



# POWERING CONNECTIVITY AND GROWTH IN MALI AFRIBONE MODERNIZES NATIONAL AND INTERNATIONAL ISP INFRASTRUCTURE WITH OCNOS

## HIGHLIGHTS

- International Interconnects
   Established: Through OcNOSpowered POPs in Paris, Dakar, and Abidjan, Afribone now peers at global IXPs, reducing latency and transit costs.
- Simplified Operations & Training: With industry-standard CLI and a consistent OS across all platforms, the learning curve for network engineers was minimal.
- Modern Networking: Support for L3VPN, advanced Layer 2 VPN to replace VPLS, SR, and MPLS allowed Afribone to meet enterprise and international interconnectivity requirements.
- Centralized Management & NOC Control: A unified NOS across DC and SP environments enabled more effective monitoring and troubleshooting from Bamako NOC.
- Multi-Vendor Hardware Flexibility: Deployed across Edgecore and UfiSpace platforms, OcNOS let Afribone choose hardware fit for purpose, including thermally robust platforms for harsh environments.
- **Proactive, Responsive Support** IP Infusion's professional support ensured a smooth deployment and scale-up for Afribone
- Lower Total Cost of Ownership: OcNOS on whitebox hardware enabled Afribone to scale without the high price tags of legacy vendors.

Afribone, a leading ISP in Mali since 1999, has been key in expanding internet access nationwide. Facing rising bandwidth needs, growing enterprise demand, and a larger customer base, Afribone set out to overhaul its network, aiming for a high-performance, future-ready infrastructure that remained costeffective.

With plans to scale from a few POPs in Bamako to 30+ sites and international peering, Afribone selected IP Infusion's OcNOS to power both its data center and service provider operations.

#### CHALLENGES

Afribone's setup was a mix of legacy and opensource tools, including aging Cisco Catalyst routers, MikroTik devices, and Linux-based routing, none of which met modern standards for performance, automation, or scalability

- **Bandwidth Bottlenecks**: Built on 1G Ethernet, the network couldn't meet rising demand. Afribone needed 10G+ links across its backbone and DC.
- Data Center Overhaul: Data center required a robust Layer 2/Layer 3 switching solution with high port density and strong protocol support.
- Fragmented Routing: Multiple stacks (Zebra/Quagga, IOS, MikroTik) hindered policy consistency, troubleshooting, and training.
- Harsh Environments: Many POPs faced extreme heat (55–60°C), limiting whitebox use and extending reliance on MikroTik at the edge.
- **Peering Expansion:** Afribone sought direct connections to France-IX and AMS-IX, needing scalable, BGP-rich routing with full table support and redundancy.
- **Tight Budgets:** Afribone needed high-end functionality without vendor lock-in, making whitebox economics attractive, if reliability and support held up.





#### SOLUTION

Afribone's journey with OcNOS began with the data center upgrade and extended to a nationwide service provider deployment.

**Data Center Fabric (OcNOS DC)**: In early 2019, Afribone deployed a spine-leaf fabric in their Bamako data center using Edgecore switches running OcNOS. This design provided high availability, scalability, and flexibility for customer hosting, server interconnects, and enterprise services. OcNOS was used for Top-of-Rack (ToR) switches and spines, running OSPF and BGP for robust underlay routing. The deployed switches included:

• OCNOS-DC-IPBASE-AS5812-54X – The base version of OcNOS DC hosted on Edgecore AS5812-54X whitebox switch with 48x 10G ports and 4x 40G uplinks.

**Core Routing & National Backbone (OcNOS SP)**: By 2020, Afribone expanded their use of OcNOS across their MPLS backbone. Using a Provider/Provider Edge (P-PE) model, they transitioned to Layer 2 and Layer 3 services over VPLS and EVPN. The backbone used Edgecore and UfiSpace routers supporting 10G+ links and full protocol stacks, centrally managed from the NOC. The deployed switches included:

- OCNOS-SP-MPLS-1080-AS5912-54X The MPLS version of OcNOS SP hosed on Edgecore AS5912-54X whitebox switch with 48x 10G ports and 6x 40/100G uplinks.
- OCNOS-SP-MPLS-1080-AS5916-54XKS The MPLS version of OcNOS SP hosed on Edgecore AS5916-54X whitebox switch with 48x 10G ports and 6x 40/100G uplinks.

**Remote POP Upgrades (OcNOS SP)**: Initial POPs remained on MikroTik due to environmental limitations. However, with UfiSpace releasing ruggedized platforms in 2021, Afribone began replacing these sites with OcNOS-capable routers. This extended the consistency and performance of their backbone to the network edge. The deployed switches included:

- OCNOS-CSR-120-S9501-18SMT The CSR version of OcNOS with support for MPLS and timing synchronization, hosted on UfiSpace S9501-18SMT temperature hardened whitebox switch with 16x 100M/1G SFP, 4x 100M/1G RJ45 port, and 8x 1/10G SFP+ uplinks.
- OCNOS-SP-MPLS-300-S9500-22XST The MPLS version of OcNOS, hosted on UfiSpace S9500-22XST temperature hardened whitebox switch with 4x 100M/1G RJ45, 8x 1/10G SFP+, 8x 25G SFP28 ports, and 2x 40/100G QSFP28 uplinks.



Afribone core, backbone, and POP network upgrade with IP Infusion OcNOS



#### International Connectivity & Peering (OcNOS

SP): Starting in 2021, Afribone built two diverse routes from Bamako to Paris (via Dakar and Abidjan), establishing international POPs running OcNOS. These POPs now handle BGP peering with carriers like Cogent, NTT, Opentransit, and Zayo, and connect to IXPs including France-IX (Paris), AMS-IX (Amsterdam and Lagos), and a local IXP in Bamako. The deployed switches included:

- OCNOS-DC-IPBASE-720-AS5812-54X -The base version of OcNOS DC hosted on Edgecore AS5812-54X whitebox switch with 48x 10G ports and 4x 40G uplinks.
- OCNOS-SP-MPLS-1080-AS5912-54X The MPLS version of OcNOS SP hosed on Edgecore AS5912-54X whitebox switch with 48x 10G ports and 6x 40/100G uplinks.



Afribone International Private Leased Circuit (IPLC) Connectivity Network with OcNOS

#### **SUMMARY**

Afribone's partnership with IP Infusion has transformed their network from a legacy setup into a scalable, efficient, and internationally connected infrastructure. With OcNOS deployed across their data center and service provider backbone, Afribone now operates a robust, modern network capable of delivering high-performance services to customers in Mali and beyond. By choosing open networking, Afribone proved that carrier-grade quality is achievable without the cost and complexity of traditional systems.

"Choosing OcNOS was one of the best strategic decisions we've made. It gave us the features and stability we needed to scale, without locking us into expensive vendor ecosystems. Today, we're delivering better service to our customers, running a modern infrastructure, and building for the future—with confidence," – **Eric Stevance, CEO of Afribone** 

## **Contact for More Information:**

For more information on the OcNOS software, please contact sales@ipinfusion.com

### **ABOUT IP INFUSION**

IP Infusion is a leading provider of open network software and solutions for carriers, service providers and data center operators. Our solutions enable network operators to disaggregate their networks to accelerate innovation, streamline operations, and reduce Total Cost of Ownership (TCO). Network OEMs may also disaggregate network devices to expedite time to market, offer comprehensive services, and achieve carrier grade robustness. IP Infusion network software platforms have a proven track record in carrier-grade open networking with over 500 customers and over 10,000 deployments. IP Infusion is headquartered in Santa Clara, Calif., and is a wholly owned and independently operated subsidiary of ACCESS CO., LTD. Additional information can be found at http://www.ipinfusion.com

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