



ANNUAL REPORT



SIGNIFICANT GAINS
BRIGHT FUTURE

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FOREWORD BY THE BOARD CHAIR

Dear Community Members,

I am pleased to present the Annual Report 2023 on behalf of the WACREN Board of Directors. As we reflect on the past year, we acknowledge the challenges faced in the year under review and the successes we achieved together. Our aim remains steadfast: To consolidate our achievements and continue to drive advancements in the cutting-edge solutions we provide for our region's research and education community.

This annual report encapsulates our journey in navigating both perennial and emerging challenges through strategic directions. Despite operating within a dynamic, fast-paced environment with minimal resources, we augmented our efforts to yield optimal results.

Looking ahead to 2024, we will focus on leveraging our resources and collaborations to deliver value to our community of stakeholders. In 2024, we will focus on expanding the coverage of our network by connecting more countries and ensuring its availability, accessibility, and security.

Furthermore, we aim to introduce more innovative digital services and infrastructure to propel research and education in West and Central Africa.

I urge all our stakeholders, particularly the national research and education networks, to demonstrate heightened commitment and dedication to our shared cause. It is imperative that we showcase the effectiveness of our NRENs to advocate for increased support from policy and decision-makers, and funding partners.

We sincerely thank the European Commission (EC) for its unwavering support to research, science and education in our region through the AfricaConnect project.

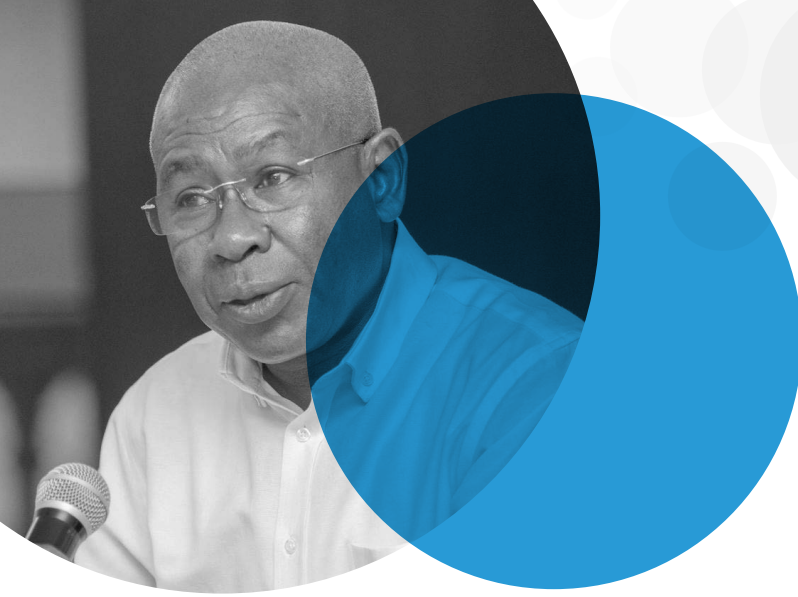
We also thank The World Bank that has been instrumental in allowing new NRENs to be connected to the WACREN backbone. The process is ongoing and the NREN map in our region is being taken to the next level.

Additionally, we thank Agence Française de Développement (AFD) for supporting the Africa Digital Campus project.

We also look forward to strengthening our cooperation with the Foreign, Commonwealth and Development Office (FCDO) in the coming years.

Last but not the least, we thank all project implementation partners for their collaboration and dedication to realising our shared objectives.
Thank you.

Dr. Venant PALANGA
Board Chair, WACREN



CEO'S REPORT .

Dear Members,

It is my pleasure once again to report on activities and efforts of WACREN in the past year and their impact on our cherished, ever-growing community.


First, allow me to, on behalf of my colleagues at WACREN, express profound gratitude to the Chair and Board of WACREN for their strategic guidance and counsel throughout the year under review.

Our gratitude goes to the European Commission, particularly the Directorate-General, Development Cooperation (DEVCO), for their unalloyed support and demonstrable commitment to research and education in our region. We thank our partners in Africa – UbuntuNet Alliance and ASREN, as well as GEANT for successfully collaborating to implement the AfricaConnect project in Africa. We are equally grateful to Agence Française de Développement (AFD) and Institut de Recherche pour le Développement (IRD) for the partnership in implementing activities under the Africa Digital Campus project in Benin and Burkina Faso. Gratitude also goes to the Foreign, Commonwealth and Development Office (FCDO) for supporting our Open Science activities.

In 2023, WACREN was mainly engaged in two main projects – the AfricaConnect3 (AC3) and the Africa Digital Campus. Under AC3, much of our efforts were channelled into capacity building, advocacy and enhancing the resilience of our infrastructure. Though WACREN did not connect any of our NRENs in 2023, we raised the counter-funding quota to meet the AC3 funding requirement in order to connect 6 countries next year.

Despite bandwidth delivery challenges on some routes, we saw an increase in the use of our network by already connecting NRENs. While scripting this report, WACREN has served over 100 public and private higher learning institutions, research centres, and government institutions across our region. Our network also supports hundreds of thousands of students, researchers and educators in the region. In the year under review, WACREN made significant efforts to diversify and enhance the delivery of our services. The advancement of Open Science among stakeholders in our region was a front burner in 2023. The LIBSENSE programme led by WACREN was a shining example of our efforts at driving Open Science in our region and beyond. LIBSENSE is fast becoming a household name in Africa and beyond in pro-African efforts to advance Open Science.

Under the ADC project, WACREN, in collaboration with partners, commenced efforts to deliver the needed digital learning infrastructure and build the capacity of network administrators in beneficiary universities. Our engineers also worked hard to ensure the project was delivered on robust network infrastructure and a conducive environment.



A modern hyper-converged cluster to support a hands-on virtual lab environment and some student e-learning applications were designed and acquired to benefit students in Benin and Burkina Faso. WACREN provided a complete open-source communication tool capable of messaging, video conferencing, video calls and webinars to facilitate collaboration and create a formidable community in the two pilot countries to bridge the communication gap.

In the year under review, we saw commitments by some governments towards the activities of national RENs. We commend the governments of The Gambia, Mauritania, Guinea Bissau and Sierra Leone for showing demonstrable commitments by giving audience to, and in some cases, facilitating the payment of the co-funding for their respective NRENs or equivalents to join the AC3 project.

Considering the ever-dynamic nature of our environment, WACREN and its members will need to work more closely to create real value for the education and research community in West and Central Africa. I will end with Henry Ford's words: "Coming together is a beginning, staying together is progress, and working together is a success."

I call on all community stakeholders to work with us to create, maintain and enhance a world-class research and education network and services to deliver value and contribute to the development of our region and continent.

Thank you,

Dr Boubakar BARRY
CEO, WACREN



SECRETARIAT

Board Members

Dr Eyouleki T. G. Palanga	CEO TogoRER (WACREN Chair)
Dr Ousmane Moussa Tessa	CEO, NigerREN
Prof. Souleymane Oumtanaga	Board Member
Dr Joshua Attah	CEO, NgREN
Mr Lucas Chigabatia	CEO, GARNET
Mr Pierre C.B. Bakoroba	CEO, MaliREN
Dr. Boubakar Barry	CEO, WACREN

WACREN Contact Address



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Independent Auditors

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Chartered Accountants
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Accra - North

Bankers

Ecobank Ghana
Silver Star Towers Branch
Airport City St, Ground Floor Silver Star Towers

WACREN Secretariat •

1. Dr. Boubakar Barry (Senegal) – Chief Executive Officer
2. Omo Oaiya (Nigeria) – Chief Strategy Officer
3. Edward Banjo (Nigeria) – Senior Network & Infrastructure Engineer
4. Ivan Yeboah (Ghana) - Finance and Administration Officer
5. Eric Attou (Benin) - Network and Systems Engineer
6. Tiguidanke Bah (Guinea) - Executive Assistant
7. Sefakor Ankora (Ghana) – DevOps Engineer
8. Koudoussou Outtara (Burkina Faso) – NOC Engineer
9. Olalekan Allade (Benin) – NOC Engineer
10. Juliet Ahiagbede (Ghana) - Accountant
11. Kwaku Effah Amponsah (Ghana) - Communication and Marketing Officer



KEY ACTIVITIES IN 2023

- In 2023 WACREN focused on the following activities
- Network Expansion and Direct Support to NRENs
- Network Upgrade, Monitoring and Management
- Advanced Digital Services
- LIBSENSE (Library – RENS Collaborations)
- TrustBroker Africa (Cybersecurity collaborative framework)
- The Africa Digital Campus project
- Membership, Communication and Marketing
- Human Resource and Secretariat Activities
- Conferences and Workshops

Network Expansion & Direct Support to NRENs

No New Connections to the Backbone

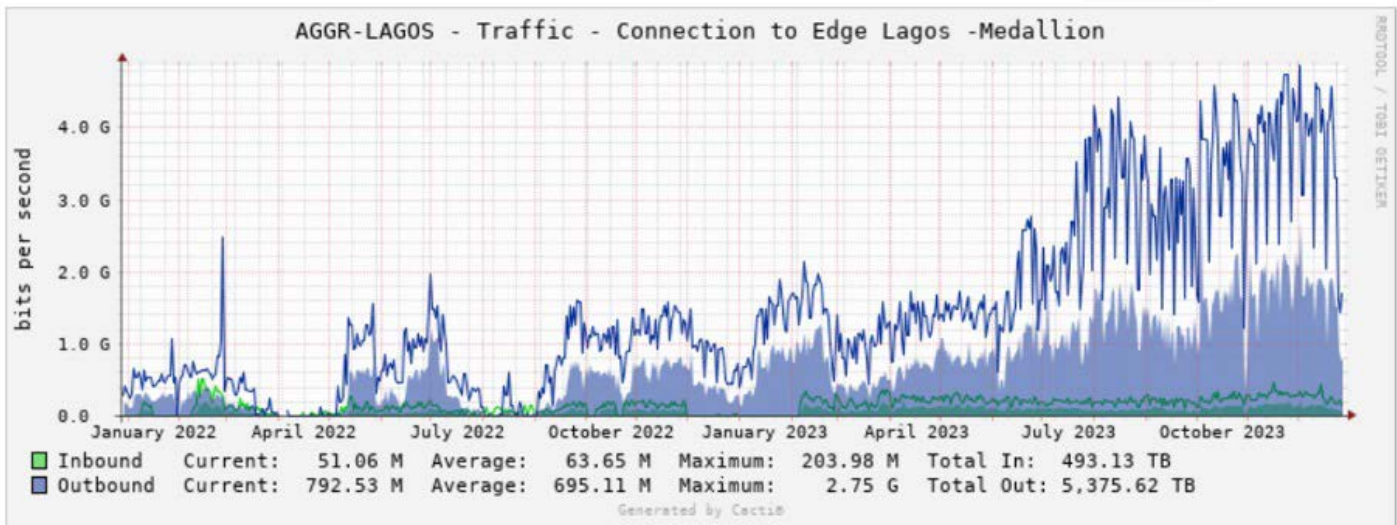
During the period under review, WACREN encountered challenges in extending its backbone to additional countries due to the absence of matching funding from targeted nations, notably Sierra Leone, Liberia, and Guinea. Despite discussions between the NRENs of these countries and potential funding agencies like the World Bank and USAID, no viable agreements were reached. Moreover, GEANT did not approve the proposed strategy of investing up to a certain level without reciprocal funding, operating the links, generating revenue, and then repaying the funding.

A proposed 20% counter-funding requirement posed a significant obstacle to connecting more countries to the WACREN backbone. Governments' reluctance to allocate resources and shifting priorities further complicated efforts to raise the necessary funding. Revenue from services provided to connected NRENs fell short of covering the required counter-funding.

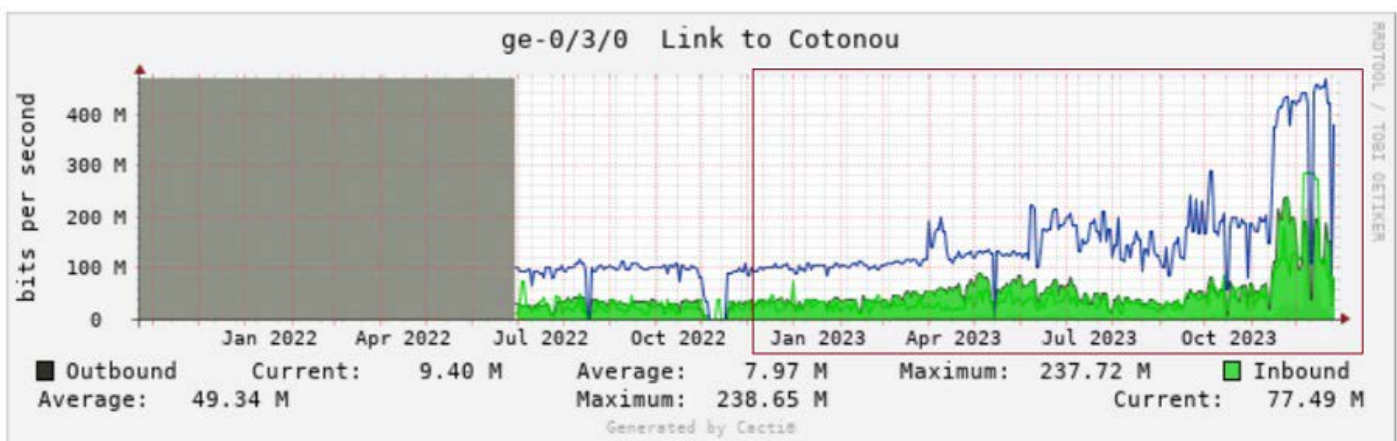
These notwithstanding, some countries, such as The Gambia and Mauritania, received support from the World Bank through the WARDIP project to join the AfricaConnect3 project. With the payment of the counter-funding by these countries, WACREN satisfied the funding requirement of the AfricaConnect3 project. Due to the late arrival of the funds, the procurement process for the purchase of links could not be completed. Hopefully, these countries will be connected to our backbone by the close of 2024.

Increment in Network Utilisation

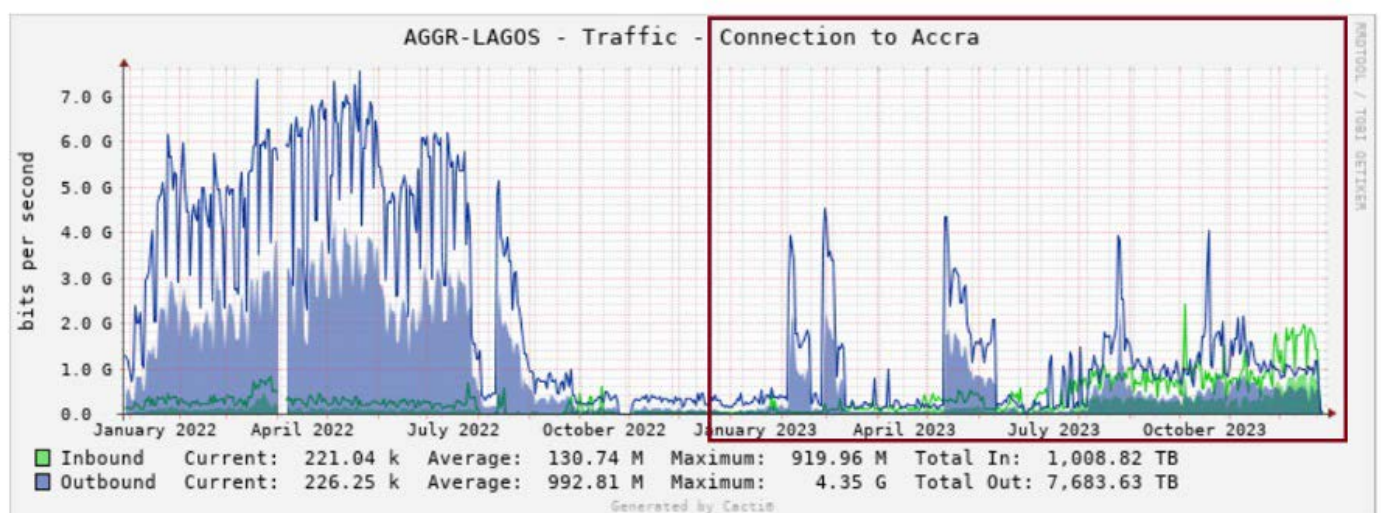
In 2023, some increments in the utilisation of our network were recorded. Nigerian NREN (NgREN), RBER (Benin), UVCi in Cote d'Ivoire and GARNET increased their usage. Unfortunately, FASOREN's decreased usage was unexpected, partly due to the network's poor performance.



NGREN. This link experienced an increase in capacity. The logical explanation will be that more institutions were onboarded, or internet penetration increased within already connected institutions. WACREN doubled the NGREN last year.

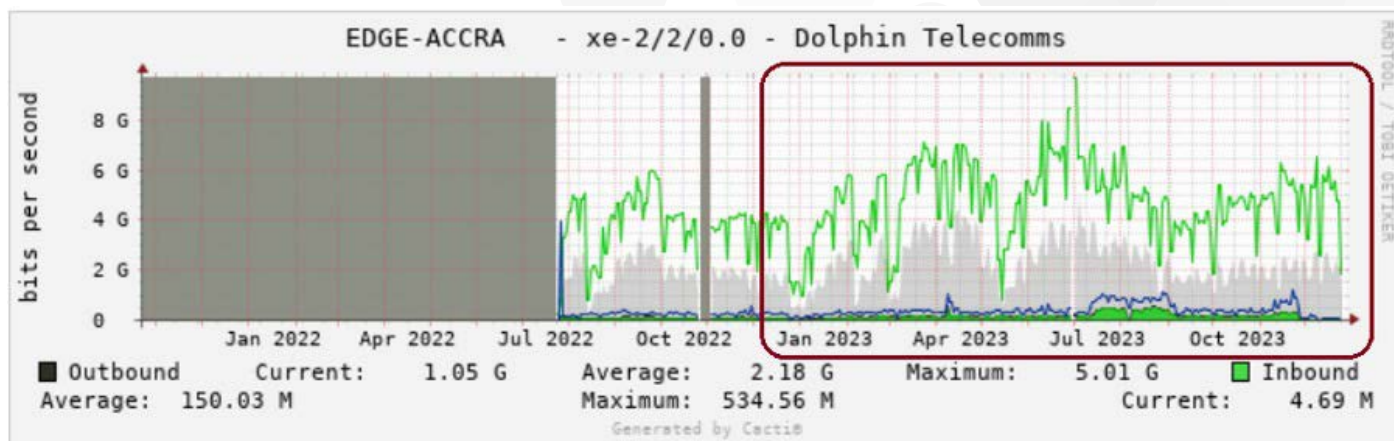


RBER. This link is a 2 x STM1 link, and from October 2023, an increase in utilisation was witnessed. RBER is only one AS number in the WACREN radar. All RBER participating institutions are connected via static IP, not BGP.

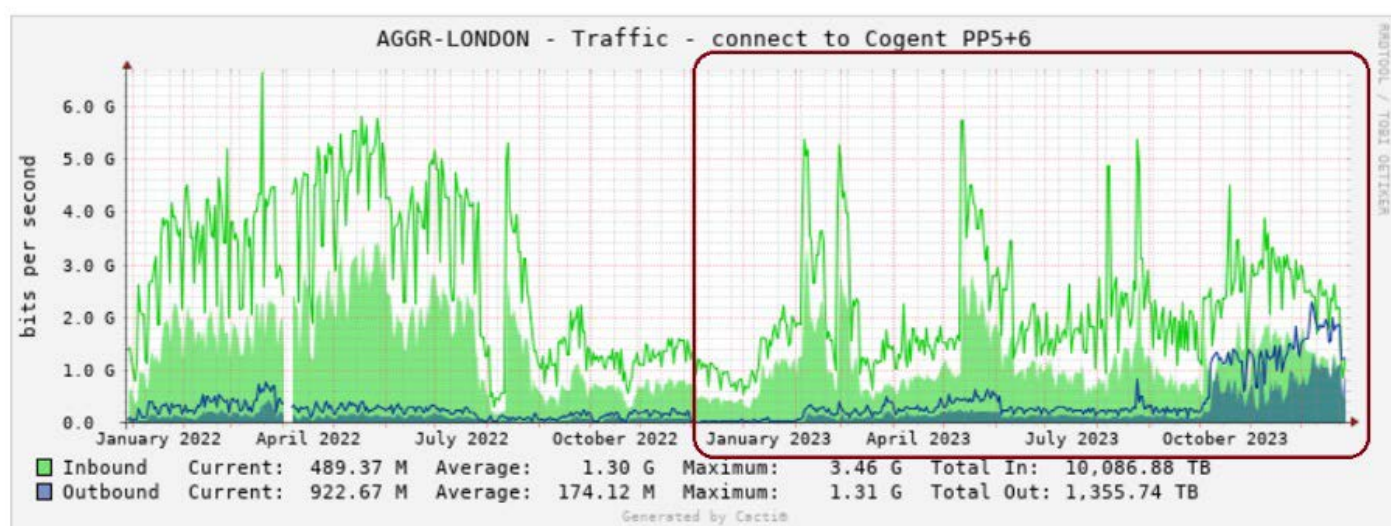


GARNET. It is important to note that this GARNET utilisation is from the perspective of the Lagos Aggregate router. This only captures GARNET traffic destined to and from other NREN within the WACREN and traffic to and from the exchange. All other GARNET commercial traffic goes via Dolphin Communications, not captured here.

Service Providers' Utilisation



This graph doubles as WACREN's utilisation of Dolphin subscribed service—and GARNET's commercial traffic utilisation, as that is the only traffic that transverses Dolphin's telecoms.

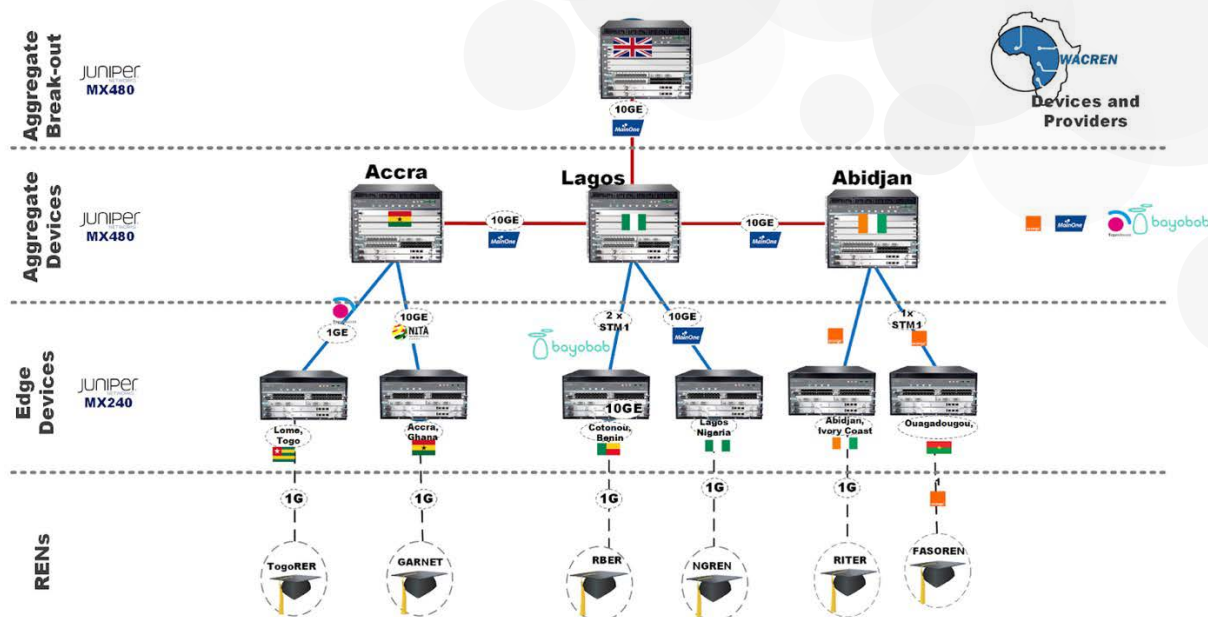


Cogent. There was an unexpected increase in utilisation this year, especially with the WACREN subscription to Dolphin Telecoms in Ghana.

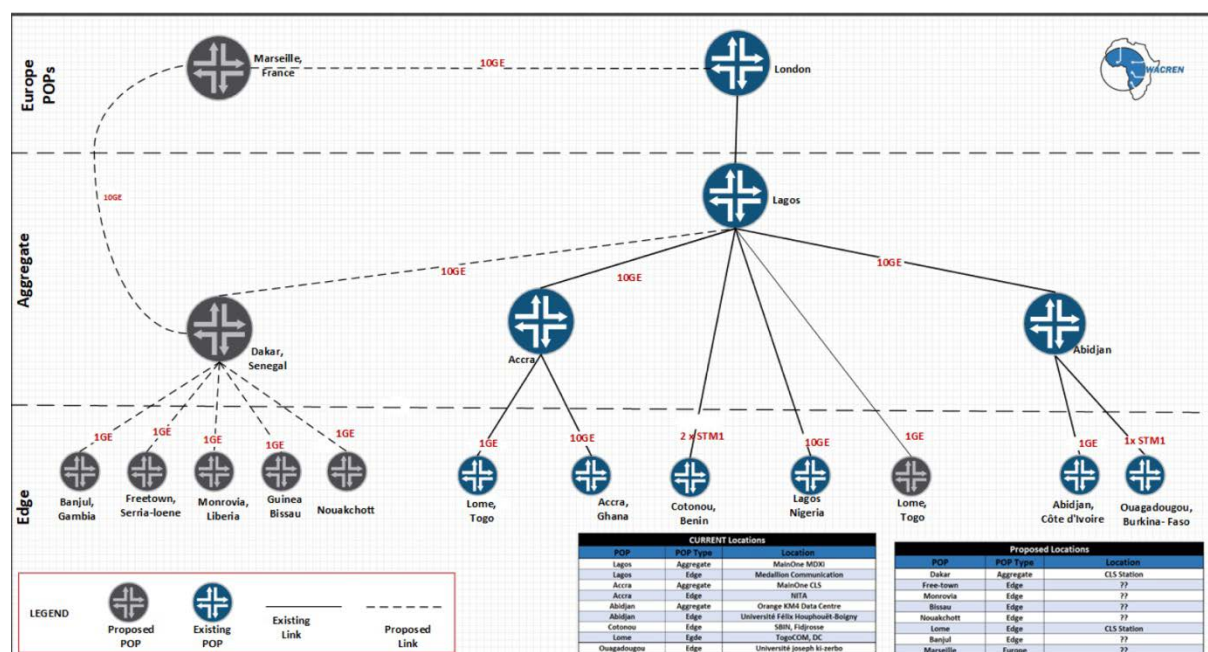
Network Upgrade, Monitoring and Management

The WACREN Network Operations Center (NOC) undertook daily network operations, encompassing monitoring, configuring, troubleshooting faults, ensuring security, optimising performance, and managing accounting to maintain the network's functionality. Daily responsibilities also involved Service Desk operations as well as addressing incidents reported by service providers and NRENs via a ticket management tracking incidents and responses. The WACREN technical team, operating from the remote NOC, determinedly managed the network. To facilitate network monitoring, WACREN consistently deployed the PerfSONAR infrastructure.

The diagrams below show the current active WACREN POPs and the short-term plan to establish an aggregation POP in Dakar, Senegal, which will be the primary location for receiving the majority of new connections to the WACREN backbone. A new POP will also be established in Marseille, France, which will be connected to the Dakar POP. That new POP in Marseille will be connected to the existing WACREN POP in London to improve the resilience of the network.



Current WACREN active POPs and connectivity providers.



Current WACREN topology and planned expansion

Digital Services

Videoconferencing



WACREN continued delivering Zoom video conferencing services to its members through public meeting connectors. Nearly one million users accessed the Zoom platform throughout the region, significantly augmenting the provision and sustainability of digital education in WACREN-linked nations. Currently, more than 4000 affordable Zooms licenses provided by WACREN are being used in the region. The majority of the licenses were utilised in Ghana.

In the year under review, WACREN began to test eduMEET - a web-based video conferencing tool. The eduMEET platform is an open-source, community-developed video conferencing platform designed by and for the Research and Education community, enabling Institutions to build a low-cost, easy-to-use VC platform for small to medium-sized groups. After the testing phase, WACREN will pilot the tool in some countries before rolling it out as a service to the community.

eduroam

eduroam is used in Nigeria, Ghana, Benin, Togo and Burkina Faso. Cabo Verde and Côte d'Ivoire are pilot candidates. As part of interventions to strengthen snRER, support is being provided to CINERI (Cyber-infrastructure nationale pour l'enseignement supérieur, la recherche et l'innovation), the agency mandated to manage shared digital infrastructure for Higher Education and Research in Senegal, to revive the first eduroam national roaming operator in the region which was otherwise inactive.

eduGAIN

As of the end of 2023, Eko-Konnnect was still the only NREN that was fully on eduGAIN. Other NRENs reached various stages of eduGAIN accession. For instance, FasoREN and TogoRER had established the policy and technical requirements and connected member services while awaiting their application to eduGAIN to be fully processed. In Côte d'Ivoire, technical requirements have been completed, but the eduID.ci operating policies are yet to be ratified. The virtual university of the country is using it in its projects. GARNET and RBER are in a similar late stage and are awaiting completion of the community governance processes that make them eligible for participation in eduGAIN.

WACREN Data Hub

This was also a new service in the testing phase. WACREN Hub is a catch-all data repository for the WACREN community to enable the storage, sharing, and publishing of digital objects, particularly research data. It will facilitate open access to research data and the FAIR principles by making research output findable, accessible, interoperable and reusable. The repository uses persistent identifiers and synchronises with data hubs, thus maximising the visibility of uploaded content.

Scholarly Publishing Platform

To meet the publishing needs of scholars and publishers in our community, WACREN tested a new service for scholarly publishing based on Kotahi. Kotahi is a state-of-the-art, open-source, scholarly publishing platform that supports multiple end-to-end workflows, making it the perfect solution for publishers large and small. We hope this service will fully deploy by the third quarter of 2024. WACREN will seek to work with member NRENs to ensure the deployment of the publishing service to their respective communities.

WACREN Persistent Identifier

To contribute to preserving digital assets produced by scholarly communities within the region, WACREN began to pilot a persistent identifier (PIDs) solution called WACREN ARKS. At production, the application will help scholarly communities have a standardised framework for ensuring long-term accessibility, discoverability, and attribution of their digital resources.

Video Management Platform

WACREN also tested a multifunctional, open-source video platform in the year under review. This versatile, multitenant and feature-rich video platform is expected to help NRENs and their communities harness the power of video for pedagogy delivery, communication and collaboration. The platform has various video management capabilities, including creation, editing, uploading, live streaming, playback and delivery, integration and customisation, analytics and reporting.

Cloud-based Collaborative Platform

In 2023, WACREN started testing an open-source, secure messaging and team collaboration application. The platform supports end-to-end encryption, private and public groups, file sharing between users, voice and video calls, and other collaborative features with the help of bots and widgets. Think of it like the Slack collaborative platform. This new tool operates on WACREN infrastructure, allowing data to be localised. When rolled out in collaboration with NRENs, this tool will be very useful to research teams and study groups in higher education institutions in the region.

IoT-based Weather Monitoring System

One novel initiative by WACREN in 2023 was piloting the IoT-based (LoRAWAN) weather monitoring system in Ghana. Through a collaboration between the Abdus Salam International Centre for Theoretical Physics (ICTP - Italy), GARNET and the Ghanaian Meteorological Agency, there was a workshop and installation of low-cost LoRAWAN weather stations to receive real-time weather data for decision-making and weather reporting. This initiative was indicative of the power of collaboration that harnessed the capabilities of stakeholders in a synergetic relationship. Thankfully, ICTP has agreed to keep collaborating with WACREN to replicate the instance in Nigeria with a workshop on deploying IoT-based sensors for real-time monitoring of surface water pollution in Ile-Ife, Nigeria.

BonafID

In 2023, BonafID, a cloud-based, lifelong, federated identity and access management (IAM) platform developed on open-source software, which was piloted in Nigeria and Côte d'Ivoire.

TrustBroker Africa

The TrustBroker Africa (TBA) Service forms the trusted backbone of infrastructure services and serves as a clearinghouse for all security and incident response teams. In 2023, WACREN made significant headway in the three main areas: listed teams, community building and awareness. In 2023, five CERTs from four countries - Benin, The Gambia, Mozambique and South Africa, were listed. More than twenty cybersecurity professionals drawn from the WACREN region participated in the TBA community-building workshop held in Lagos. Participants from Ghana, Benin and Sierra Leone pledged to initiate steps towards establishing CSIRTs in their respective NRENs and institutions. TBA gained attention and visibility through a presentation at the Global Conference on Cyber Capacity Building held in Accra.

LIBSENSE

Chair and Members, LIBSENSE gained traction in the open science terrain in Africa and beyond in 2023 due to its valuable contribution to the advancement and advocacy for open science in the WACREN region and across Africa. LIBSENSE focused on the following in 2023:

National Collaborations on Open Science Policy

After a modest success in Ghana in 2022, LIBSENSE, through its symposiums in Nigeria and Sierra Leone, brought key national and institutional stakeholders to the table to discuss a bottom-up approach to open science policy framework and governance in the two countries. 120 participants from libraries, publishing houses, research institutions, NRENs, government ministries in charge of science, technology and innovation (STI) as well as policy makers,

- <https://indico.wacren.net/event/192/>
- <https://www.trustbroker.africa/registry/index.html>
- <https://indico.wacren.net/event/179/>
- <https://africaconnect3.net/cyber-security-capacity-building-africaconnect3-at-gc3b-in-accra/>
- <https://indico.wacren.net/event/175/>
- <https://indico.wacren.net/event/174/>

attended the LIBSENSE Symposiums in Nigeria and Sierra Leone. Key outcomes included the drafting of a national open science policy for Sierra Leone and the formulation of a working group comprising the union of university librarians (AULNU), researchers, and the committee of directors of IT in Nigerian universities (COMDICT).

Efforts at Enhancing the Visibility of African Scholarly Outputs

WACREN (through LIBSENSE), in collaboration with the Electronic Information for Libraries (EIFL) and African Journals Online (AJOL), began a three-year project to support diamond open access (OA) publishing in Africa. The initiative aims to empower the African diamond OA community and provide cost-efficient, open, shared publishing infrastructure. AJOL, renowned as the world's most extensive online collection of African-published, peer-reviewed scholarly journals, will help to model options to liberate African authors and readers from the financial burdens of Article Processing Charges (APCs) and subscription fees.

Roadmap for Implementing PIDs in Africa

The LIBSENSE Working Group on Infrastructure crafted a strategy document outlining the implementation of Persistent Identifiers (PIDs) in Africa, aiming to bolster cohesion and discoverability of scholarly content. Prioritising open infrastructure and PIDs promises to amplify African scholarly outputs, enhance visibility and accessibility, and foster FAIR research data practices. The roadmap advocates for selecting open, community-driven PID systems, establishing governance and finance models, forming national and regional PID consortia, and advocating for flexible fee structures. The strategy seeks to facilitate the widespread adoption of PIDs in African research and scholarly communication by addressing barriers, promoting collaboration, and ensuring sustainable implementation.

- [LIBSENSE Open Science Symposium - Nigeria](#)
- <https://zenodo.org/records/7970386>

LIBSENSE-Connect

LIBSENSE-Connect is a new initiative to establish a strong frontline technology infrastructure community in Africa that supports open science. The initiative is intended to address the skills gap regarding infrastructure support for open science in the African terrain. More than 20 software engineers, researchers, NRENs and development and operations (DevOps) within the region attended the maiden workshop in Lagos late last year. Participants learnt the rudiments of open science and infrastructural needs, especially in Africa.

LIBSENSE-RUFORUM Collaborations

RUFORUM and LIBSENSE collaboratively designed a series of initiatives to provide cutting-edge digital services to higher education and research institutions, promoting open agricultural data repository development while reducing associated costs. A webinar and a workshop dedicated to Research Data Management (RDM) principles, policies, and practices were held in April 2023 and at the 19th RUFORUM AGM, respectively. At the workshop, the two parties presented the final findings of the needs assessment survey undertaken with RUFORUM institutions from February to June 2023. Participants agreed that RDM policy development should be a participatory and concerted effort. The next level of the LIBSENSE-RUFORUM collaboration is the development of an open-access repository for agricultural research outputs for the 163 RUFORUM member universities in 40 countries.

Africa Digital Campus Project

WACREN and its partners could not advance with some of the tasks under the project because of the political situation that emerged in Burkina Faso. Hopefully, in 2024, the situation will change to facilitate the delivery of the project.

To reinforce the capacity of network engineers of the two campuses involved in the project to update the knowledge necessary to handle the campus infrastructure planned by the project, a workshop was organised in January in Ouagadougou and March in Benin Republic on "Design and management of campus networks". To fulfil the main objective stated by the ADC project as "easy access to e-learning resources", WACREN also organised workshops on "Identity and access management" in the two pilot countries to upgrade previous knowledge acquired by the campus network and computer infrastructure engineers with new users and systems identity creation and fluid management in order to have a lucid view of users and user groups as well as systems.

- <https://libsense.ren.africa/en/libsense-connect-a-new-tech-community-to-support-open-science-in-africa/>
- <https://indico.wacren.net/event/177/>
- LIBSENSE-RUFORUM Sensitisation Webinar
- <https://ruforum.org/AGM2023/side-events>

This workshop was held from 31 July to 02nd August 2023 in Burkina-Faso and from 11th to 13th September in Benin. These workshops gathered all the engineers from all the public campus members of FasoREN and RBER, respectively, in Burkina-Faso and Benin. A total of 22 participants, including 2 females and 22 participants, including a female have participated in the workshops in Burkina-Faso and Benin respectively.

Aside from the workshops, other activities were held to meet the milestones and project objectives. For instance, to develop the network effectively WACREN worked with partners in Benin to start the network deployment at Universite Joseph Ki-Zerbo (UJKZ) and in Burkina-Faso to start the procurement of the campus network in Lokossa. It is worth noting that the planned networks are to solve connectivity challenges encountered by students and other campus users in these campuses and to permit easy access to the e-learning infrastructure to be deployed. ADC also solicited WACREN to assist at each country's "Community Day" organised. The year ended with the participation of WACREN engineers and ADC focal point in an Educathon organised to the benefit of teachers involved in the Work Package "E-learning" of the project. The objective was to develop valuable learning materials to be used as open resources and offered by the project to any french speaking community.

Membership, Communication & Marketing

WACREN Membership •

Chair and Members, in 2023, three institutions joined the WACREN family in the Premium Associate membership category. These institutions are The West Africa Science Service Centre on Climate Change and Adapted Use (WASCAL), The University of The Gambia and Universidade Amilcar Cabral (UAC) in Guinea Bissau. This brought the number of WACREN members to twenty (20).

NRENs SDGs Initiative •

The WACREN Communication and Marketing Unit collaborated with its counterparts in Africa to contribute to African RENs meeting the Sustainable Development Goals (SDGs). The team compiled a comprehensive report, of concrete examples of African RENs' contributions to the SDGs and produced a policy paper as a guideline for RENs to state their contributions to the SDGs. A series of blogs highlighting the direct contributions of NRENs to the SDGs have been publicised on the AfricaConnect3 website. It is important to note that WACREN, through its projects and other collaborative efforts, contributes directly to six out of the 17 SDGs. The six are SDG 4 - Quality Education, SDG 5 - Gender Equality, SDG 8 - Decent Work and

- <https://wacren.net/en/news/wascal-joins-wacren-as-the-third-premium-associate-member/>
- <https://wacren.net/en/community/members/>
- https://africaconnect3.net/wp-content/uploads/2023/01/African-NRENs-contributions-to-UN-SDGs_final.pdf
- <https://africaconnect3.net/spotlight-on-rents-and-un-sdgs-making-the-world-a-better-place-to-live/>
- <https://africaconnect3.net/sdgs-info-centre/>

Economic Growth, SDG 9 - Industry, Innovation & Infrastructure, SDG 13 - Climate Action and SDG 17 - Partnerships for the Goals.

NREN Country Fiches

Chair and Members, I would like to stress the need for members to cooperate with us in the collation of country fiches. The data informs us about the state of affairs of NRENs in order for us to map out advocacy strategies and designed services as well as foster collaborations that will, in the long run, meet the needs of NRENs. At the time of submitting this report, seven out of 16 NRENs had submitted the country fiche. Some NRENs have as yet not presented county fiche for a couple of years now.

WACREN 2023

WACREN Membership

The 8th WACREN Conference was held in Accra on the theme – 'Tooling Up for the African Digital Learner and Researcher'. 160 participants from 23 countries participated in the Conference and the preceding workshops. There were three workshops and nine Conference sessions with 25 panellists and speakers participating in this annual event. WACREN leveraged the Conference to build new relationships with new stakeholders, partners and collaborators, including Invest in Open Infrastructure (IOI), ICTP, WASCAL and FCDO.

Human Resources and Secretariat

Staff contracts for the Dev-Ops and NOCE's were amended during the period. The year under review saw some resignations and recruitments. Two staff namely Jesse Asamoah-Odei, Dev-Ops Engineer, and Edward Banjo, Senior Network and Infrastructure Engineer, resigned. Jesse Asamoah-Odei, effective September 2023, while Edward Banjo has requested and been allowed to stay until the end of his contract in May 2024.

Two new staff were added to the team in the last quarter of the year. Mr. Gordon Wutsikah and Ms. Juliet Ahiagbede joined WACREN on 1 November 2023 as NOC Engineer and Accountant, respectively and have resumed work accordingly.

A second NOC Engineer, Brahim Nagi, has been recruited and is scheduled to commence work in January 2024.

Four interns, 3 (three) Dev-Ops interns and 1 (one) Communications and Marketing Assistant (Graphic designer) are scheduled to commence an internship program in January 2024. The search for a Project and Procurement Manager continues.

At the end of the year, WACREN had eleven (11) staff members working from different locations.

■ <https://wacren2023.wacren.net/>

Financial Report

WACREN Revenue invoices, including Member subscriptions, WACREN Connect, WACREN Zoom invoices, and conference-related invoices, were processed and respective members followed up for payments. During the period, NgREN, GARNET, and in particular, UVCI and RBER improved payments of their WACREN-Connect invoices. TogoRER also made some payments in the year amidst challenging situations they were faced with. The WACREN Global Connect Contract was amended with UVCI, and revised with a capacity reduction from 2xSTM1 to 1xSTM1. Zoom service uptake increased, with Niger-REN, LRREN, and TogoRER joining GARNET as NRENS subscribing to WACREN's zoom service. WACREN also commenced internal discussions on plans for an alternate Zoom service following the potential unavailability of the subscriber licenses.

Membership subscription payments continued to be woefully inadequate despite several reminders by correspondence as well as a special engagement by the CEO for a settlement arrangement. These efforts notwithstanding, only 3 NRENS were in good standing at the end of the year. Several members have made no payments at all since they joined WACREN.

AfricaConnect3 counterpart contribution invoices were raised for Guinea-Bissau, GARNET, The Gambia and Mauritania, with receipt of payments from all named NRENS at different stages during the year. In a bid to secure the allocated AC3 EC funds for the region, substantial payments were made for the connectivity budget counterpart funding, with the final counterpart funding payment made in November 2023. With that payment, WACREN can now access and use the full budget allocated to WACREN despite the initial threat of funds being reallocated to other RRENS. A procurement memo was submitted to the EC for approval to procure links and equipment in the region.

WACREN fulfilled all statutory Human Resource and Operations requirements with the various regulatory bodies, including Ghana Revenue Authority, SSNIT (Social Security and National Insurance Trust), Enterprise Trustees Ltd (Tier 2 Pension Contribution), Registrar General's Department and Not for Profit Organisations Secretariat.

Financial reports conforming with requirements and standards of various funded-project terms were submitted to various project funding partners promptly. The 2022 Financial Report was prepared, audited, and presented to the CEO, Board, and subsequently to WACREN members at the members' meeting during the annual conference in Accra. An expenditure verification audit for the AfricaConnect3 project was performed by Deloitte Ghana in the year under review. The Africa Digital campus project audit for the first period took place with IRD partners leading the audit readiness.

The financial year was eventful, with some minimal impact of external environment financial element changes. Despite the high inflation rate and unstable exchange rates, WACREN was successful financially as project and internally generated funds were used judiciously to run operations for the year.

Outlook

WACREN recognises that its primary mandate is to foster the development of a digital society and a knowledge economy, both of which significantly impact the educational landscape in West and Central Africa. In the upcoming year, WACREN aims to deploy its resources and expertise to extend technological infrastructure and its utilisation to NRENs and their communities, focusing on leveraging the WACREN cloud platforms.

A pivotal aspect of our efforts in the year 2024 will involve modernising and upgrading infrastructure across the value chain. Key investments in advanced network infrastructure and expanded cloud technology are anticipated to yield substantial benefits. Realising this vision hinges on delivering high-quality, scalable services to NRENs and building their capacity to optimise and maximise these services.

Adapting to the dynamic macro environment, WACREN will initiate adaptive and forward-thinking moves with the goal to evolve into a more agile and proactive organisation. Capacity-building programs will be strategically designed to enhance our core business, supplemented by recruiting high-quality technical staff as needed and within our financial capacity, focusing on relevant and value-added NREN services.

Under the AC3 project, we will focus on upgrading our cloud infrastructure and deploying it to deliver the new advanced services that were tested and piloted in 2023.

As WACREN has satisfied the counter-funding requirements, we look forward to connecting several countries: Guinea-Bissau, The Gambia, Mauritania, Sierra Leone and Liberia.

We look forward to deepening our existing partnerships and collaborations and create new ones to promote research and education excellence in our region.

