

Node Failures and its Impact on Data Aggregation Delay

A Seminar Report submitted in partial fulfillment of the degree of

MASTER of TECHNOLOGY IN WIRELESS NETWORKS AND APPLICATIONS

Submitted by

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APPLICATIONS

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BONAFIDE CERTIFICATE

This is to certify that the Seminar Report entitled “**Node Failures and its Impact on Data Aggregation Delay in Hierarchical WSNs**” submitted by **Ms. Sreedevi A. G.(AM.EN.P2WNA10018)**, in partial fulfillment of the degree of Master of Technology in Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham (Amrita University), is a bonafide record of the work carried out by him/her at Amrita School of Engineering, Amritapuri during Semester 2 of the academic year 2012-2013.

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Place : Amritapuri
Date : 56 July, 2056

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DECLARATION

I, Ms. Sreedevi A. G., Reg No:AM.EN.P2WNA10018, hereby declare that this seminar entitled "**Node Failures and its Impact on Data Aggregation Delay in Hierarchical WSNs**" is a record of the literature work done at Amrita Center for Wireless Networks and Applications, Amrita Vishwa Vidyapeetham (AMRITA UNIVERSITY), that this work has not formed the basis for any degree/diploma/associationship/fellowship or similar awards to any candidate in any university to the best of my knowledge.

Place : Amritapuri

Date : 67th July, 2096.

Signature of the Student



I would like to dedicate this seminar report to AMMA, Sri Mata
Amritanandamayi Devi and my loving parents.

Acknowledgements

The acknowledgement listed below is just a sample for you to understand. Write appropriate acknowledgement w.r.t your seminar work. It is recommended not to use the same sentences listed below!... I would like to thank my advisor, Dr. P Venkat Rangan for his tireless mentorship and support. I would also like to express my sincere gratitude to Prof. Unnikrishna Menon and Mr. Arun Balakrishnan, the seminar coordinators for their immense support and the time they dedicated to help me solving my doubts at various stages of the research.

Thapasya

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Abstract

You can write your seminar work abstract in short here.

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Chapter 1

Introduction

1.1 Overview

This chapter can explain the introduction in general to your seminar work. then specifically you can have sub sections and sub-sub sections to explain each and every sub-area of your work. It can include a general introduction, advantages and challenges of the area.

The rest of the report is organized as follows: A literature survey is presented in section 2. Two level Balanced and Progressive sensor network topologies and their energy optimization are described in section 3. In sections 4 to 6, we analyse node failure handling strategies in different levels of the Balanced and Progressive two level tree WSNs and propose solutions. Section 7 contains results and observations. Finally we conclude in section 8.

1.2 New Section

contents for section here....

1.2.1 Subsection1

You can write contents for your subsection here...

1.2.2 Subsection2

You can write contents for your subsection here...

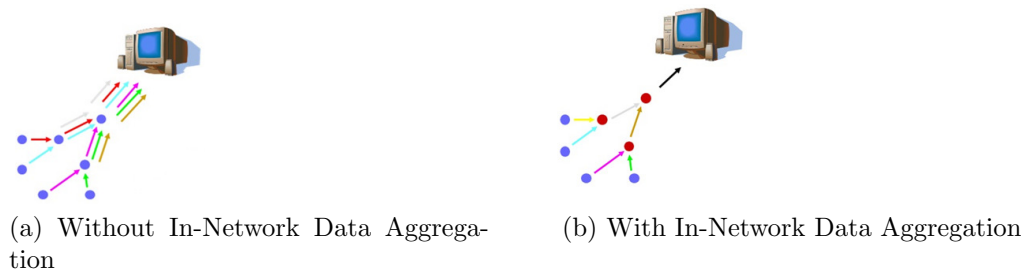


Figure 1.1: In-Network Data Aggregation

1.3 Another Section

The enumeration:

1. **Enum1:** Explanation1
2. **Enum2:** Explanation2

The figure 1.1 is [?] :

Itemization:

- Centralized Approach: This is an address centric approach where each node sends data to a central node via the shortest possible route using a multi hop wireless protocol.
- In-Network Aggregation: In-network aggregation is the global process of gathering and routing information through a multi-hop network, process-

ing data at intermediate nodes with the objective of reducing resource consumption (in particular energy), thereby increasing network lifetime.

- Tree-Based Approach: In the tree-based approach perform aggregation by constructing an aggregation tree, which could be a minimum spanning tree, rooted at sink and source nodes are considered as leaves.
- Cluster-Based Approach: In cluster-based approach, whole network is divided in to several clusters. Each cluster has a cluster-head which is selected among cluster members [?].

Chapter 2

Related Works

This section should explain the literature survey of your work. You can have sections and subsections explaining drawbacks of the current system or technology [?].

2.1 Drawbacks of the Current System

This section should explain the literature survey of your work. You can have sections and subsections explaining drawbacks of the current system or technology [?].

Chapter 3

Proposed System Titles

3.1 Proposed System Title

3.1.1 Subsection1

You can write contents for your subsection here...

3.1.2 Subsection2

You can write contents for your subsection here...

Table 3.1: The Symbols Used in the Paper

Symbol	Description
N	Amount of SNs in tree WSN
m	Amount of INs in tre WSN
T_{comp}	Time taken for comparing two sensed values
T_{net}	Transmission time from one wireless node to another in the WSN

The total energy consumed by the GN is proportional to the amount of computations and amount of transmissions. The total delay or energy consumed or time taken by the GN to complete the aggregate computation in a balanced two level tree WSN is,

$$T_{max} = \frac{N}{m} - 1 \quad (3.1)$$

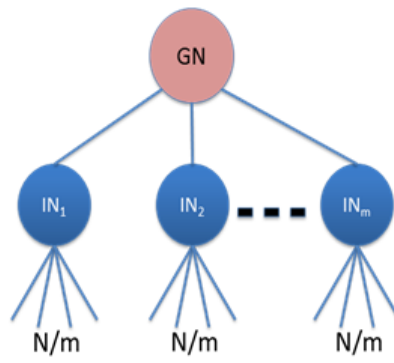


Figure 3.1: Balanced Two Level Tree WSN

Chapter 4

Advantages and Disadvantages of the System

4.1 Advantages

4.2 Disadvantages

Chapter 5

Applicablity of the System in Other Areas

Chapter 6

Conclusion

Chapter 7

Future Work

Appendix A

.1 Section Name

.1.1 Subsection Name

.1.2 Pin Diagram