CRITICAL INTERNET INFRASTRUCTURE

WHITE PAPERS

INTERNET TRAFFIC PATHWAYS AND ROUTING SCENARIOS FOR NATIONAL SECURITY

India's Internet International Connectivity – Role of Submarine Cables

Cyber Peace Foundation - Indian Internet Foundation

India Internet Foundation

India Internet Foundation is an Internet Research & Policy think tank organization working on thematic, policy and technical dimensions of Internet. It is not for profit organization and registered as a trust under Indian Laws. It started as an initiative of Internet Society Kolkata but considering the Indian focus required for development of Critical Internet Infrastructure, it has gone through transformation to its current state, form and structure.

Cyber Peace Foundation

Cyber Peace Foundation (CPF) is an award-winning apolitical civil society organization and think tank of cybersecurity and policy experts. CPF is involved in Policy Advocacy, Research and Training related to all aspects of Cyber Peace and Cyber Security. Key areas of it's work are in Technology Governance, Policy Review and Advocacy, Capacity and Capability creation and building through partnerships with various government organizations, academic institutions and civil society entities. Cyber Peace Foundation was formed with the vision of pioneering cyber peace initiatives to build collective resiliency against cybercrimes and global threats of cyber warfare.

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1 Internet Components

Internet access can be divided into three components:

• Connectivity, which involves the submarine cables and exchange points needed for domestic networks to exchange traffic with each other and the rest of the world

• Distribution, which effectively extends the reach of the submarine cables to inland cities and other countries, where access can be provided by the ISPs (also referred to as backhaul or internal transit)

• Access, which involves the ISPs that are used by end-users to reach the Internet.

The Elements of the Internet access value chain is as follows:
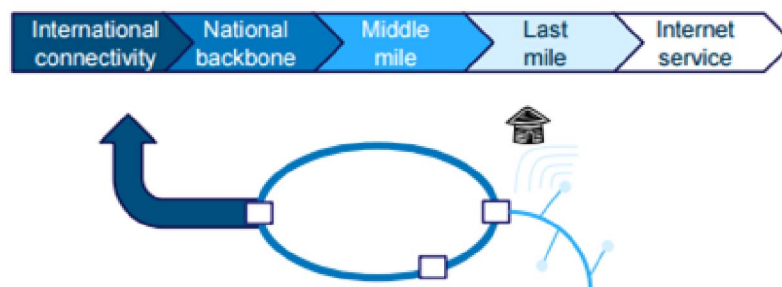

Source: Analysys Mason, 2013

The focus of this PoV is International Connectivity.

2 International Connectivity

International connectivity is clearly fundamental to connecting users to the wider Internet. Cables lying on the seafloor bring the internet to the world. They carry ~97 percent of international data, make transoceanic communication possible in an instant, and serve as a loose proxy for the international trade that connects advanced economies. The cables are widely used, as opposed to satellite transmission, because they are reliable and fast; with high speeds and backup routes available, they rarely fail. This means these cables are a key part of the global economy and the way the world connects.[1]

2.1 Submarine Cables – Modern Trade Routes

Submarine Cables are the modern trade routes. Landing stations becomes the seat of heightened business and economic activity. Historically, India was the key point of business on the trade routes, and now in these changed times India needs to re-establish the place of eminence by adopting the new method of interdependence because the economics has remained the same.
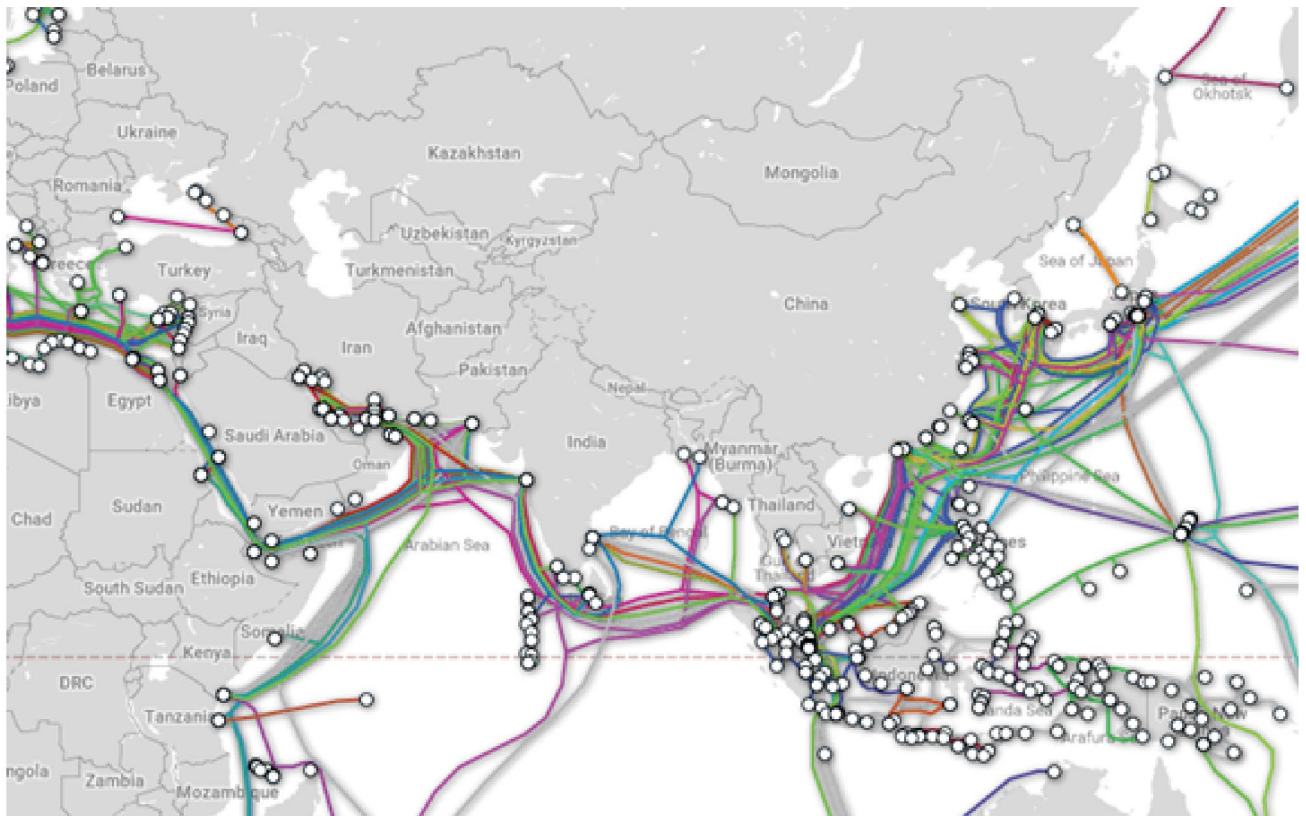
Source: Tele geography [2]

2.2 Submarine Cables & India

• Twelve (12) submarine cables connect India to the world. Out of the 12 submarine cables landing in India, six are consortium cables viz. Bharat Lanka Cable System, EIG, IMEWE, SEA-ME-WE 3, SEA-ME-WE4, and SAT3/WACS/SAFE, while the remaining cables are privately owned.

[1]*https://www.submarinecablemap.com/*

[2]*http://submarine-cable-map-2015.telegeography.com/*

• Cable Landing Station (CLS) access charges now constitute 45- 55% of total charges on international capacity whereas the remaining 55- 45% cost covers undersea fiber transport, CLS charges and IP port charges at the foreign end. This clearly reflects a very high and disproportionate CLS access charges in India. Further, owing to very high Access Facilitation Charges, the advantage of availability of international bandwidth at competitive prices is not passing on to the customers, which is adversely affecting the proliferation of broadband services in the country.

• The latest landing station in India has been created at Agartala. The BSNL will lay the optical fiber cable network from Agartala to the Integrated Check Post at Akhaura near the international border to connect Cox Bazar's submarine landing station. The cost of the project is Rs. 19.1 crore and annual operational expenditure is around Rs. 7.2 crore.[3]

• DoT vide its letter no. 70-01/2013-SU Vol-II dated 19th March 2014 had requested TCIL to prepare an approach paper for connectivity of Andaman and Nicobar Islands (ANI) through undersea optical fiber cable system to mainland India.

• There are instances where domestic traffic that is generated in India takes a routing de-tours and traverse these cables to reach their destination. This means that an email sent from a location in India to another location in the country may first travel out of our sovereign boundary and be routed back over these cables.

This is the same scenario when we access any internet resource, whether it is located in India or abroad. Costs and security are key points to be considered along with the need to have domestic data reside and transit within the country itself.

2.3 Impact of Submarine Cable Landing Stations

• The quality of service, and more specifically the available speed of Internet access, is a significant contributor to users' decisions to subscribe to Internet access services.

• Quality serves as an indicator of obstacles on domestic and international routes for Internet access. The more expensive these routes are, the less capacity is likely to be provisioned per subscriber by the ISP, which affects quality as it is measured by the average speed of access.[4]

2.4 India's Priority for Security of Cables & Landing Station.

• Security of Submarine Cable Landing Station should be national priority and landing stations should be designated as Critical Information Infrastructure (CII) installations and should be under the watch of defense establishments or NCIIPC.

• As these cable could lead to the emergence of regional hubs where market conditions and economies of scale allow subcontinental markets in capacity – benefiting everyone in the region by attracting operators and content, any issue here impacts the local region.

• In the event of a disaster, it is imperative that the country is prepared and can recover all round national connectivity and prevent a breakdown of life in this technology age. India needs to take steps in terms of creating a national DNS infrastructure and ensure it is completed and agreed upon by stakeholders. This status will provide assurance to the country that our national (internal) systems will continue to run with or without international connectivity.

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[3]http://indianexpress.com/article/technology/tech-news-technology/
 international-gateway-for-internet-at-agartala-to-boost-connectivity-in-north-east-india/

[4]http://www.internetsociety.org/sites/default/files/Barri-
 ers%20to%20Internet%20in%20Africa%20Internet%20Society_0.pdf

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