



The Impact of National Research and Education Networks on Science in Africa

Promoting Open Science in Africa – WACREN 2016
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Outline

- WACREN in a nutshell
- Advocacy
- WACREN EduID
- H2020 Projects
- AfricaConnect2
- PADTICE
- WACREN Cloud

WACREN in a nutshell

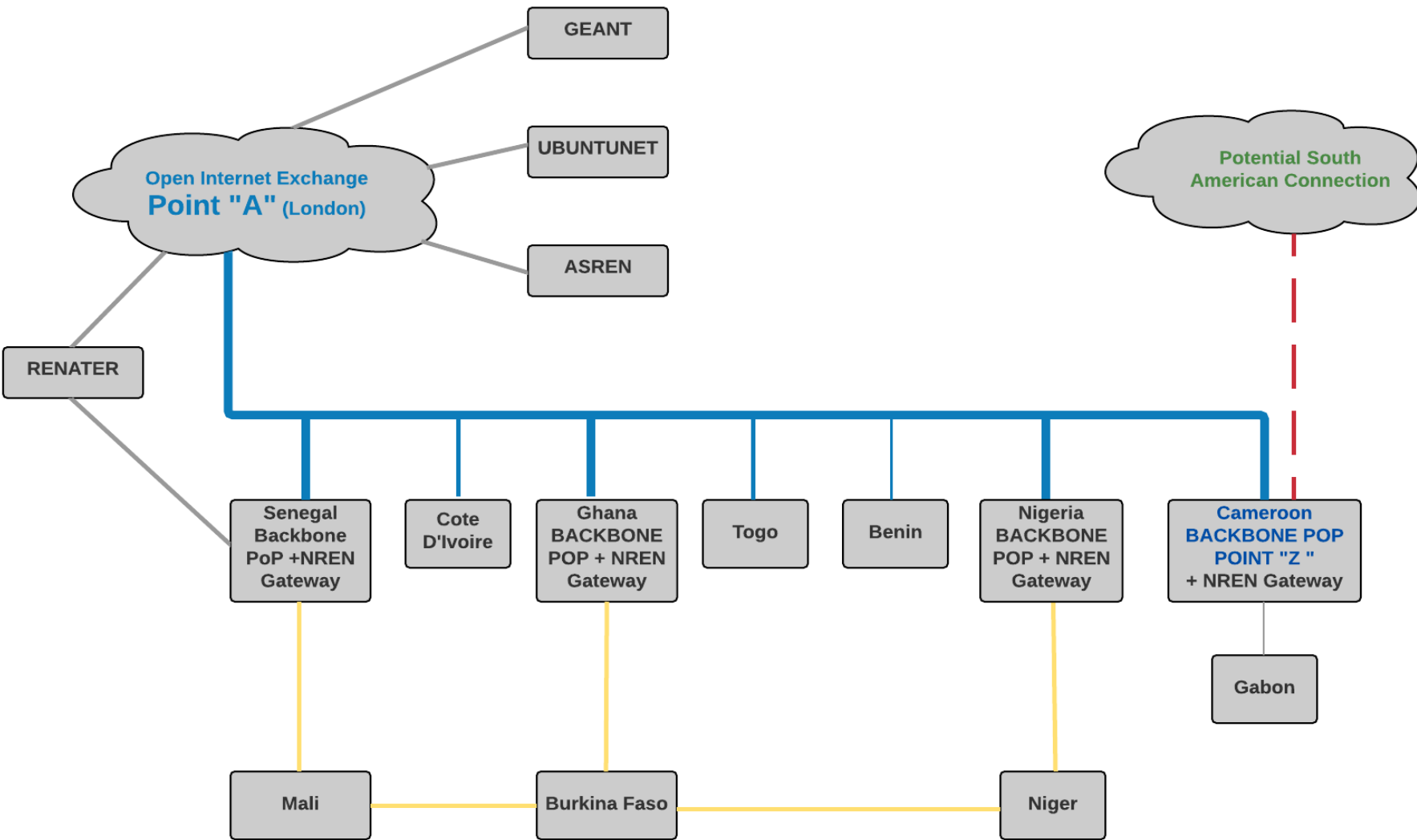
- Incorporated in 2010 as a not for profit organisation
- Currently 9 formally established NRENs
 - GARNET – Ghana
 - snRER – Senegal
 - MaliREN – Mali
 - Niger-REN – Niger
 - GabonREN – Gabon
 - NgREN – Nigeria
 - TogoRER – Togo
 - RerBenin – Benin
 - Cameroon – RIC
- Associate members: RENATER (FR), Eko-Konnect (NG)
- Initiatives in Burkina Faso, Chad, Guinea and Cape Verde

WACREN in a nutshell (cont'd)



Proposed network topology

- Core + Access
 - 10G+ Core
 - 1G+ Access
- 3-4 main hubs: Cameroun, Ghana, Nigeria, Senegal, Côte d'Ivoire
- Redundant links from hubs to NRENs
- At least 2 intl. links: to Paris and London
- Multiple Submarine Cable Access
- Peering at Open Exchanges

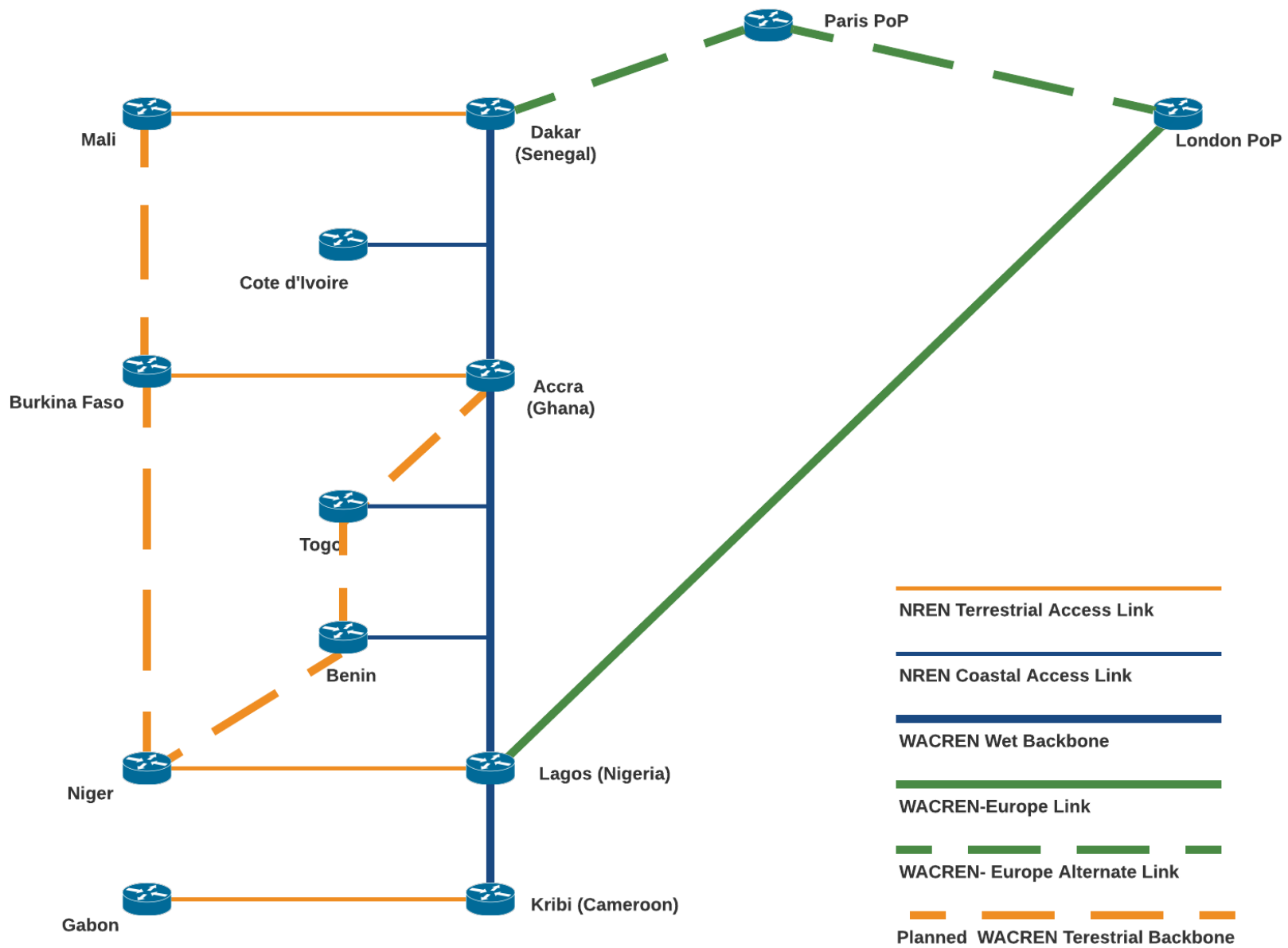


10GE Wet Backbone

1GE NREN Access

Terrestrial Link

Submarine link from Point "A" to Point "Z" with option to land in every country of presence



Advocacy

- AfricaConnect2 (EC-funded) high on WACREN's agenda
- Several authorities approached for sensitization
 - ECOWAS
 - UEMOA
 - AfDB
 - WATRA (regional association of telecom regulators)
 - Governments
 - Côte d'Ivoire
 - Sénégal
 - Nigeria
 - Niger
 - Togo
- Other issues being addressed with the authorities
 - Legal status of the NREs
 - Full-time staffing



WACREN EduID

Bootstrapping establishment of NREN
Federations in West and Central Africa



WACREN EduID Objective

- Bootstrap establishment of NREN federations
- Resolve implementation issues
 - Lack of server infrastructure and issues with electricity
 - Lack of understanding of the technology and knowledge to deploy and maintain
 - Lack of familiarity with identity management systems and managing user databases
 - Limited funding and resources to operate



WACREN EduID Approach

2 pronged approach

- Policy and Practice
 - Federation policy development workshops
 - Localised templates for federation policy and practice statements
- Technology Support
 - Federation as a Service (FaaS)
 - Create Identity Federation - Campus or NREN
 - Register Identity or Service Provider
 - Identity Provider (IdP) in the Cloud
 - Training to use WACREN EduID

Metadata Resource Registry



- Centrally hosted Metadata Management
 - Based on software from HEAnet, the Irish NREN
 - WACREN worked with developer to modify the code to create role for NREN federation administrators
 - Resultant effect = 100% control by NRENs of their federation metadata and entities
- Federation administrators register Identity Providers (IdP) and Service Providers(SP) in their respective federations

<https://eduid.wacren.net/registry>

The screenshot shows a web browser window with the URL <https://eduid.wacren.net/registry/federations/manage>. The page features a navigation menu with options: Dashboard, Federations (selected), Identity Providers, Service Providers, Register, and Administration. Below the menu, there are tabs for 'CATEGORY': NRENs, Virtual Organisations, and All Federations (selected). The main content is a table listing various federations.

Name	Name in metadata		Description	#
WACREN EduID	urn:mace:wacren.net:eduid	public active local	WACREN Identity Federation	▼
PADTICE	urn:mace:uemoa.unesco:padtice	not public active local	Projet d'appui à la mise en œuvre de la «Licence-Master-Doctorat» la réforme à travers les TIC bâtiment des capacités dans différentes universités des pays en Afrique de l'Ouest.	▼
Eko-Konnect	urn:mace:wacren.net:eduid:ngren:eko-konnect	not public active local	Eko-Konnect is the pioneer cluster of the Nigerian Research and Education Network (NgREN) based in the Lagos area	▼
NgREN EduID	urn:mace:wacren.net:eduid:ngren	public active local	The NgREN Identity Federation - NgREN EduID	▼
eduGAIN	urn:mace:wacren.net:eduid:edugain	not public active local	eduGAIN is the GÉANT interederation service that interconnects identity federations around the world, simplifying access to content, services and resources for the global research and education community. Join this interederation to have your IdP or SP published to eduGAIN interederation. The metadata generated here will have only IdPs and SPs that are be published to eduGAIN.	▼



H2020 Projects...

- Consortium Member in three (3) projects funded in the framework of European Commission Horizon 2020 Programme
- From May 2015 – April 2017
- **TANDEM** -(TransAfrican Network Development)
 - aimed at creating the favourable conditions for WACREN to benefit maximally from AfricaConnect2
 - ensure WACREN integration into the global Research and Education networking community and long-term sustainability.
- Ongoing NREN needs survey
- Project site - <http://www.tandem-wacren.eu/>

....H2020 Projects....

- Sci-GaIA (Energizing **Scientific** Endeavour through Science **G**ateways and e-**I**nfrastructures in **A**frica)
 - aimed at producing clearly structured guides and educational documents for training NREN representatives, Communities of Practice (CoPs), and, importantly, to get universities to develop Science Gateways and e-Infrastructures in Africa.
 - Participation requires federated access
- Project website - <http://www.sci-gaia.eu/>

....H2020 Projects

- **MAGIC (Middleware for collaborative Applications and Global Virtual Communities)**
 - aims at establishing a set of agreements for participating world regions – Africa, A
 - consolidate middleware for a marketplace of services and real-time applications to benefit global science communities.
- Project website - <http://magic-project.eu>

AfricaConnect 2

- Second phase of the AfricaConnect Project
- EC Funding (26.6 M€)
- Project duration: 2015 - 2018
- Objective: Support RENs in Africa and interconnect with GEANT
- Three clusters
 - Cluster 1: UbuntuNet Alliance
 - Cluster 2: WACREN
 - Cluster 3: ASREN
- 80:20% funding scheme
- Budget for Cluster 2: 12.25 M€ (2.5 M€ counter-funding by WACREN)
- Implementation of Cluster 2 component: GEANT and WACREN

PADTICE

- UNESCO – UEMOA project to support HE quality and access and support the implementation of the 'Bachelor-Master-Doctorate' (LMD) reform through ICT capacities building
- 8 beneficiary universities
 - UCAD, UAC-BJ, UAC-GB, UAM, UFHB, USTTB, UL, UNIV-OUAGA
- WACREN deployed AAI and Generic Portal pilot based on EduERP from Eko-Konnect
 - Leveraging opportunity to establish NREN federations in these countries

WACREN Cloud

- Cloud Computing and Shared Infrastructure Services
- Based on presence in datacenters across the region
- MoU signed with Galaxy Backbone in Nigeria to develop pilot and business plan
- Datacenter in Senegal?

Contacting WACREN ...

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THANK YOU !

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