Several Subsea Cables in 10 African Countries are Badly Damaged and Need to be Repaired

At least 10 countries in West Africa have experienced network outages since Thursday (14th), with South Africa also affected.

Interoperability and mutual assistance in electricity and Internet among West African countries

Damage to submarine fiber optic cables will severely impact global industry financial settlement transactions

DUBAI, UAE, March 20, 2024 /EINPresswire.com/ -- Internet outages in at least 10 countries in Africa, many undersea cables damaged, expected to take 5 weeks to repair. At least 10 countries in West Africa have experienced network outages since Thursday (14th), with South Africa also affected.

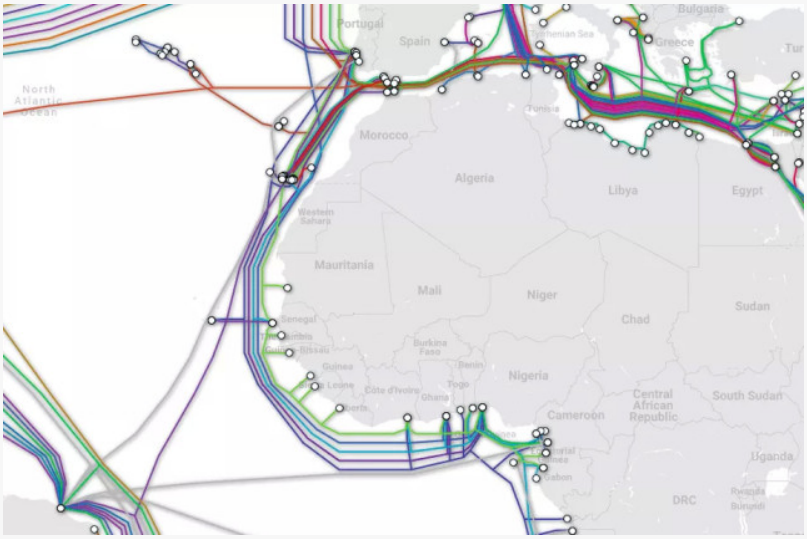
Bloomberg, Agence France-Presse, The Times of India, and other media reported that multiple undersea cables in Africa have been damaged, affecting internet services for millions of users. The cause of the cable damage remains unclear, although seabed movement is one of the possible causes.

As a direct result, internet access in a dozen African countries was severely disrupted on Thursday due to 'faults' in several undersea telecom cables. The cause of the incident is also questionable, as a similar situation occurred in Europe not long ago.

Source: https://arstechnica.com/information-technology/2024/03/internet-outages-hit-13-countries-in-africa-due-to-undersea-cable- damage/

Ghana's National Communications Authority (NCA) said on 17 November that it had held meetings with four service providers and that it expected the repair of the undersea cables to take at least five weeks to complete before services could be fully restored.

South Africa's MTN Group, one of Africa's largest internet providers, said the continued internet outages were due to the failure of several major submarine cables, and that it was actively working on restoring transmissions through alternative network paths. MainOne, a West African ISP, said on the 17th that it is actively working to restore service to some of its customers through the cable system that is still available.



Existing Internet infrastructure in Africa is still very fragile, especially submarine cables.


Damage to submarine fiber optic cables requires a multi-step process of inspection and repair

Status of the Internet in West Africa

West Africa refers to the western part of Africa, which consists of fifteen sovereign countries including Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, and Guinea. Although the Internet penetration level of the whole of Africa is still at the bottom of the global Internet level, the Internet usage rate in Ghana, Benin, and other countries in West Africa has risen highly in recent years. This is because various developed and developing countries in the world have provided infrastructure assistance to the African region.

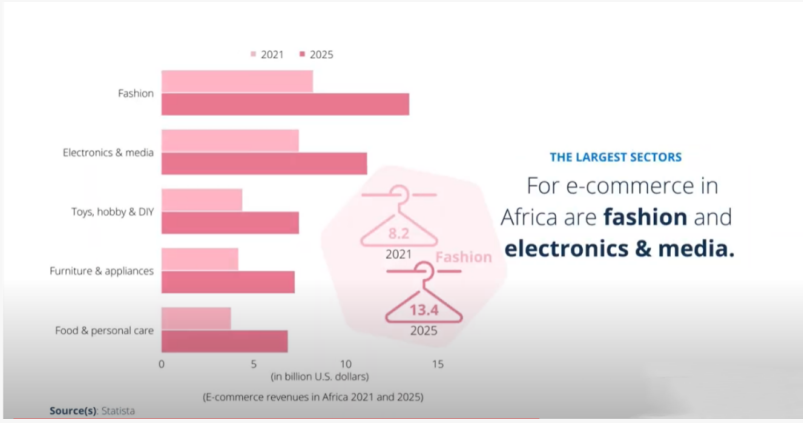
Among them, Ghana is the eighth largest economy in Africa, the second largest e-commerce market in West Africa, and one of the fastest-growing Internet markets in the entire African continent. Moreover, Ghana, with its favorable geographical environment, political stability, and friendly business environment, is known as "the center of Africa's economic renaissance".

Among ZMS Cables' customer base, Ghana's demand for cables and Internet power accessories has been increasing, which also indicates that the country has been vigorously developing its

power transmission and distribution and Internet sectors in recent years.

According to the Global Digital Overview 2023 report, Ghana's internet penetration reached 53% in 2022 with 16.99 million users, and the active social media-using population was 8.8 million, or about 27.4% of the total population, with 47% of the population still without access to the internet.

Data source: https://datareportal.com/reports/digital-2022-ghana



Africa has entered the era of the digital revolution, utilizing the Internet to vigorously develop e-commerce and the Internet economy.

Following the damage to the internet in parts of West and Central Africa, Ghana's National Communications Authority (NCA) has noted that service providers have located the approximate location of the damage and are ready to dispatch repair vessels. The Nigerian Communications Commission (NCC) also said that submarine cable operators said they were actively working on repairs and that services were gradually being restored.

Data from NetBlocks, a network monitoring organization, showed severe disruptions in network connectivity in several West African countries, including Ivory Coast, Liberia, Benin, Ghana, Nigeria, Burkina Faso, and Cameroon. Several network companies in South Africa also reported service disruptions.

Impact of Damaged Submarine Cables

Submarine cables are known to be very troublesome when they suffer from faults and damage. Submarine cables are an important physical communication tool that connects all parts of the globe, and under normal circumstances, countries are serious about maintaining them. However, when they are damaged, they are faced with some tricky problems.

First of all, the main purpose of submarine fiber optic cables is for communication between countries around the world, once the communication routes are cut off, people with the outside world will certainly be affected to a certain extent. As for how big the impact is, ZMS Cable believes that it depends on the degree of damage to the submarine cables, if all the external fiber optic cables are cut off, then people in the outside world will certainly be interrupted, which will lead to the inability to access some foreign websites or servers.

Secondly, there are a large number of financial settlements every day in the world, which include settlements between trade transactions, settlements between investment and financial

management, and settlements between individual remittances. Especially for some big trading countries, the daily financial settlement is very large, if the undersea fiber optic cable is cut off, when the communication is blocked, a lot of financial settlements will indeed be greatly affected.

But if only part of the cable is damaged, the impact will not be too great, unless the cable between China and the United States is completely interrupted, then the impact will indeed be greater.

Because the global Internet root server is in the United States, we visit many Web sites, we have to resolve through the U.S. root server to be able to access normally.
It was noted that the affected cables are the West African Cable System (WACS), Africa Coast to Europe (ACE), SAT-3, and MainOne. a spokesperson for Cloudflare, a network analytics firm, said that repairs could take weeks to months depending on the location of the damage, what needs to be repaired, and the local weather conditions.

Ghana's main stock exchange extended trading hours by an hour on the 14th and 15th due to the network service disruption, while banking services in Nigeria had been paralyzed.

Digital revolution holds bright promise for Africa

Through this West African undersea internet outage, ZMS can observe that much of Africa is changing the economic status and educational development of a region or even a country through the internet zone.

Internet penetration in Africa is slowly rising, bringing the prospect of a digital dividend to a continent that has long been mired in the digital divide.

"Africa's (Internet) penetration has crossed the 15 percent mark, which is significant," said scientist Nii Quaynor. Quaynor, who played a key role in the introduction and development of the Internet in Africa, is known as the continent's "father of the Internet".

Source: https://www.internetsociety.org/wp-content/uploads/2017/08/InternetInAfrica-2015070820Final.pdf

However, Africans are still unable to develop enough software, applications, and tools to deliver much-needed dividends to economies.

In less than a decade, Africa's Internet has shifted from satellite connections to low-cost submarine connections. New submarine fiber optics have significantly increased data transmission capacity and greatly reduced transmission time and costs.
Steve Song, the founder of Village Telecom, which aims to develop low-cost hardware and software for telephony networks, says that today, with 16 undersea fiber optic cables connecting

Africa to the Americas, Europe, and Asia, international interconnections are no longer a big problem. Countries are thus able to share information more directly within the continent and globally, which creates more space for innovation, research, and education.

"The network has ended the isolation of African scientists and researchers. People now have access to information from more developed countries and this is changing the way people think", says Meoli Kashorda, Director of the Kenya Education Network.

As early as 2017, Kenya surpassed most countries in West Africa in terms of internet usage. in 2017 Kenya surpassed Nigeria as the top African country in terms of internet penetration at 83%, with Nigeria coming second at 81%.

Data source: https://onlinelibrary.wiley.com/doi/10.1111/1467-8268.12370

Leveling the playing field on the internet
Technology is also helping to reduce inequalities caused by education gaps. UNESCO data shows that the out-of-school rate in Africa is more than one-fifth for children aged 6 to 11; one-third for adolescents aged 12 to 14; and almost 60 percent for youth aged 15 to 17.

On the bright side, the potential of the Internet to close the education gap in Africa will increase with the spread of mobile Internet. E-learning continues to grow due to its affordability and accessibility. By 2022, the market size for e-learning in Africa will reach $1.4 billion. This will enhance the education level of the African workforce, which in turn will contribute positively to African economies.

The submarine cables laid around Africa must be reconditioned and maintained; after all, the cost of repair and maintenance of submarine cables can be very cumbersome and expensive.

Here, ZMS gives a few common ways of repairing submarine cables.
Failure of submarine cables is generally divided into two types: the first type is external damage, which is caused by the anchor hooks of salvage sand boats and fishing boats. The second is the aging of the insulation itself, that is, internal failure. This time, it is the external failure.

The first step is to use an optical time domain reflectometer (OTDR) to locate the approximate fault location, and then with the help of an underwater robot, find the exact location of the broken submarine cable through scanning and inspection.

The OTDR uses the principle of time-domain reflection to send and receive a complete set of signals, which are reflected at the location of the break and compares the reflected signals with the shape of the signals and the time of day calculated by a mathematical algorithm to locate the exact position of the broken fiber.
In the second step, the robot will be buried in the seabed fiber optic cable dug out, and then cut

it, respectively, the cut ends tied to the rope lowered on the ship and pulled out of the sea.
The third step is on the ship to complete the repair fusion. This fusion splicing process is quite complex because the cable must be fused to the hair-thin fiber one by one.
In the fourth step, after the new submarine fiber optic cable is connected, it has to be tested repeatedly to ensure that the communication and data transmission are normal.
In the fifth step, the repaired submarine fiber optic cable is thrown back into the sea and then covered with sediment using a robot.

Submarine cables that have encountered many bumps in the road

The submarine cable was destroyed in not one or two years only once, with the global submarine cable in recent years, coupled with the disharmony between the various countries, always produces some friction in the construction of submarine cables.
For example, the Red Sea submarine cables were cut off in a boisterous incident some time ago. In early March, at least four Asia-Europe communication cables passing through the Red Sea were sabotaged, directly affecting 25% of the data traffic between Asia and Europe. Despite previous threats made by Houthi operatives on social media about underwater cables in the Red Sea, the Houthis stated that the cables were damaged to clear the air of responsibility.

At the end of 2022, France stated to the public that three fiber optic cables under the Atlantic Ocean had been severed, causing connectivity failures around the world, while news also came from the UK that the internet cable near the Deland Islands was also offline.

The Gambia Submarine Cable (GSC) has revealed that the ACE submarine fiber optic cable system has been repaired and internet usage is back to normal. On January 1, 2021, the submarine cable failed, thus affecting internet services in The Gambia.

The Asia-Africa-Europe (AAE-1) international submarine fiber optic cable failed on the morning of September 27, resulting in the loss of all international Internet traffic from Vietnam to Singapore. Representatives of Vietnam's Internet Service Providers (ISPs) were informed of this information yesterday (28).

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