



# A Reconfiguration Characterization for WSN Optimization

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*Abstract— A sensor network is a critical real time network with specification of distributed nodes. The limited range and energy increase its communication criticality. In this paper, a feature driven characterization method is provided for network communication optimization. The paper has described the network reconfiguration architecture with its characterization. The paper explored the various challenges, requirement and scope of this methodology under sensor network restriction.*

*Keywords : WSN, Reconfiguration, Optimization, Context Aware, Real-Time*

## I. INTRODUCTION

An adhoc network is the temporary network without specification of any direct connectivity or the infrastructure in the network. Mobile networks and sensor networks are such network forms which provide cooperative communication to deliver the information. Sensor network is a more critical network with limited coverage and energy specification. The real time environment integration increases its critical communication aspects because of which, an environment specific configuration of network is required. The network is defined here with sensor network modeling with communication effort specification in real time. The communication models includes direct, multi hop and cluster specific communication. The method includes the logical and physical feature derivation and phenomenon extraction based on the configurable features. A category driven deployment is here provided to reconfigure the network with operational derivation so that the communication efforts will be formed. The activity driven, environment specific communication model is required to achieve the effective communication in functional network. To achieve the effective network communication, there is the requirement of effective placement of nodes and dynamic configuration

of the network. A network ability analysis is here provided to achieve the effective network reconfiguration with node level inability analysis and provide the effective network communication. This configuration and network formation depends on various associated factors. Based on these all factors a collective model is defined which is shown in figure 1.

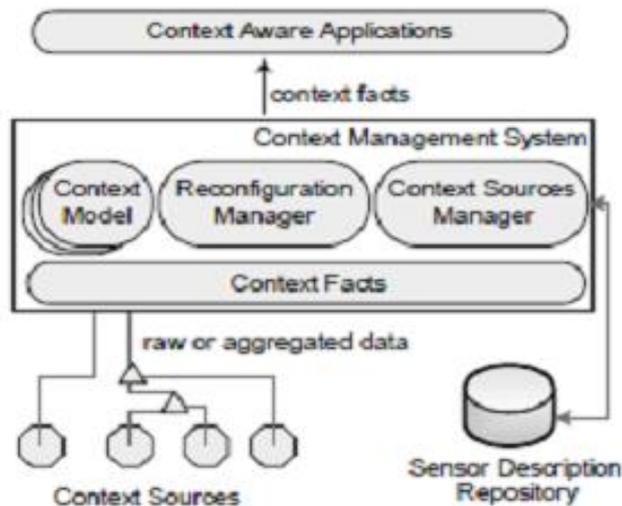


Figure 1 : Architecture Reconfiguration[8]

Here figure 1 is showing the reconfiguration network for sensor localization based on the environment analysis. A context driven analysis is provided in this framework. According to this framework, at first the source driven individual node analysis is observed, the descriptive node information with communication information analysis is provided in this framework. Once the framework is derived to form the context model with specification of reconfiguration manager and source process manager. Based on these vectors, a context fact based observation is provided for effective network configuration. The context driven application is here form to optimize the network. The configuration process in the network faces various challenges relative to the environment, platform and context information integration. These all process parameters are combined in a combined form to generate the adaptive communication results. To provide the effective configuration, there is the requirement is to apply the cyclic performance analysis so that the effective reconfiguration will be obtained. The key performance parameter for reconfiguration improvement is described here under

#### A) Memory Space

A network deployment and configuration are here defined to provide the scheme specific communication. The related communication patches and the memory space configuration are provided for the work. An overlap is defined to derive the performance vector for constraint specific improvement. The significant feature analysis with dynamic runtime specification is provided for configuring the platform. The resource specification mainly based on the memory configuration and updation so that the effective feature configuration for the network will be achieved.

#### B) Energy Consumption

As the sensor network is defined by energy restriction, there is the requirement to configure the system with energy configuration. A parameter specific analysis is required to identify the energy consumption along with transmission updation. The error specific transition and reception is provided for the work. The resource consideration, distance parameter analysis and the communication type and formulation are provided for network energy estimation.

In this paper, an effective network reconfiguration model is presented in this paper. The paper has identified the network issues and characterization so that the optimized communication will be formed. In this section, the reconfiguration architecture with different context driven analysis is provided. In section II, the work provided by earlier researchers is discussed. In section III, the network issues and features are explored. In section IV, the work conclusion of this work is presented.

## II. EXISTING WORK

Wireless adhoc network is dynamic network having challenges in terms of mobility and the cooperative communication. The range specific communication increases the communication criticality as node is not under the coverage scope of another node. To optimize the network communication, there is the requirement of some configuration scheme. In this section, some of the contributions of earlier researchers are discussed to optimize the network by reconfiguring. Panousopoulou *et. al.*[1] provided a work on mobile agents to provide reconfiguration of clusters. The agent acquired the knowledge of spatial location and the radiation pattern of nodes and provided the limited connectivity based communication in clustered form. Author provided the algorithms to achieve the effective minimum distance communication so that the performance vector of the network will be optimized and the high strength communication will be formed. A voronoi diagram based configuration method is provided by the author to control under multiple parameters. Radeke *et. al.*[11] has defined a mobility specific communication network management using different reconfiguration strategies. Author proposed a proactive and reactive reconfiguration method to improve the clustered mobility, connectivity and energy effective communication. The clustered topology driven communication was provided by the author. Mikhail *et. al.*[12] has provided a requirement specific mobile communication observation with sensing capability analysis. Author defined a conditional analysis using linear and integer problem. Author applied the average case communication method by applying different algorithmic approaches to optimized the network communication. A decentralized communication solution was provided to improve the network design.

Another configuration is required at channel allocation and bandwidth assignment. Balachandran *et. al.*[2] provided the dynamic channel specific reconfiguration in a dynamic mesh network. Author improved the channel assignment and scheduling method based on traffic analysis in multi-channel communication network. Author provided the work on dynamic network and defined a traffic demand driven communication using theoretical framework and configuration. Author defined the polynomial bounded heuristic algorithm for state aware channel configuration. The traffic configuration analysis is the major parameter considered to optimize the bandwidth and channel allocation method. Ramakrishnan *et. al.* [3] provided the bandwidth allocation by considering the channel capacity issues. Author provided the link failure based inference analysis method for obstacle and motion detection based on application requirements. Author provided a case driven study on network issue identification for link change identification at earlier stage so that the failure rate will be reduced.

Clustering is the another opted method for improving the parallel configuration analysis. A segment driven reconfiguration method was suggested by multiple researchers. Hang *et. Al.* [4] provided an energy adaptive clustering model for sensor network reconfiguration. Author defined the analytical model for optimal parameter derivation under clustering method. A modified network model is here defined to optimize the number of clusters in the network to optimize network lifetime. Author provided the random distributed clustering based on device location analysis and to improve the configuration model for the network. Leligou *et. Al.* [5] provided at work on a feature and resource driven reconfiguration to improve the architectural formation in the network. Author defined the communication frequency and functional components based on network load and design analysis for improving the configuring aspects. Author defined the block level analysis to provide a functional analysis of effective network configuration. Wouter *et. al.* [6] has defined a work on component driven modeling for improving the configuration in sensor network. Author worked on realistic dynamic environment to achieve cost adaptive communication under graph specific analysis. The graph specific portioning and enacted communication method is provided. Tompkins *et. al.*[15] provided the work on layered communication model for substantial overhead method. Author provided a parameter specific traffic analysis model under programmed method to provide the policy driven communication. A node management policy with lightweight configuration method was proposed to achieve the channel control in a distributed environment.

Bapat *et. al.*[7] has provided the work on network system deployment by generating the protocol specific configuration under memory size, version and reconfiguration. Author defines a management scheme identified by potential causes under quality and lifetime impact for optimizing the real deployment. Author defined a loop stabilization method for local detection and correction. Emmanuel *et. al.* [8] Definitely the work in context driven appropriate reconfiguration using fuzzy logic methods. Author provided the network information and effort extraction to identify various reconfiguration challenges and issues. Author provided the software and hardware level configuration in a hybrid network environment. Auroux *et. al.*[9] provided a densenet based network architecture for identification of associated network issues. Author provided the explosion driven signal analysis to identify the safe communication in the scaled heterogeneous network. Author provided the optimization using the crowd controller framework. Shengfeng *et. al.*[10] defined at length driven topology reconfiguration in the sensor actor network to identify the failure situation and its recovery. A link length based novel parameter specification is defined to estimate the actor role and provided the topological information extraction. A cluster specific connectivity analysis method is defined with probabilistic estimation under power and actor level observation. A homogeneous and communication range analysis is provided to discover the existing strategies in the network. Sungwook *el. al.* [13] has provided a distributed control method under performance algorithm activation. Author provided the network adaptability based configuration to reduce the complexity and

control in a global environment. Jing *et. al.*[14] has provided a work on cluster specific reconfiguration algorithm for effective cluster head selection and improving the transmission range. Author provided a balanced range based communication to provide the generalized communication in distributed networks.

### III. RECONFIGURATION CHARACTERIZATION

Reconfiguration of adhoc network is required to provide effective communication between the network nodes respectively to applications, locations and environment. This heavy communication is drawn using larger data files, video files or the transaction files. As the security is the main criteria, such kind of network requires the high speed communication with higher reliability. Because of this these networks are defined in wired form. The communication links for this network under topological specification. The communication can be controlled using different technologies location aware transmission, optical communication, etc. The dedicated network requires the direct transition between the network elements or the nodes so that the fast and safe communication will be obtained from the work. The content level communication analysis is defined by this network to observe the node level and network level communication. To provide high communication, the network requires the effective utilization of limited bandwidth. The small distance communication is also the basic requirement of this network form. The communication or the transition in the network is also controlled using different constraints specified. In biometric applications, real time communications are the most common application areas of such networks. This network form also provides the internal communication observation with dedicated connectivity specification and the control. The communication support is here provided at multiple mode as well as for single mode. The core diameter specific communication can be drawn through the communication links. The parameter driven analysis with dedicated connectivity is applied and observed. The communication distance, communication media and technology are the other parameter which can control the communication so that the effective communication will be drawn. Some basic characterization of this reconfiguration technology is given hereunder

#### A) **Effective Resource Utilization**

As the sensor nodes are placed in real environment for effective, location driven data transmission, the network requires the effective utilization of available resources. The communication frequency range is high and provides the communication at high data rates. The wavelength division is provided for data rate control and capacity analysis. The user interaction with the network is observed to provide the sharing of the bandwidth.

#### B) **Low transmission loss**

As the localization is based on the communication feature aware so that the efficiency and reliability because will be improved, and the data loss will be reduced. The transmission can be long distance at a high communication rate even then the primary requirement of this network form is to provide the communication with lesser transmission loss. The communication can be controlled by applying the amplifiers or the repeaters. The error checkers are also applied to observe the data validity.

#### C) **Cross Communication**

As the communication is topology driven, it can share the same media. It may be possible that more than bulk transmission can be performed at the same time over the network. Such kind of cross communication can arise the situation of bottleneck which is required to resolve for effective and reliable communication.

#### D) **Small size and weight**

The network is generally smaller and not for larger distances because this kind of communication is performed between the servers or to take the backup. Sometimes the communication is performed for less than meter distance. Because of this, there is the requirement to maintain the data reliability and integrity while performing the communication.

#### E) **Communication security**

The security is another major factor that affects the communication. The transmission at the lower end can be drawn to achieve the highly secure communication. The communication validity or the reliability is the major communication aspect drawn here. The communication control can be applied to gain high level and effective communication. The active and passive attacks are still required to predict and prevent so that the early stage resolution can be obtained.

#### IV. Conclusion

In this paper, an effective network terminology is discussed to improve the network strength and the communication. The network system optimization for real time sensor network is here defined using the concepts of network reconfiguration. The paper explores the concepts of network reconfiguration for sensor network as well as identified the challenges, requirements and characteristics of this method.

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