



## Pine Networks collaborates with Africell Sierra Leone to deploy a high-capacity disaggregated IP backbone

Africell Sierra Leone offers comprehensive mobile coverage, including 2G, 3G and 4G throughout the entire country. Additionally, Africell provides high capacity FTTx to cater to the connectivity needs of businesses and residential areas in Freetown.

Due to the significant surge in traffic resulting from its extensive 4G coverage and in preparation for the introduction of 5G, it became crucial for Africell to deploy a robust and scalable IP backbone network for the backhauling of both mobile and fixed traffic.

Known for its innovative approach and early adoption of new technologies, Africell made the strategic decision to deploy its new backbone infrastructure using disaggregated routing solutions based on the IP Infusion OcNOS Network Operating System (NOS) and the Edgecore Networks AS5916-54XKS Whitebox switches.

Pine Networks successfully delivered this turnkey project to Africell. Throughout this strategic endeavor, Pine Networks collaborated closely with Africell, overseeing the project from the initial design phase to its final completion, covering: network design, proof of concept, integration, migration and support.

**Ali Abou Hamdan, Head of Transmission and IP at Africell Sierra Leone highlighted:** "We took the decision to use a disaggregated routing solution because it covered all of our requirements and provided the flexibility we need, all at a lower price point than traditional routing solutions."



Africell Sierra Leone is a leading telecommunications company in Sierra Leone, providing mobile voice and data services.

Since its establishment in 2005, Africell has become one of the largest mobile network operators in the country. With a focus on reliable and affordable communication, Africell offers a range of services including voice calls, text messaging, mobile internet, and mobile banking.

Africell has made significant investments in network infrastructure and is committed to bridging the digital divide and supporting community development.

Africell Sierra Leone strives to empower individuals, businesses, and communities through its telecommunications solutions.

# Main Challenges

Africell needed a solution that covers the following critical requirements:

- Scalability to accommodate future traffic growth and the introduction of new services seamlessly.
- Millisecond convergence time in the event of link or node failures.
- Simple to operate and to maintain.

In addition to the above, the solution needed to take into consideration the following aspects, specific to Africell's environment: the transmission layer is a mix of fiber and microwave with different capacities, fiber cuts can be frequent and the stability of point-to-point microwave links can be impacted by heavy rain during the rainy season.

## Solution

The network was designed using Segment Routing MPLS (SR-MPLS) therefore eliminating the need for explicit label distribution and for LDP-IGP synchronization, which can be a potential source of complexity and stability issues in traditional MPLS networks. Furthermore, SR-MPLS provides traffic engineering capabilities and fast reroute in case of node or link failure. SR-MPLS also provides a flexible and versatile infrastructure that supports a wide range of services such as L3VPN and L2VPN need for mobile and fixed services provided by Africell.

Traffic was smoothly migrated from the legacy layer 2 network to the new IP backbone. As a result Africell benefited from: higher capacity, lower latency and improved resiliency.

**Ali Bazzi, CTO of Africell Sierra Leone: "The Freetown IP backbone project is a strategic project for us that will enable us to expand our 4G coverage and introduce 5G. Pine Networks delivered this project on time and with a great level of expertise."**

## Network Management

For visibility and performance monitoring, Africell Sierra Leone deployed Pine Networks PMO, network Performance Management and Observability platform. PMO is a vendor agnostic network management system purpose-built for disaggregated IP networks. PMO covers multiple routing vendors and is easily customizable to cover new devices and use cases.

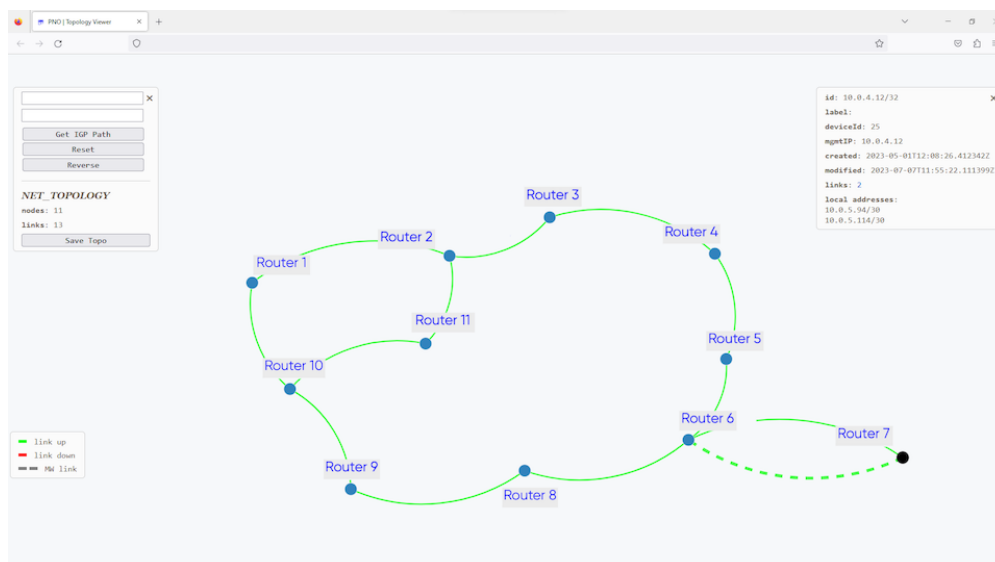


Figure 1 : PMO topology view

PMO provides Africell:

- **Visibility** into devices and modules. Up-to-date network topology with automatic links discovery.
- **Real-time alerting** of issues impacting the network in order to take actions immediately.
- **Dashboards** of Key Performance Indicators for a better understanding of the network performance.
- **Automated backup** of configurations when changes are detected. Configuration changes are clearly highlighted to simplify troubleshooting.

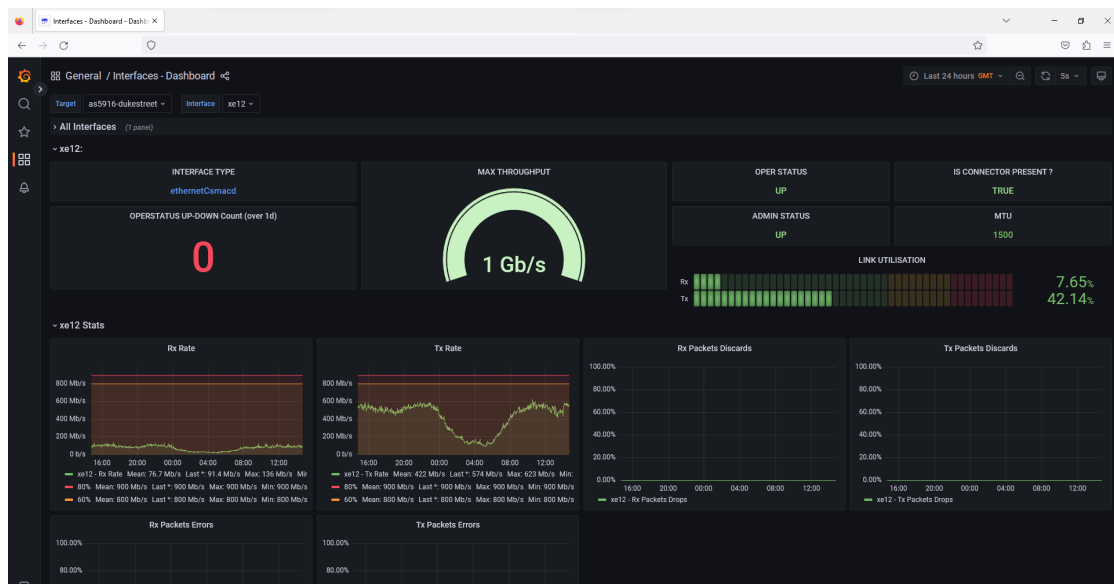


Figure 2: Customizable interface utilization dashboard

As a result of implementing PMO, Africell has now clear visibility into the IP backbone. The operations team is immediately informed of any issues impacting the network. With PMO's dashboards, Africell can take proactive actions, based on real-time performance data, in order to avoid network performance issues.

**"Pine Networks supported us throughout the whole project. They have excellent understanding of IP networks, transmission and disaggregated technology."** said Ali Abou Hamdan, Head of transmission and IP at Africell Sierra Leone.

**Pine Networks**



Pine Networks is a leading system integrator specialized in open disaggregated networking and real-time monitoring solutions. We transform your network into an open, controllable and flexible network by relying on disaggregated, virtualized and open technology. This new approach delivers multiple benefits including cost savings, scalability, no vendor lock-in and efficiency.

Our aim is to guide our customers through their journey to network disaggregation so they can reap all the benefits of this new model. Our promise to our customers is a faster time-to-market, operational simplicity and major TCO savings.

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