



**De La Salle University - Dasmariñas**

**MAXIMIZATION OF THE COVERAGE OF WI-FI ACCESSIBILITY  
IN DE LA SALLE UNIVERSITY – DASMARIÑAS**

**An Undergraduate Research Presented to  
the Mathematics and Statistics Department  
College of Science and Computer Studies  
De La Salle University–Dasmariñas**

**In Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Science in  
Applied Mathematics**

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**October 2014**



### ABSTRACT

This research study was conducted in De La Salle University – Dasmariñas from the 2nd Semester A.Y. 2013 – 2014 until the 1st Semester A.Y. 2014 – 2015. The primary purpose of this study was to find the best strategic locations of the APs/routers to maximize the Wi-Fi coverage within the university, using the least possible number of these devices.

The data gathered in this study were the number and the brands of the APs/routers which were obtained from the ICTC. The current model employed by the university uses 60 APs/routers and costs about Php 317, 634.26. The costs and specifications of each device were obtained by the researchers from the market as provided by the companies' websites.

From the data gathered, the researchers first assessed the existing condition of the Wi-Fi system through plotting the APs/routers to the regions in the map. The basis for the dimension of each region is the average length of the range of the 60 devices used in the existing model. The researchers applied the principles of Set Covering and Integer Programming in formulating their proposed strategic locations of the Wi-Fi devices. The goal of Set Covering was to cover an entire area with several regions satisfying the constraints provided which was the primary objective of this study – to maximize the coverage of Wi-Fi accessibility within the campus.

The objective function subject to certain constraints formulated was solved using MS Excel Solver. The result from this formulation was also plotted in the map. The researchers were able to reduce the number of APs/routers to 22 with their proposed model. With these 22 Wi-Fi devices the university will be able to maximize Wi-Fi connectivity, except for those places which were not considered, with the estimated cost for putting up the proposed model amounting to Php 33,000.



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H Summary of the Adjacent APs/routers to Each Region – Proposed Model

I Formulation in Microsoft Excel

J Results from Microsoft Excel Solver

K Certification from the Language Editor

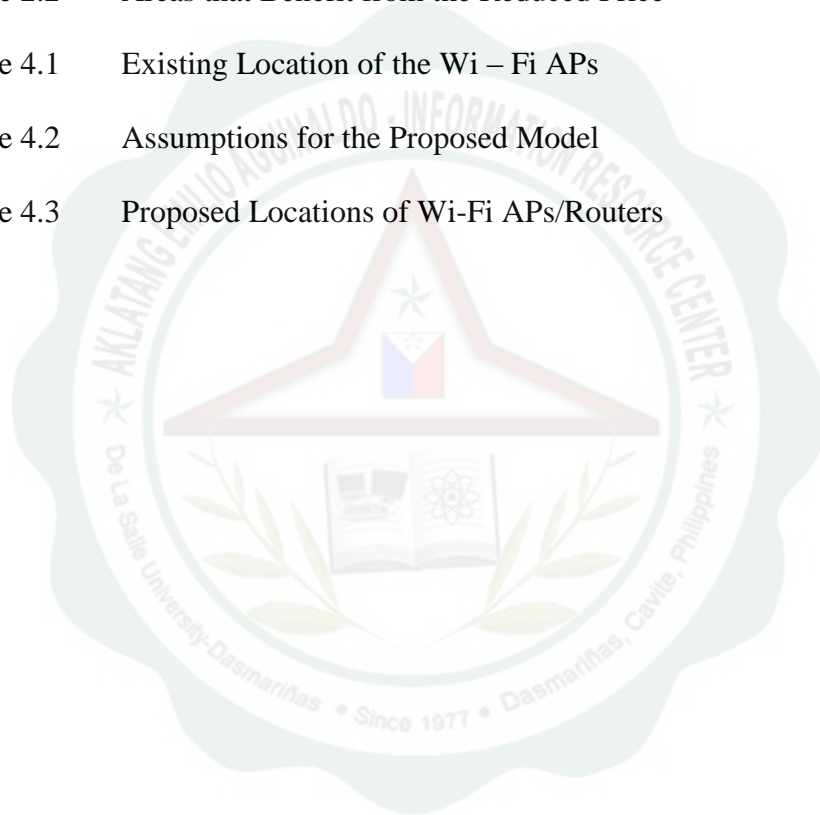
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