Chapter 18
Issues in Underwater Cables Deploymentby Risk Analysis

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ABSTRACT

Underwater cable deployment facilitates the coverage and speed of internet all over the world for various applications like international trade, various communication transfers, and other daily end user requirements. Also, critical network infrastructure below the water remains largely unexplored to end users because they are not directly related with its development. However, the risk of damage or destruction by unintentional underwater accident or intentional malicious threats leads to costly and communications disruptions. This chapter solves two primary goals. The first is to highlight the issues in underwater cable deployment that may be seen or unseen leads to various potential risks that could interrupt cable-supported services. The second goal is to explore the various possibilities for securing the organization to ensure business continuity.

INTRODUCTION

In around the world, it is normal that interest for "Under Unmanned Vehicles" units is to develop by 49 percent up to 2020 from 2016 (of which 73 percent are relied upon to be utilized for the military purposes, yet there is quick development in the gas and oil segment). Some portability and drive structures are taken from the normal world, and several look progressively like torpedoes. Energy units have expanded UUV go and in any event, going at a relaxed 2 bunches, most types can meander aimlessly a long way from their shoreline, effectively arriving at the 12-mile nautical point of confinement and past it (Goyal et al., 2018; Ellis and Mohan, 2019).

While trading firms and research teams have been successful in enhancing power and manoeuvrability, the rules and regulations of physics still constrain communications: high-speed wireless "underwater internet" of the kind which is now penetrating in the biosphere is still just theory. The data just doesn't spread simply through water without cables. Be that as it may, the innovation is growing quickly. Investigations in the North Sea and Baltic in 2006 demonstrated that submerged unmanned vehicle (UUV)

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control sign will transmit at 100 bits for every second by means of audible channels. A study distributed by RAND in 2009 suggested seven military missions for UUVs and assessed the empowered frameworks required for them. Fast specialized advances in installed sensors and correspondences fill the plans of a universal yearly gathering and the item inventories of business organizations both little and huge around the world. Acoustic interchanges systems are the favoured channel and function admirably over short separations; still they are perilous to danger and can undoubtedly be stuck. The NATO STO 2016 Underwater Communications and ebb and flow condition of-craftsmanship and Networking gathering talked about the close term difficulties, similar to task by a group of Italian who have created secure submerged remote interchanges and marketed it with the goal that it can achieve 10Mb/s at a scope of 32 feet, in harbour water conditions (Reiber, 2018; Vancouver, 2018; McGillivary, 2018).

This chapter consists of 4 sections mainly with section II to classify the risks involved in hacking during underwater cable deployment. Further in section III the ways to cyber secure the organizations are detailed. Furthermore the chapter leads to the conclusion of these parameters.

ISSUES IN UNDERWATER CABLE DEPLOYMENT

The application backbone of underwater communication network is the submarine cables, these cables are laid almost around the world. It helps to communicate and transfer data between different countries. But researchers investigated that these submarine cables are becoming risky day by day because the attackers nowadays becoming more vulnerable as they can access the data transfer within the cables (Goyal et al., 2017c). Similarly in UWSN the security of these networks is shrinking day by day, as each sensor node contains important data that cannot be shared, although this data is available in decrypted form (Burnett, 2018; Qiu, 2011; US Report, 2018). In today's world, the attackers are also using prominent technologies and methods to get into it or to access the link which connects the adjoining sensor nodes with other nodes. The link between the nodes should be deployed in a safe manner as it is only path to transfer data from main substation to a receiver point (Bimbaum, 2017; Goyal et al., 2019; Young, 2018).

Due to some insignificant activities under the deep sea like cyclones, tsunami which affects adversely these connected nodes like through the rate of data transfer (Liam, 2018). Some attacks are also there, which are generally carried out by most of the hackers to make the user unable to get services of a particular system. The biggest fear for UWSN is DOS (denial of service attack). DOS attack puts a great effect on the UWSN, as it makes the sensor nodes affected to that level that they are unable to process and send data to the receiving end. This attack results in lack of communication services, important data breaching and huge cost for again deployment of the sensor nodes. Once the service is impaired it also affects all other sensor nodes as they are unable to find path for sending data to a particular end (James, 2018; James, 2017). As the interference of individual cables is commonplace, there are two kinds of disruptions that can result in major impacts:

1. **Simultaneous Cable Breaks:** Natural calamities like earthquakes, tsunami puts an adverse effect on the submarines cables, e.g. imagine the earthquake held in 2006 which abruptly damaged around 8 submarines and the cables associated results in 90 percent of loss of traffic between Europe, United States and China (Mauldin, 2017). This results in a great amount of loss to the communication service provider. UWSN can also be effected by this simultaneous cable breaks. As in UWSN every sensor node is connected to each other, but due to some natural disturbances in water sometimes