

A New Approach to Optical Networks Security: Attack-Aware Routing and Wavelength Assignment

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ABSTRACT

Normal optical networks can be identified the security issues like routing and wavelength assignment and physical layer attacks problems. Network Operators can be facing the risks at the frequency and wavelength allocation process. Physical layers attacks like high powered jamming of attacks can be occur inside the network. High power jamming of attacks can be provides the performance, scalability and efficiency is low. How increases performance using reactive and detection mechanisms in optical networks. Implement some of the prevention attacks of information and reduces the potential damage. Optical networks can be working based on the light path connection facilities of information can be reduces congestion problems. We are going to implement the algorithms like attack aware routing algorithm, graph coloring algorithm, tabu search algorithm and integer linear programming. Using the tabu search algorithm to allocate the load in average format of representation process. Intelligent optical networks can be justified improving the network security process.

Keywords: Optical fibers, optical networks, tabu search algorithm, Integer Linear Programming problem.

1. INTRODUCTION

Wavelength Division multiplexing can be provides huge amount of optical fibers frequency can be divided to allocate like different wavelengths of representation. Optical fibers networks can be provide high speed backbone network communication environment representation process. Fiber can be contains the magnitude value representation process for that providing of services using amplifiers. Through fibers to generate the fast network infrastructure representation process.

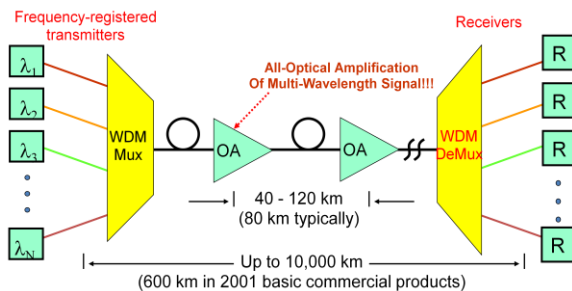


Fig1: WDM architecture

2. BACKGROUND:

Optical networks can be contains static programming environment process. Static programming can not be detecting attacks of information inside the network. Existing optical networks contains low level features for that distribution of information. Amplifiers can be distributes information frequency like low level. Low level features amplifiers can be allow the power jamming attacks of representation process. In amplifiers there is no monitoring procedure. There are no constraints, rules, triggers of representation process. Power jamming attacks can be gives some of the problems like tamper resistance attacks representation process. Tamper resistance problems can be gives the implementation like bits loss of information. Is there any problem can be occurring inside the network, there are no reconfiguring networks services inside the previous system.

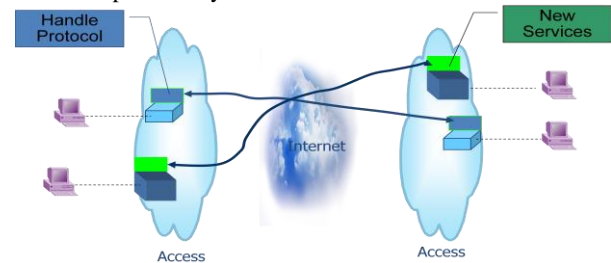


Fig2: previous system architecture

3. OBJECTIVES

1. New objective specification like routing and wavelength assignment environment process.
2. Reduces attacks, congestion of attacks inside routing environment process.
3. Reduces the minimized wavelength allocation process inside the network.
4. Implement the process of wavelength allocation in dynamic-case representation process. It should be identified the optimal solution.
5. New approach can be provides the implementation process like cross layer representation process.
6. Applies the integer linear programming problem algorithm reduces the light path congestion problems.
7. Apply the recall based application development of communication graph representation process.

8. Work with some of the greedy algorithms to defines that optimal solution implementation.
9. Largest number of light paths can be working in a only one single path.

3.1 Modules Description and Representation Process

For implement of application to require these number of modules representation process.

1. Wavelength Division Multiplexing
2. Light Path selection process
3. Wavelength Assignment process
4. Monitoring process using tabu search heuristic algorithm

3.1.1 Wavelength Division Multiplexing

Transparent optical networks can be contains the huge capacity of optical fibers frequency. WDM can be divides the frequency and represented as a many number of inputs. This is backbone process for starting communication establishment process.

3.1.2 Light Path Selection process:

All the connections are working as a optical networks of light paths. Through light paths to start the communication or conversation process. Light paths can be working as a virtual topology creation process. Virtual topology can be reduces the traffic inside the network.

3.1.3 Wavelength Assignment process:

Each and every physical path can be demand some frequency of information. Each light can be contains that some of the constraints of representation process.

3.1.4 Monitoring process using tabu search heuristic algorithm:

Minimizes the congestion problems and increases the successful probability solution identification. Identify the optimal solution in the form of dynamical format of representation process.

5. DEVELOPMENT DESIGN

1. Generate some number of nodes using the swings concept in java.
2. Generation of GUI with the help of Swings Builder tool.
3. Each and every GUI to get that one port number allocation process.
4. Every window to place at the particular distance and to generate the network topology.
5. Browse the file implementation process and calculate the bandwidth about the file.
6. Each and every file to distribute inside the network representation process.

7. Based on the node generation to identify the neighbor nodes generation process.
8. Neighbor nodes can be provides the possible paths representation process.
9. In all possible paths to select any one of the light path representation process.
10. Through light path to start the transmission of information, to get that any problem inside the routing to choose another possible path as a light path representation process.
11. To check that wavelength at each and every nodes can be contains that wavelength is constant or not

5.1 Block Diagram Representation

USE CASE DIAGRAM:

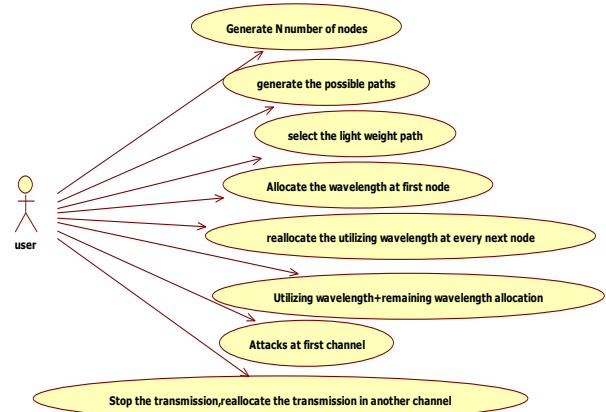


Fig3: Use case diagram representation process.

It can be represents the information about the actors, use cases and relationship operations in between all the modules representation process.

5.2 State Chart Diagram Representation

It can be represents the information from one state module represents to another state representation process. All the modules description can be shown inside the process diagram.

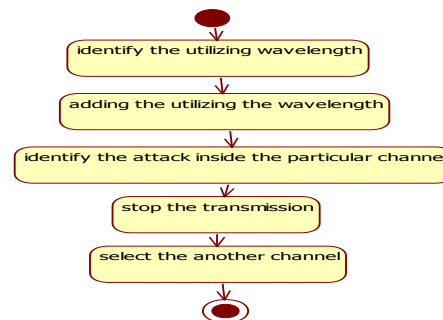


Fig 4: State chart Diagram

6. IMPLEMENTATION PROCESS AND REPORTS GENERATION PROCESS

System can be design and implement with socket programming environment process. Socket programming can be working based on the port numbers communication. Using the port numbers communication to implement the complete life cycle of the project development process.

System Development can be gives the reports like

1. Node generation
2. Give the distance and update the node inside the network
3. Select the destination node
4. Identify the neighbor nodes
5. Identify the possible paths and select on of the light path
6. Send the encryption file of information
7. To show the constant wavelength at each node
8. Decrypt the information.

7. OUTPUT SCREENS

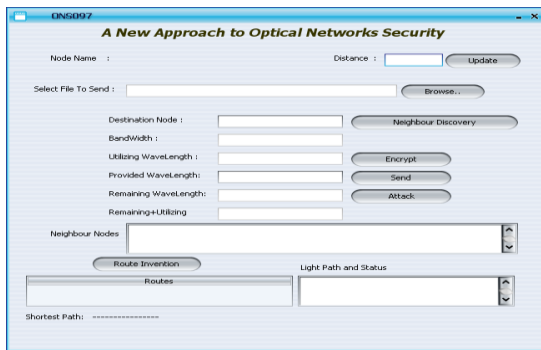


Fig5: Node Creation

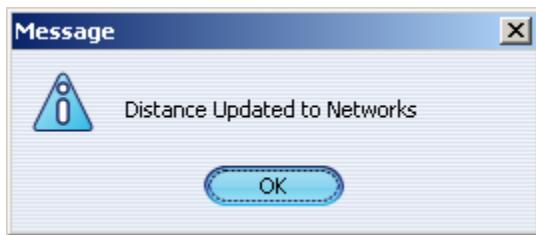


Fig6: Node updating inside the network with particular distance

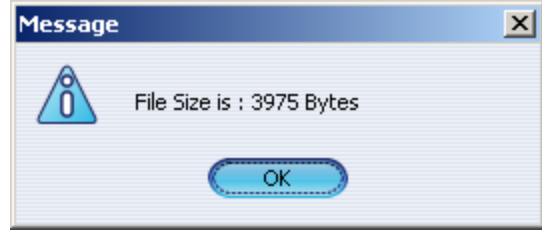


Fig7: select the file to start the transmission based on the file size

File size to choose the frequency for that encryption of information.

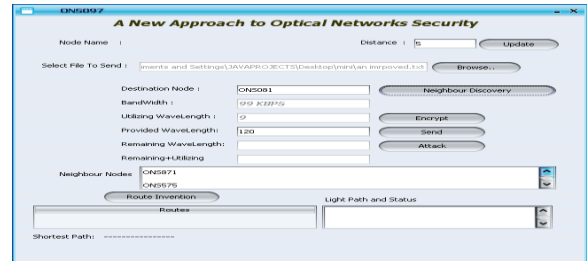


Fig 8: Neighbor node identification process

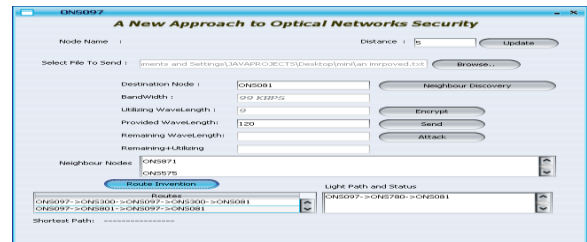


Fig 9: identify the possible path and light path

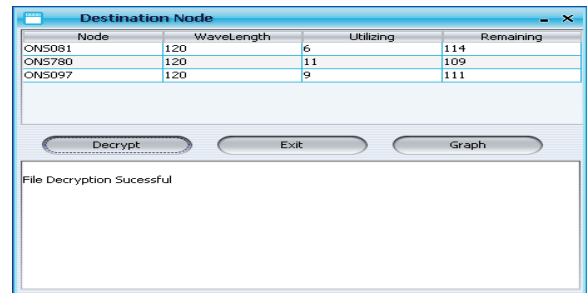


Fig10: All nodes can be maintain the frequency are constant

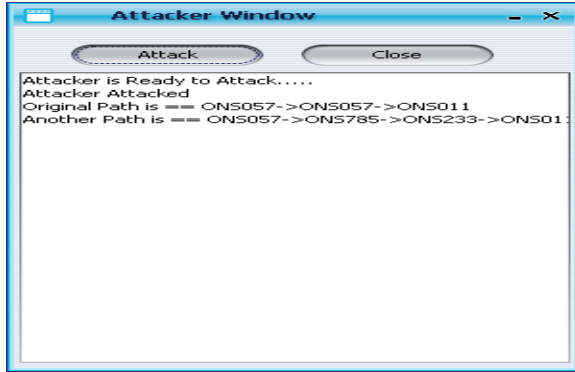


Fig11. Transparanet optical networks window

8. CONCLUSION

The above solution can be working as a robustness solution specification. Intelligent optical networks can be provides the robust design with out any attacks and congestion problems of information. Compare to previous system to present system increases the performance measurement is high. Tabu search heuristic algorithm to provide the implementation in the minimum cost and high efficiency manner.

9. REFERENCES

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