

Geographically Distributed Clusters

By Alex Bissessur

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- Organiser of Cloud Native Mauritius
- Kubernetes Person™ at La Sentinelle
- Likes: Linux, FOSS, Tech Communities, Python, Rust
- Dislikes: Crashloopbackoff

Q: Most interesting thing about me?
A: My homelab

A Wild ALEX
Appeared!

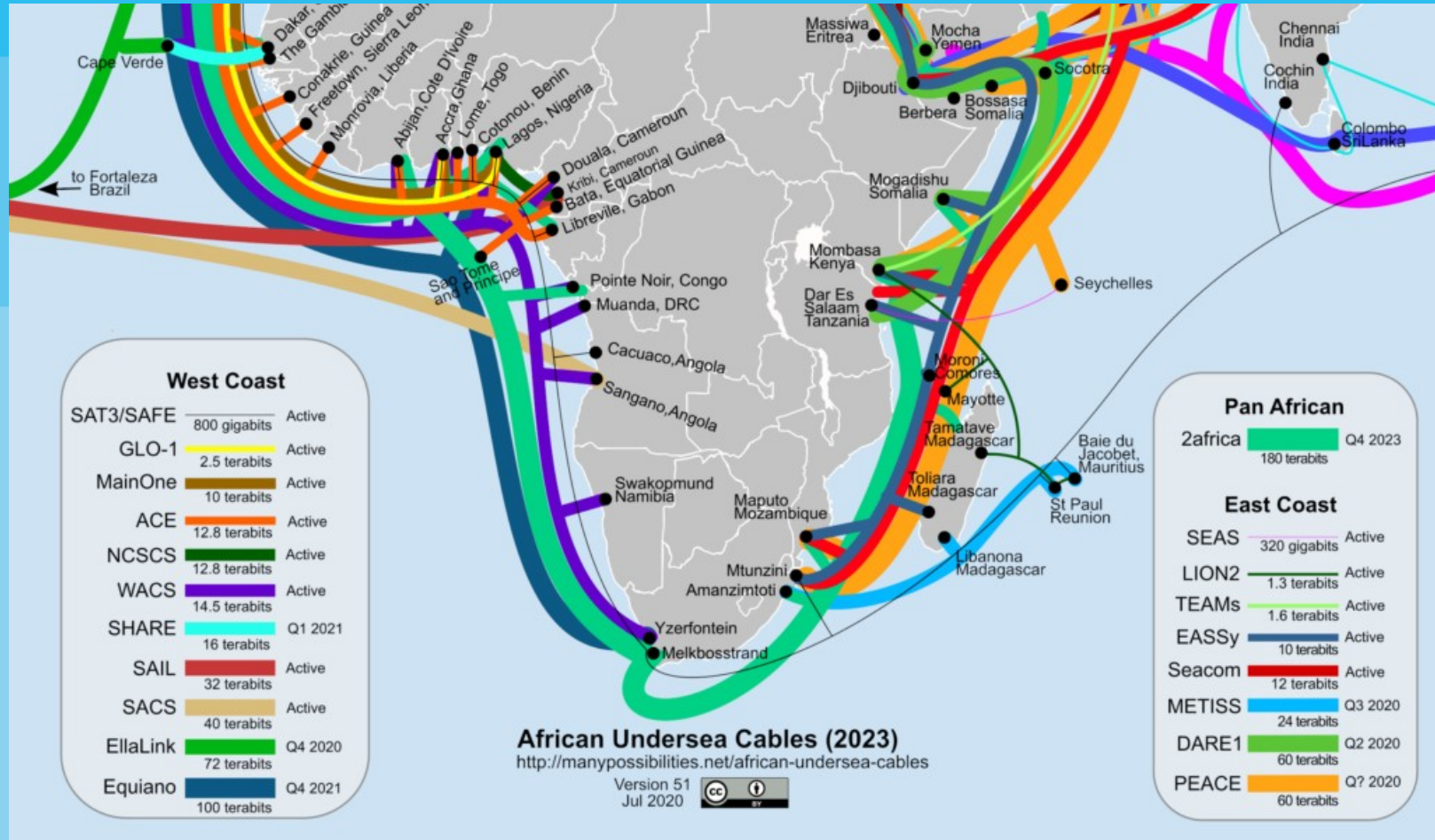
“I do fun things with
Kubernetes.”

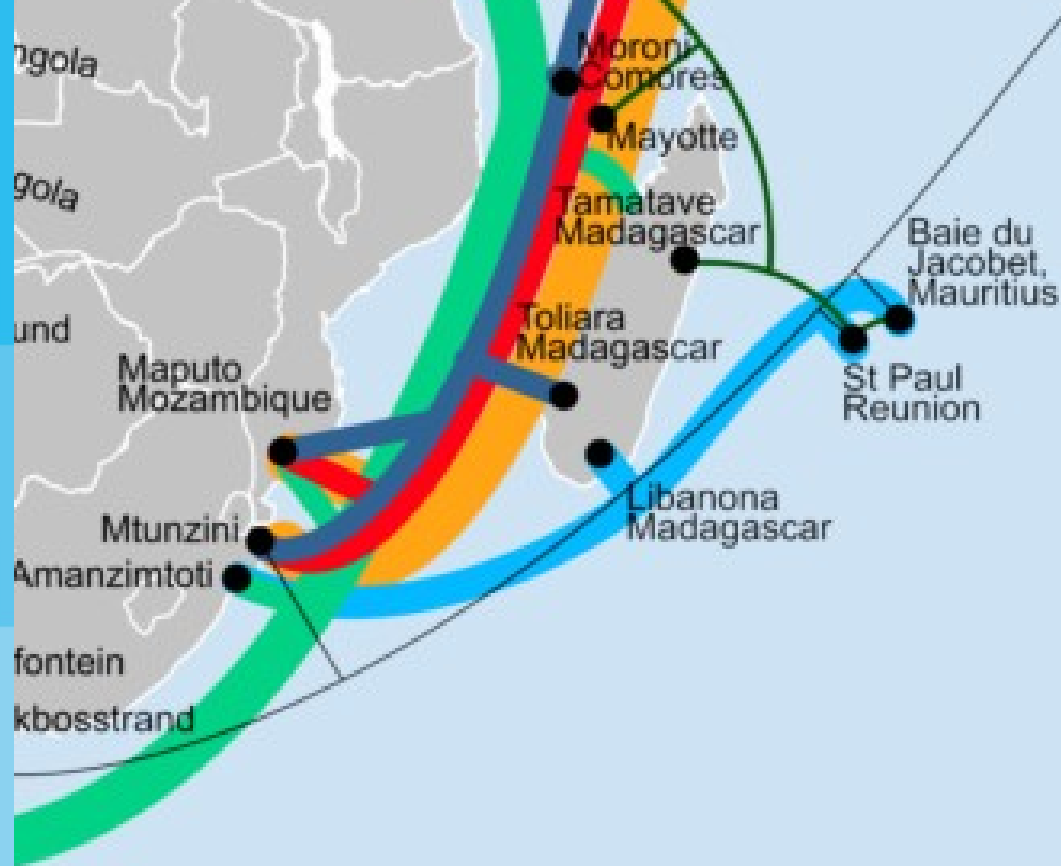


The Cloud In Mauritius

- Cloud naive not cloud native
- Until recently, the govt's official position was that cloud = bad
- Most people view the cloud as someone else's computer

Networking Situation






sea Cables (2023)


[s.net/african-undersea-cables](https://www.s.net/african-undersea-cables)



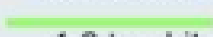
Pan African

2africa  Q4 2023
180 terabits

East Coast


SEAS  Active
320 gigabits

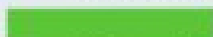
LION2  Active
1.3 terabits

TEAMs  Active
1.6 terabits

EASSy  Active
10 terabits

Seacom  Active
12 terabits

METISS  Q3 2020
24 terabits

DARE1  Q2 2020
60 terabits

PEACE  Q? 2020
60 terabits



Elevation News > Blog > News > Major Internet Outages in Mauritius Due to Undersea Cable Damage

NEWS TECH

Major Internet Outages in Mauritius Due to Undersea Cable Damage

The damage to the SAFE cable highlights the delicate nature of global internet infrastructure and the far-reaching effects of its disruptions.



Elevation News

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PEACE 60 terabits Q? 2020

CSPs in Mauritius

- cloud.mu is the only (?) CSP in MU
- AWS, GCP, Azure have strict requirements for setting up DCs
 - network redundancy
 - power redundancy
 - space issues
- Closest is South Africa (60ms)
and an undersea cable away

Solution?

The World Is Your Homelab

What we did

- Homelab at my place – cool but power down = no service
- Companies use multi-cloud for better reliability right?
- Well, let's have multi-homelabs, everything orchestrated through Kubernetes

The Plan

- 3 locations (houses)
- 3 machines per house
- All joined in one big Kubernetes cluster

Tech Used

- K3S for being lightweight
- Longhorn for persistent storage and replication
- Minio/S3 for backups
- Tailscale (for now) for connecting everything together

Concerns

- Latency
etcd heartbeat timeout 100ms
- Powercuts
CP in one place makes the cluster vulnerable
- IP Changes
routers cycle IPs every 24h
- Bandwidth
good connection needed for Longhorn

Production Use

- The cluster is used by a startup for their server needs
- Some changes to the cluster to support their needs:
 - Addition of exit nodes to Tailscale for access to non-Kubernetes nodes
 - Adding special GPU nodes for AI purposes