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RESEARCH ARTICLE

Scalable Search System based on Metadata in Large Scale Wireless Networks

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Abstract

This paper mainly concentrates on a data search problem where there is a huge usage of the internet now a days. Due to this, in a large scale network its is difficult to fetch the data from the nodes into a wireless network. Because of high overhead, the nodes will fail to fetch the data flexibly from the nodes and they cannot give the query service as we expect. Locality based distributed Data search system (LORD) is been used in our paper in order to overcome this problem. The data will be published to a particular zone in a large network . when a user receives a metadata query from the user node, the file will be fetched directly from the particular zone and retrieves the data to the user.

Keywords: scalability, data publishing, flexibility, reliability

1. Introduction

Now a days there is a rapid development in the mobile communication techniques which is enabling the demand of searching applications, which allow the searching among the users wherever and whenever. Traditional data search systems suffer from problems like a single point of failure, hotspots and low scalable transmissions. This project is based on the LOcality based distRibuted Data search system. This provides some of protocols which provides highly efficient, scalable and dynamic data search system with lower overhead. LORD has a Region based geographic routing for data publishing and querying. RGR only requires to know their located regions and angle information using low power. This system will enable the user to easily fetch the data from the nodes especially in a large scale network. Our system divides the entire large network into the zones and publishes the data to the particular zones instead of publishing it to many zones. When it receives a metadata from the user, the metadata will be converted to ASCII characters and applying the module to the value, we will get the hash value. The zone matching that hash value, the request will be sent to that zone and easily fetching the information from the particular zone easily.

2. Objective & Motivation

The main objective behind this paper is to provide an effective data searching and retrieval of data from large wireless mobile networks. It also provides high scalability and prefetching the data and also reduces the size of the metadata which is in the nodes.

Motivation behind this paper is, as there has been huge increase in the data usage now a days, the network is unable to serve efficiently in a right manner. so this system may be implemented to overcome the current network problems and can provide effective data searching.

3. Features of the Proposed System

1. An efficient and congestion-resilient region-based data publishing and querying protocol: the data is been published for all the neighboring nodes which generates low overhead for a highly mobile network.

2. An energy-efficient and mobility-resilient Region based Geographic Routing protocol: Suppose if we consider an example of horse, if we want to find out the location of where the horse is moving. Instead of concentrating on the current location of horse, lets concentrate on route through which the horse travelled and the nodes nearby which the horse moved will sense the movement of horse and that will be stored in their nodes with their attribute name and details of it. In this way RGR maintains the table containing the details which helps in major for finding out the routes and locations which only requires region angle information based on low power Devices.

3. A parallel file fetching algorithm: As the data for the query will be distributed all over the nodes , lets apply TREE-ON-DRAG concept for fetching and aggregating the data from all the nodes where the metadata from the nodes that have low stretch will be aggregated first and slowly aggregating in the same procedure from all the nodes.

3. SYSTEM ARCHITECTURE

System architecture is a conceptual model that defines the structure, behaviour, and more views of the system. An architecture description is the formal description and representation of the system, organised in a way that supports reasoning about the structures and behaviours of the system.

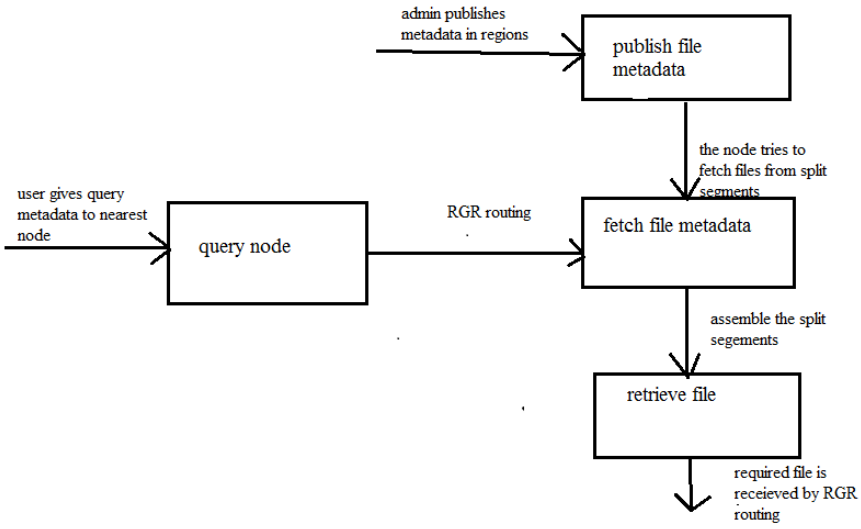

Fig 1.1 system architecture

4. STRUCTURES AND RELATIONSHIPS

4.1 Data flow diagram

A data-flow diagram (DFD) is a graphical representation of the "flow" of data through an information system. DFDs can also be used for the visualization of data processing (structured design). On a DFD, data items flow from an external data source or an internal data store to an internal data store or an external data sink, via an internal process.

A context-level or level 0 data flow diagram shows the interaction between the system and external agents which act as data sources and data sinks. On the context diagram (also known as the Level 0 DFD) the system's interactions with the outside world are modeled purely in terms of data flows across the system boundary. The context diagram shows the entire system as a single process, and gives no clues as to its internal organization.

In the level 0 diagram, the file metadata will be published among the nodes by mapping among the regions. Those file metadata will be stored in the region nodes. When one of the nodes accepts a query from the user it tries to fetch the file location information. When it fetches the file location information from the respective nodes the file will be received at the node which answers for the query given by the user.

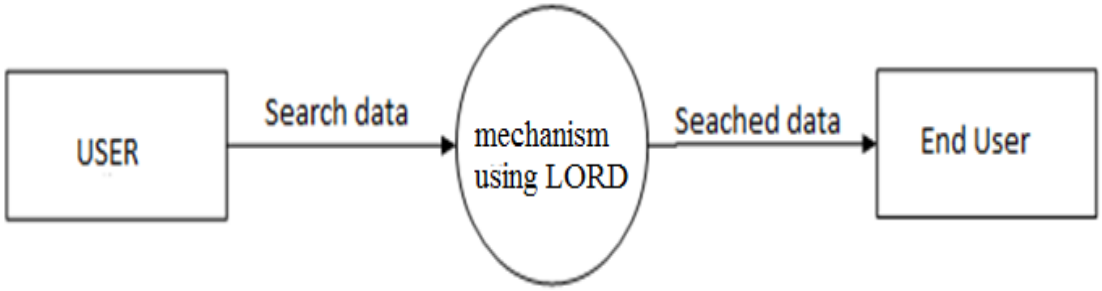

Fig 2.1 Level 0 Data flow diagram

The Level 1 DFD shows how the system is divided into sub-systems (processes), each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the system as a whole. It also identifies internal data stores that must be present in order for the system to do its job, and shows the flow of data between the various parts of the system.

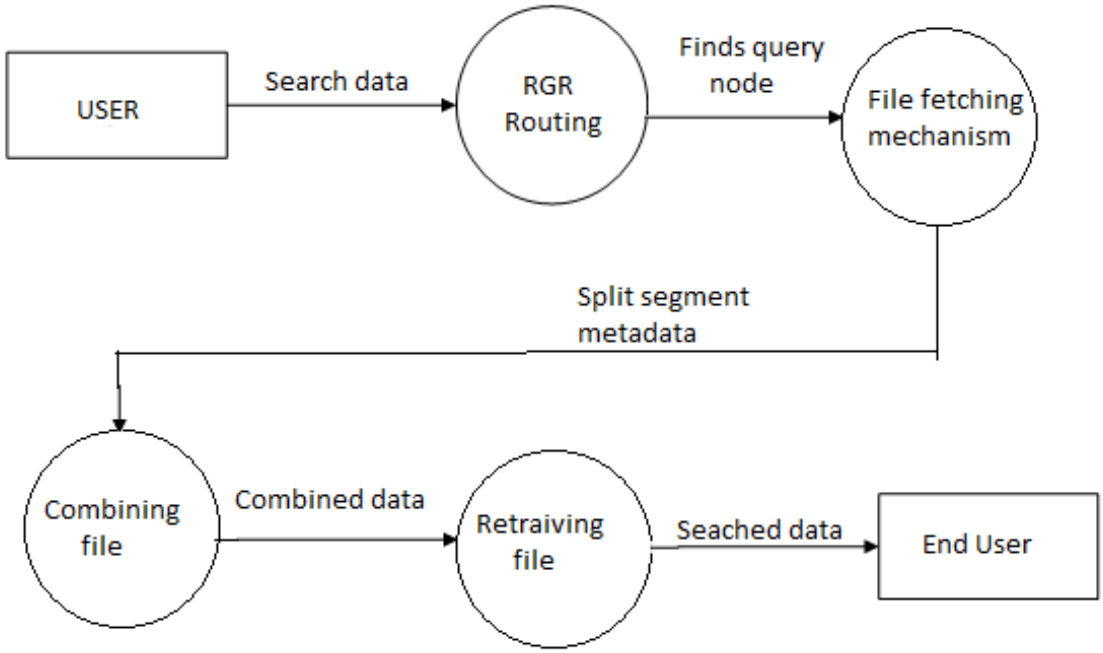

Fig 2.2 level 1 data flow diagram

5. OBJECT ORIENTED APPROACH

5.1 Use case diagram

The various interactions of the actors are quantized into use cases. An actor is direct external user of a system. A use case is a coherent piece of functionality that a system can provide by interacting with the actors.

In the fig.3.1 use case diagram, a various interactions happen with a query node where a node performs uploading the file, publishing it in all the regions. When it gets a query from one of its nodes, it retrieves the file from its nearest nodes. It replicates the copy and delivers it to query node.

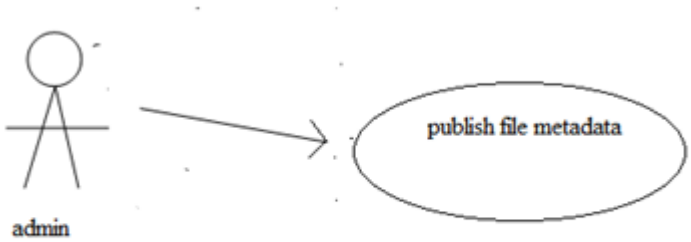

Fig. 3.1 use case diagram

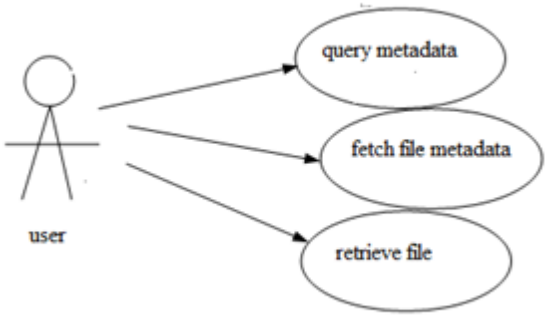

Fig 3.2 use case diagram

6. CONCLUSION

There is a huge growth in the usage of internet now a days. Its been a very hectic for the nodes to store the files. Due to the heavy storage, the data is not able to be fetched so easily and reliably. So there is a requirement in an advancement of technology to overcome this problem. This paper introduces LORD system which helps in publishing the file easily among the nodes and retrieve the file exactly from that node. This merely reduces the data overhead and increases the flexibility, makes the network more reliable. This works well in a large scale network which increases the scalability by retrieving the files in an easy manner.

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