DS System for 4G Networks through Data Mining

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Abstract: Due to the more demand of services provided by cellular devices. And the mobile devices, the traffic in the network increases. In result it causes the reduction in quality of services (QOS). For the assurances of (QOS) reduction in traffic and the satisfaction of customer. This paper propose the decision support mechanism, data mining techniques are used. In this study, the aspect of DSS are explored with the experimental support. For the experimental support WiMAX equipment is used. In the DSS by using the k-map clustering algorithm of data mining, MRTR parameter are automatically adjusted. This real experimental result shows that the QOS can be maintain using DSS in 4G mobile network to fulfil increasing demand for advanced services.

Keywords: DSS, QoS, LTE, WiMAX, NMC.

INTRODUCTION

Nowadays the network management centre (NMC) need to be more intelligent to assure QoS in 4G wireless network. As more and more advanced services are provided. The bandwidth data requirement is more and also it increase traffic in the network. Therefore all this demand the minimizing packet loss, advanced communication services, improves transmission quality with lower latency to assure QoS in 4G network.

The decision system support assure that QoS in 4G wireless network using data mining.DSS is a computer based software provides the organizational and business decision making, sorting ,resulting and analysing and routing . DSS helps to take a decision on particular problem that may rapidly change by collecting organizing and analysing data through data mining algorithm. It is observed that to get the accurate decision from DSS, it is necessary to analyse the data in LTE network for the satisfaction of customer.
The fundamental components of the DSS are:

1. Database:
    That provides the data to analyse.

2. Model:
    The condition to take decision.

3. User interface:
    The framework of DSS.

Intelligence:
It includes the collecting the condition to take the decision.

Design:
It includes the development of the action for solving the problems.

Choice:
Selecting one action from all developed.

Implementation:
Adjusting the selected choice in decision making situation.

The top advantages of DSS in 4G wireless are:
1. Time saving- it speed up the process of decision making.
2. Organizational control is increased.
3. Increase effectiveness- it helps in making accurate decision.

For providing effective DSS, it is necessary to combine techniques to improve the performance by analysing two aspects: historical data and forecast. For optimizing decision support data mining can be discovering relationship and patients in large data.

DM is Computational process of analysing data of by combining many techniques like AI, database system, machine learning, visualization. DM produce the learning the output for the large data as a set of inputs. In this experiment, the K means clustering algorithm where the DS function module is directly added to the WiMAX to assurances of QoS in 4G mobile network.

LITERATURE SURVEY

DS System evolved from the theoretical studies of organizational decision from the Carnegie institute of Technology. The implementation work is done in 1960s.From the DSS and the single user, organizational decision support system. The scope and definition of DSS has been evolved over the years.

In 1970s, DSS was described as the computer based system to aid decision making. In late 1970s, the DSS started working as "interactive computer based system for decision making purpose utilizing database and models to find solution of problem. In 1980s, DSS should able to work as a "system which improves effectiveness and managerial and professional activities using suitable and available activities.

Fig 1.The system architecture of PFS algorithm for WiMAX resource allocation

1. cluster0- Increases the MRTR values.
2. cluster1- Don't modify.
3. cluster2- Decrease the MRTR values.

Let us consider the four application scenario having traffic 2MB,1.5MB,1MB respectively. Initial value of Packet Lost Rate(PLR) of traffic 1.5 MB and 1 MB is increased from zero to 4 and 2.9 respectively. But the highest values of the PLR for the traffic 2MB is decreased from 16.9 to the 3.8. All values are below 5 in an average so that all end user can get the efficient services.

Table I. The PLR result values in relation with MRTR Values

	2 MB	1.5MB	1MB
Initial value of MRTR (Byte/Frame)	625	938	625
Before dynamic adjusted PLR (in %)	16.9	0.0	0.0
Stable value of MRTR (Byte/Frame)	992	750	506
After dynamic adjusted and stable PLR (in %)	3.8	4	2.9

BACKGROUND

DSS is evolved from the organizational decision making done at the Carnegie Institute of Technology in 1950s.In 1970s DS was the "computer based system for decision making". In late 1970s,the scope of DS increased to "interactive computer system to take decision using database and models " . In 1980s DS faced the new challenge towards the design of intelligent workstation.
Quality of Services (QoS) is an overall performance of the network. The QoS is generally measured from the user perspective. There are many factors which are used in determining the QoS: transmission delay, bit rate, rate of transmission .
Data Mining is a process of analysing data using different perspective giving the result in the form of useful summarized data exploring some patterns and relations.

CONCLUSION

In this paper,the QoS is maintained in 4G mobile network using the DS with the help of K-Means Clustering Algorithm. The experimental result showed that the proposed DS mechanism improves the QoS by balancing the MRTR values and satisfying all end users. This study also demonstrates the resource allocation for the 4G base station. Therefore, 4G BS system can switch on DS, if the total traffic is beyond the predefined threshold.

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[3] M. Pande, V. Ramamurthi and P. Mohapatra, Quality-Oriented Video Delivery over LTE, Journal of Computing Science and Engineering, vol.7, 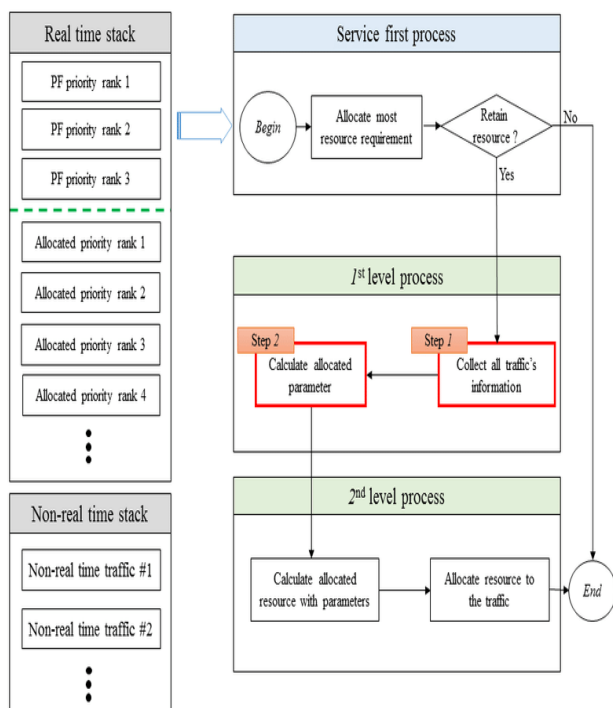pp. 168-176, 2013R. E. Sorace, V. S