

Update on Networking in Ghana

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Overview

- Submarine fiber cable landing and prices
- National fiber backbone - NCBC
- eGovernment project by NITA
- GARNET

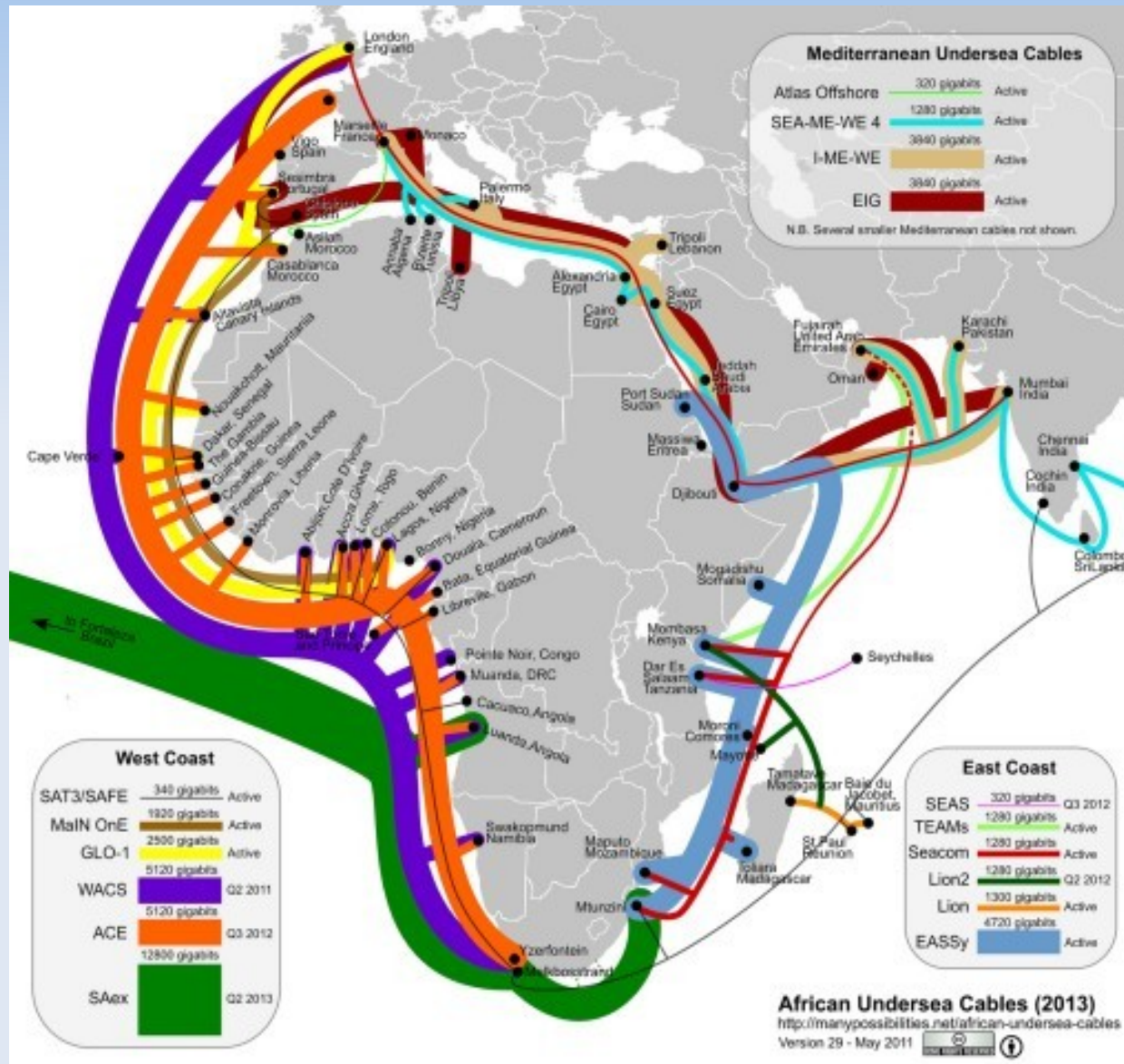
Submarine Fiber Cable

- Monopolized by SAT3 over the years. Recently the National Communications Authority licensed Nigerian-based Main One Cable and Glo as well as West-Africa Cable Systems to bring competition to the international bandwidth market in the country
- Main One
 - July, 2010 - Announced 1.28 Tbps, 7,000 kilometres long, submarine fibre optic cable system linking West Africa to Europe had been completed and commissioned.
 - Landing stations in Nigeria, Ghana, Morocco, Canary Islands, Senegal and Ivory Coast
 - Connects to United Kingdom via Portugal
- SAT3
 - September, 2010 - National Communications Backbone Company (NCBC) cuts SAT3 bandwidth price by 50%
 - Reduction was from US\$ 4,500 – US\$ 2,100 for 2Mbps (wholesale price to ISPs).
 - Due to competition from new international bandwidth providers. This is after Main One announced its price of US\$1,050 for the same capacity.

Submarine Fiber Cable

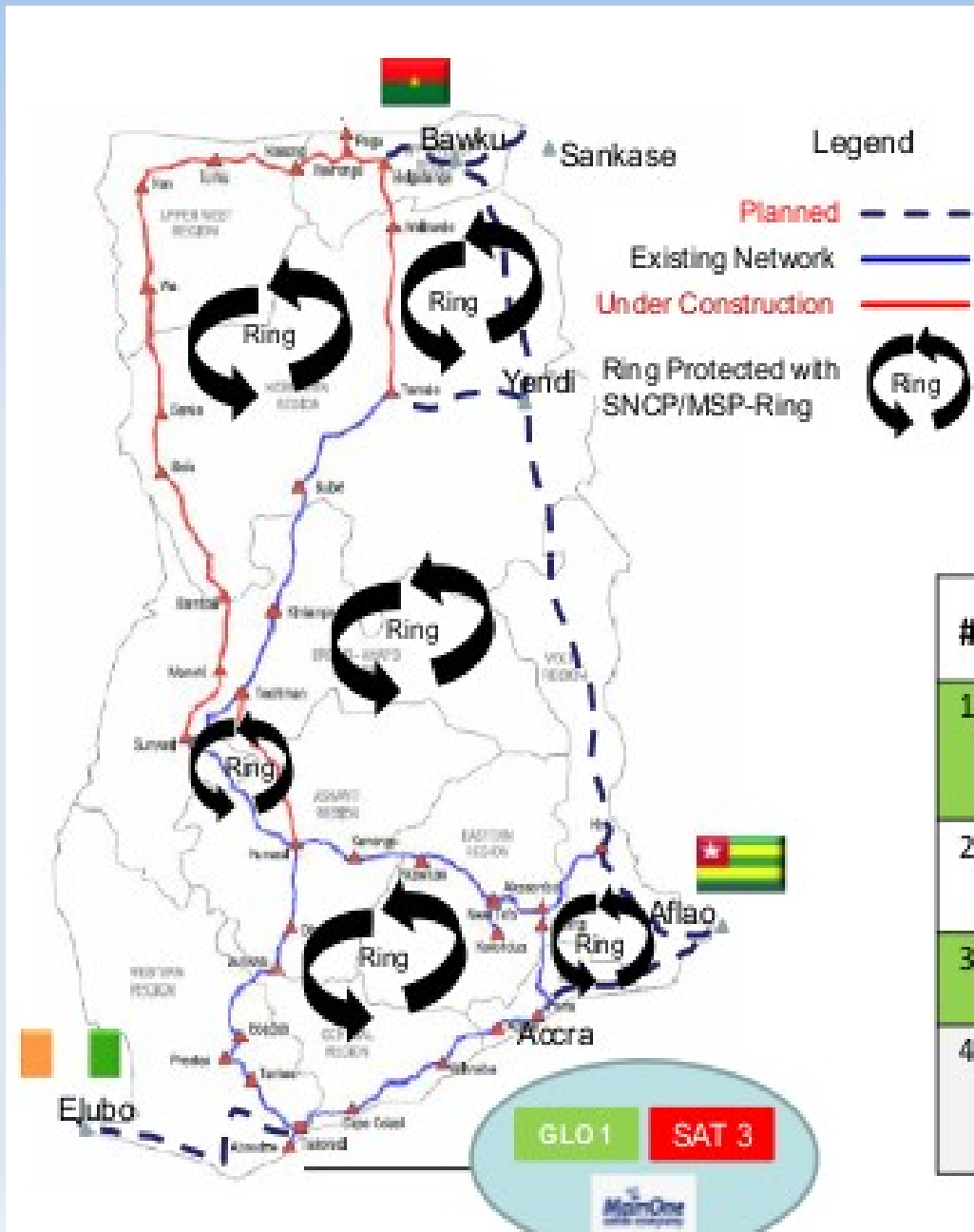
- Glo-1
 - April, 2011 – Announced completion of submarine cable landing in Accra.
 - 640 Gbps capacity
 - 9,800km long submarine cable network
 - Connects to United Kingdom via Portugal and Spain
- West Africa Cable System (WACS)
 - May 2011 - Landed in Ghana and is expected to be lit in early parts of 2012.
 - 14,000 kilometre network system with initial capacity of over 500 Gbps upgradeable to 5.2 terrabits per seconds
 - Connects to United Kingdom via Portugal
 - 15 terminal stations which anchor along the western coast of Africa, including countries where MTN has operations such as Ghana, Nigeria, Ivory Coast, Cameroon, Congo, Namibia and South Africa.
 - MTN invested US\$ 90 million
- In May, 2011 - Main One and SEACOM interconnected allowing West Africa and Eastern/Southern Africa connection (through Europe)

Active and planned African submarine cables as of May 2011



Ghana Fiber Network

- National Communications Backbone Company (NCBC) manages the network
- NCBC is wholly owned by Vodafone Ghana, of which the government has 30% stake
- Established in 2007 under Ghana Telecom before sale to Vodafone.
- Fiber network is an extension of Voltacom fiber cable
- Some objectives:
 - Promote socio-economic development
 - Provide high quality and competitively priced services to ISPs and Operators
 - Provide high capacity bandwidth to the hinterlands and under-served regions of Ghana
 - Facilitate international connectivity

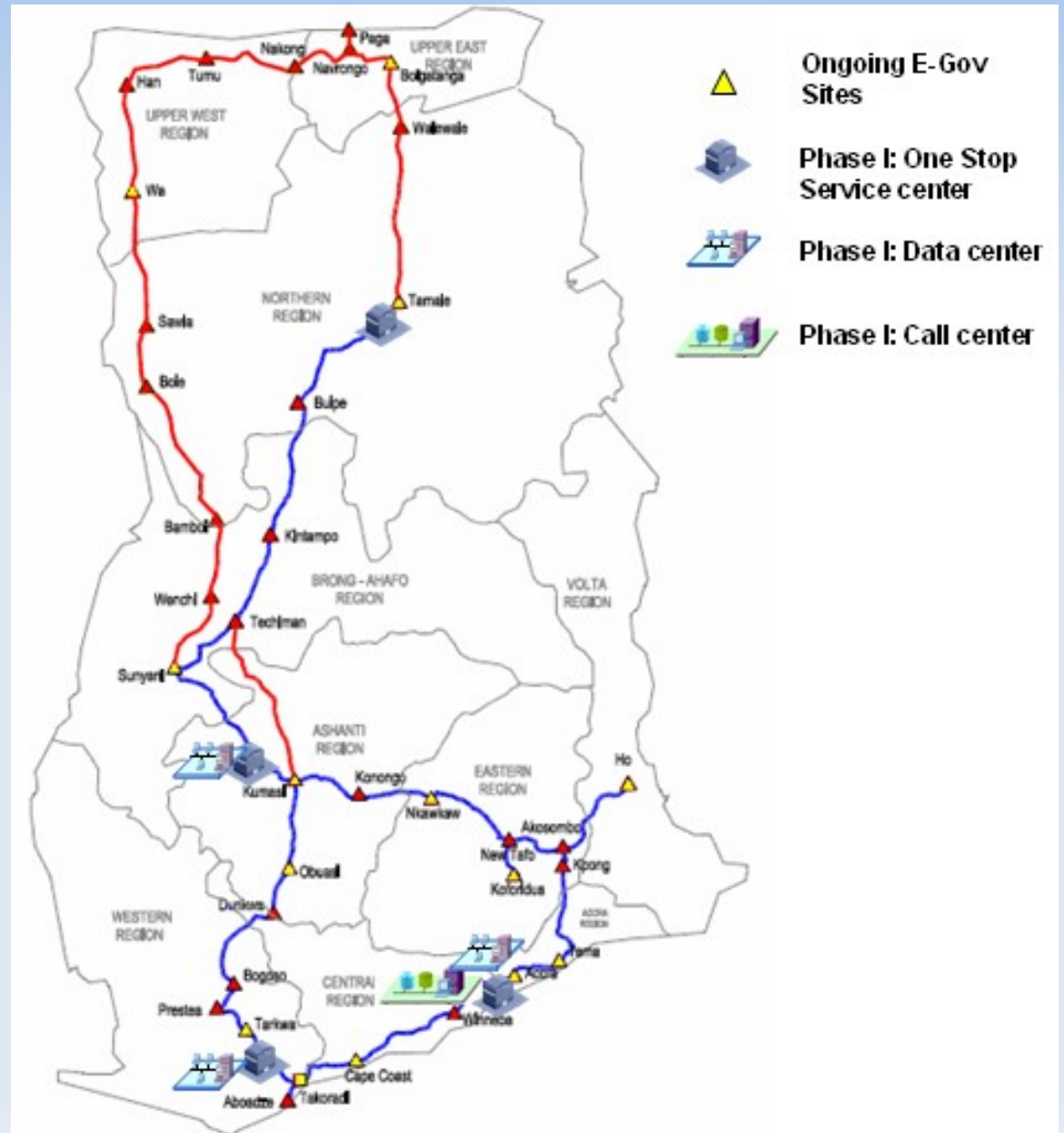


eGovernment Network

- National Information Technology Agency (NITA)
 - ICT policy implementing arm of the Ministry of Communications
 - Responsible for implementing Ghana's IT policies
- Objective is to extend the national backbone infrastructure to all districts and ultimately connect all public institutions
- Connect 1050 sites
 - 550 via wireless (WiMax) last mile – recently completed
 - 500 locations via any other means:
 - Direct fibre optic
 - High capacity microwave links
 - VSAT
 - Leased terrestrial circuits from local telecoms and ISP

eGovernment Network Diagram

- eGovernment network uses the NCBC network as its backbone network and is to build its own last mile solution as the access network.
- Currently installed all the proposed 30 WiMax base stations
- MoFEP VSAT network was not use. Fiber links used for those locations
- Metro fiber network, which links all the Ministries, has been completed
- Main One and Vodafone (SAT3) are the two mainstream providers



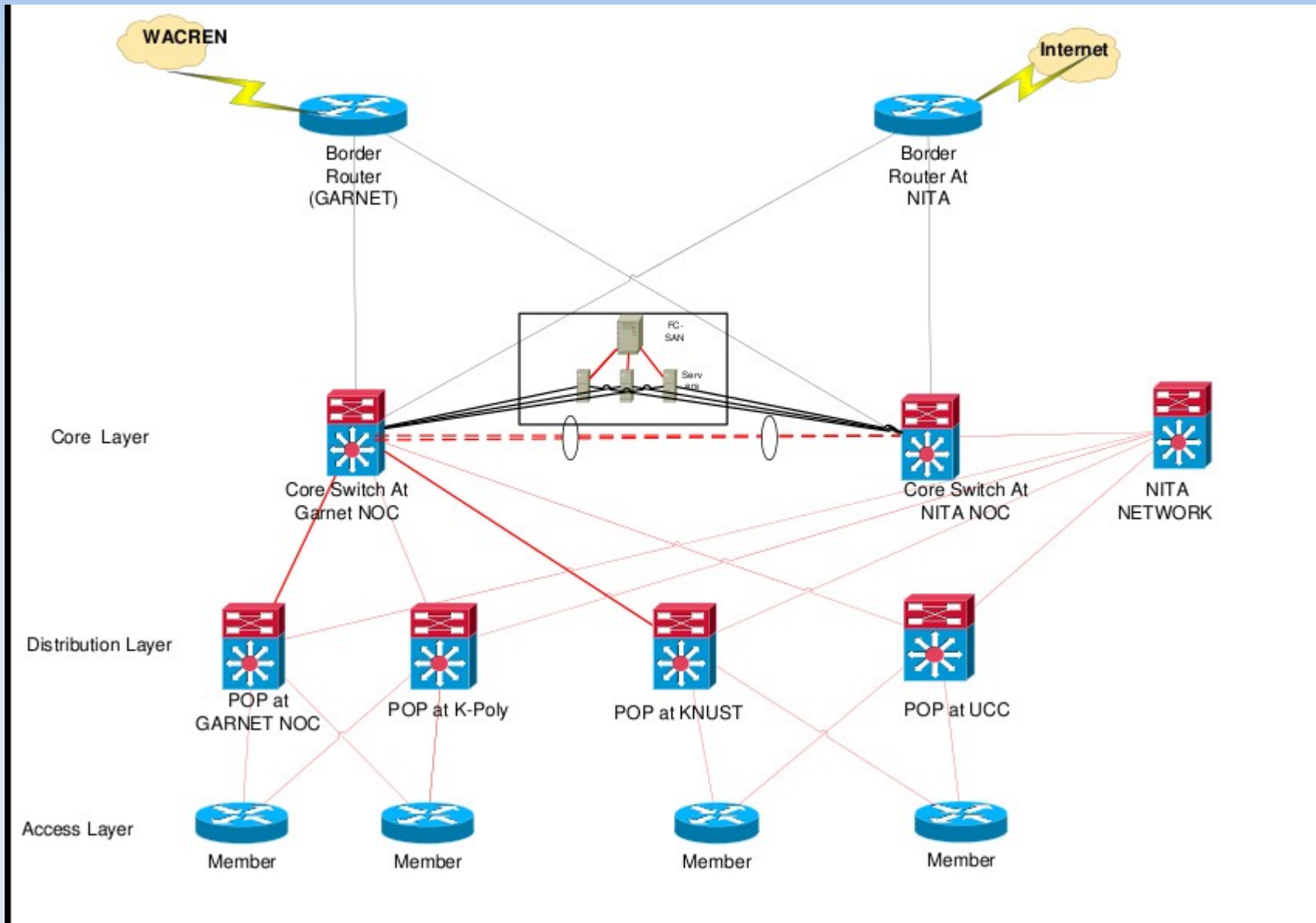
GARNET

- Ghanaian Academic and Research Network (GARNET)
 - Incorporated as a legal entity on August 23rd 2010
 - Technical Network Committee to review and propose the Logical and physical network for GARNET
- Discussing with NITA about use of eGovernment network for connecting member institutions
 - Some public institutions will be on NITA network but not all
 - Private institutions not considered by NITA
 - Accra to Kumasi is 100 Mbps, Kumasi to Northern Ghana is 10 Mbps
- Negotiating with wholesale bandwidth sellers for collective bandwidth purchase for member institutions
 - Price has to be less than market price so members will be willing to terminate existing contracts. Vodafone's STM-1 (155Mbps) price dropped recently making it highly competitive with Main One's price for same capacity.
 - Problem of last mile distribution still a problem. Main One willing to pay for initial setup cost for access network from national backbone.

GARNET

- Main One has offered GARNET rack space in its NOC in Accra until GARNET's NOC is established.
- Main One is giving GARNET 45 Mbps to Nigeria and 10 Mbps to Senegal to connect to other NRENs.
- GARNET Redundancy
 - Not yet seen since everything appears to flow through NCBC network

GARNET Proposed Network



Thank You

Questions?

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