designed and built a 2-way cross-platform messaging system for communication during parcel delivery

DevOps / SRE Intern   **Upguard**   **Aug 2019 - Mar 2020**
<div align="center">California, US</div>

- Developed release package upload tool for Forward Deploy Engineers to install packages on customers' VMs
- Oversaw Nginx version upgrade and configurations for enabling Modsecurity WAF

Software Engineer Intern (Backend)   **Ninja Van**   **May 2019 – Aug 2019**
Shippers team   Singapore

- Developed a webhook history tool to allow tracking and searching of fired webhooks

Education

- **B.COMP. COMPUTER SCIENCE,** NATIONAL UNIVERSITY OF SINGAPORE   **2017–2021**
  Awarded NUS Undergraduate Merit Scholarship
- **NUS OVERSEAS COLLEGES** (SILICON VALLEY)   **2019-2020**

Technologies and Languages

- Languages: Python, Java (Scripting: Bash)
- Technologies: Elasticsearch, Kafka, Logstash
- Other: AWS, Azure, GCP (Google Cloud Associate Cloud Engineer Certification)

Projects

- **(Grab) Opensearch Cold Tier using JuiceFS (FUSE backed storage)**
  Added a cold data tier backed by JuiceFS (FUSE) in our Opensearch logging cluster as part of a cost-reduction initiative. This involved benchmarking the cold data nodes in the AWS playground subaccount, deploying to staging and production, optimizing for performance and cost once deployed.
- **(Grab) Benchmarking alternative Storage Engines (e.g. Clickhouse, Quickwit, Loki)**
  Benchmarking alternative storage engines e.g. Clickhouse, Quickwit and Loki as part of a cost-reduction initiative for the logging cluster. This involved benchmarking and deploying these storage engines in the AWS playground subaccount.
- **(Grab) Rack Aware Kafka Producer (Logstash Plugin)**
  Developed Rack aware Kafka producer Logstash Plugin to reduce cross-AZ traffic between Producer and Kafka.
- **(Grab) RCA Troubleshooting LLM Service**
  Developed tool to automate investigation of common troubleshooting flows e.g. panics, Hystrix errors during an outage and present summarized findings in a single Grafana dashboard. Aimed to help reduce context-switching between platforms and surface only relevant signals to prevent information-overload.
- **(Grab) Clickhouse Backup**
  Created script to periodically back up Clickhouse cluster metadata and data into S3. This is used internally by the SLA Monitoring service.
- **(Grab) Deploying configuration over SSM**
  Created flow to perform ansible-push over AWS Systems Manager (SSM) for canary testing configuration changes and deploying configuration updates fleet-wide. This is used for deploying logging-agent changes across multiple tenants.
- **(Grab) Azure Buffering Layer**
  Setup Eventhub buffer in Azure for backpressure to prevent logs from being dropped when there are network issues between Azure and AWS.
- **YPT Stop Human Trafficking Hackathon**
  Achieved 1st in a Tech for Good hackathon which aimed to use transportation tech to solve human trafficking.

- **Developers' Week Hackathon (Travel Gamification)**
  Setup infrastructure to build & deploy the application.
- **NASA Hackathon by WeSolve**
  Developed an AR iOS mobile application to transform space into a virtual playground.
- **Container Vulnerability Enumeration (CVE) Scanner**
  Built tool to build, push and scan container images for vulnerabilities.