

WORK EXPERIENCE

Sr. Devops Engineer **BigBasket.com** **July 2019-Present**

Infrastructure Provisioning

- Increased the overall coverage of the AWS services being deployed and managed using IAC. Some using **Terraform** and others using the **CloudFormation** stacks. This includes Platforms like EKS, EC2, S3, SQS, etc.
- Automated the creation and provisioning of platform components like Kafka, Zookeeper, Aerospike, Jenkins, Kubernetes etc using tools such as **Ansible**, **Packer**, **Helm** and Terraform.
- Hands-on experience working with Services like IAM/SSO, OpenSearch, RDS, DynamoDB, NFS.

Kubernetes

- Experienced with Cluster provisioning and administration activities. Worked with both, a self-managed cluster as well as AWS managed **EKS** clusters with more than 1000 nodes spread across multiple environments.
- Handled the deployment, monitoring and working of critical components like coredns, apiserver, metrics-server, etcd, controller-manager, kube-scheduler etc.
- Worked with the kubernetes networking components such as flannel-cni, kube-proxy, ingress-controllers, service-objects.
- Skilled with various types of **Kubernetes** resource creation such as **CRDs**, Mutating webhooks, Cronjobs, Service Objects, Persistent Volumes. Even created microservices that are deployed as CRDs and **webhooks** for better management of kubernetes clusters.

Networking and Security

- Well versed with cloud infra networking be it **VPC**, Subnet, Route tables, security groups etc.
- Experienced with DNS, TCP/IP, UDP and other routing and load balancing. Helped application teams analyze tcp packet dumps using **wireshark** while debugging issues.
- Improved the overall **security hub** score of bigbasket from **65% to 100%** covering all standards such as CSI v1.2.0, CSI v1.4.0, NIST and PCI DSS. This included fixing the existing vulnerabilities and suppressing those that were not relevant to bigbasket's use cases.

Monitoring and Observability

- Have experience setting up end to end logging stack using **ELK** and **LOKI**. In the case of ELK, worked on index lifecycle management and various log aggregators like filebeat, logstash, fluentbit. For Loki, used promtail.
- Hands-on experience in **grafana** and **prometheus**. Creating Dashboards, Setting up alerts using alertmanager, Debugging issues. Used it for platforms such as kafka, kubernetes, **Ingress controllers** etc.
- Worked with **datadog** for RDS and aerospike monitoring.

Hybrid Cloud, Intern **IBM India Pvt. Ltd. (ISL)** **Jan 2019 - july 2019**

Cognitive BMD

- A Supply Chain **Business Matrix Dashboard** which uses machine learning and data analytics to provide insights about various Service deliveries. It uses Cognos as a reporting tool.
- The Application helps senior managers make better decisions about customer engagement services.

EDUCATION

Pilani, Rajasthan **BITS Pilani** **Aug 2021 – Oct 2023**

- Master's of Technology in **Data Science and Engineering**
- Academic Courses included: Deep Learning, Machine Learning, Reinforcement Learning, **Big Data**, Ton of calculus
- Lab Experience: Stream Processing tools such as Kinesis firehose, Hive, **Hadoop**, Kafka, **Athena**.

Neemrana, Rajasthan **NIIT University** **Aug 2015 – Aug 2019**

- Bachelor of Technology in **Computer Science** and Engineering; Specialization: Data Science
- Cumulative **Grade Point Average: 8.22**
- Undergraduate Coursework: Operating Systems; Advanced Databases; Algorithms; Comp. Architecture; Inferential Statistics, Business Analytics, Predictive Modeling.

TECHNICAL EXPERIENCE

Projects

❖ **Kubernetes Migration To EKS (2023).**

Objective: The Project is to move from a self-managed kubernetes version 1.16.0 to an AWS managed service called EKS. The self-managed cluster was an old cluster and all the resources were using old *API* versions. We were also facing the challenge of managing the *control-plane* ourselves that impacted our productivity. With this project we intended to offload the Control plane responsibilities except for monitoring and observability and move to a newer version of kubernetes(v1.24.0).

My Contribution:

- I contributed heavily to the creation and *provisioning* of EKS using **terraform**
- Majority the **platform** components such as Logging(EFK), Monitoring(grafana,prometheus), Kube-state-matrices, Alertmanager etc were configured by me using Helm and terraform.

- To ensure a **seamless migration** without much developer involvement, We created many **admission controllers** to mutate the resource definitions before moving to the new cluster.

❖ **Automatic PEM Key Rotation(2023).**

Objective: To Ensure a better security compliance, it is recommended to rotate the public ssh keys(**Pem key**) at certain intervals. This rotation was a manual effort and took a lot of time and energy to rotate all the keys from all the servers. I came up with this idea of implementing an automated system that will keep rotating the keys at any specified frequency.

My Contribution:

- I implemented an architecture where the private and public key combination will remain stored in **AWS Secrets Manager** and a **lambda function** will update the keys in all the servers using **AWS SSM service**.
- Going forward with this setup, **0 manhours** needs to be invested in the rotation of PEM keys, During the server creation itself, it can be decided at what frequency the keys need to be rotated.

❖ **Setting up an EFK logging stack(2023).**

Objective: With the growing scale of bigbasket, we had a challenge of log volume management. We introduced more microservices and servers in our system that the overall log volume and cost became unmanageable. To tackle this we implemented some heuristic and automated solutions. I lead the project from design to implementation.

My Contribution:

- Did POC with various **logging stacks** like Loki, EFK (Elastic Search, Filebeat, Kibana), Fluentbit, PromTail, Auditbeat, logstash. This was to validate and compare the cost, agility and flexibility of stack.
- Implemented the EFK stack to collect logs from monolith and Kubernetes clusters and ship them to the **ElasticSearch**.
- Build a custom automated solution to ensure the log volumes and **cost** remain in control.

Other Notable projects:

- Overall BigBasket Infra **Cost Optimization**,
- CI-CD pipelines for shameless product delivery using Jenkins(Automated Job creation Using jenkins JJB),
- Kafka/zookeeper cluster Setup/configuration/**administration**,
- Newrelic APM Data ingestion and alerting,
- New Microservice onboarding and deployments to production.
- 50+ Python/shell scripts to **Automate toil and repetitive tasks** and **alerting**.

LANGUAGES & TECHNOLOGY

- Experienced Python programmer. Learning Go lang.
- Experienced with various terraform provisioners such as AWS, Helm, Kubernetes, Newrelic.
- Hands on Linux admin. Bash Shell Programmer.

Additional Experiences

- Have extensive experience working and debugging production systems.
 - Triaging S1 issues, Preparing RCA documents, planning and implementing fixes.
 - Being on an OnCall Roster for 24/7 support.
 - Working directly with application teams to bridge the gap between application and infra.
 - Assisted in designing and managing systems for HA and DR
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