Mobile Agent to Perform Query on Multiple Database Servers for Security

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Abstract— **The availability of information continues to increase rapidly, the method for encoding and storage of information also increased. The development of information resources brings several problems, among them about how to combine the data storage and distributed differently. Information on an organization or company is usually stored in separate locations and different formats. When an increase in storage capacity and the amount of information search costs, companies are faced with the problem abundant amount of data. This research has resulted Mobile Agent to perform query on multiple database servers Security. Users configure the program to the database to be accessed in the form of a query command, username, password and address of the database server. Output can be either table or message information from a database that is accessed. Users can view the results of queries that are performed on each database server in one application.**

Keywords—**Mobile Agent, Database Server , Security**

I. INTRODUCTION

This template, The availability of information continues to increase rapidly, a method for encoding and storage of information also increased. The development of information resources this brings several problems, among them about how to combine distributed data storage and different. Information in an organization or company is usually stored in separate locations and different formats. When an increase in storage capacity and the amount of information search costs, companies are faced with the problem abundant amount of data.

Distributed data base is a database where data is placed in several locations, but to apply a certain mechanism to make it a single entity database . A distributed database system can only be built in a computer network system. In contrast to the centralized database for which data are placed in several locations but not interconnected.

Distributed database access is a process to mix and match, query, manipulate, and combine data in a distributed database. Access database query results will display the desired user. Access databases do not do tracking of changes to the database on each host.

Agent is a new breakthrough in software development. Agents are entities dedicated software for specific purposes. Advantage agents has attracted the attention of many stakeholders. One is the Japanese who developed the IBM Aglet SDK (Software Development Kit) to facilitate programmers to create Java-based agent. The combination of Agents and Java software will generate a strong network in a low bandwidth consumption, so that the selected technology in building applications to Mobile Agent Access distributed databases[1].

II. MOBILE AGENT BACKGROUND

Mobile agents are often used to collect data, information or a change. Mobile agent is not tied to the system is executed first place. Mobile agent has the unique ability to move itself from one system to another in a network[1].

Application of Mobile Agent has its own advantages when compared with the other agent technology, such as RMI (Remote Method Invocation). Despite the fact that almost all problems in distributed computing can be solved without the use of mobile agents, but by applying the mobile agent will be able to facilitate the development of applications and can improve reliability and efficiency[2].

Some of the benefits of Mobile Agent, among others : Reduce the network load,Resource efficiency Overcoming network latency, Encapsulate the protocol, Asynchronous and autonomous execution , Adapt dynamically.,Reliable and fault tolerant , Supports heterogeneous environments, Real Time Notification ,Parallel execution at home, Adaptive computing paradigm and Scalability[8].

III. COMPARING AGENT

In the chapter analysis and design will be discussed in three stages in the methodology of RAD (Rapid Application Development) which was developed with the development framework Grapple (Guidelines for the Rapid Application Engineering) which needs planning phase, analysis and design. Planning stages and needs analysis implicitly discussed in the analysis. In this analysis phase will be used three [3]

UML diagram of class diagrams, use case diagrams and collaboration diagrams, while the diagrams used in the design stage activities and interface prototypes. The use of four diagrams. Both the next stage of development and deployment phase will be discussed later.

In software development these two actors can be identified is in the form of human and Tahiti server software. The actor is someone or something outside the system but interact with the system[7]

IV. DATABASE SERVER SECURITY ACCESS SIMULATION

In this application, agents used two pieces: namely DBApplication and AgletSlave which is derived from the Aglet class. DBApplication served as a stationary agent, which runs on a computer server by the administrator. DBApplication as a major class in the server menginstansiasi DBAgent user interface. This class is associated with several classes, each of which has a specific function.

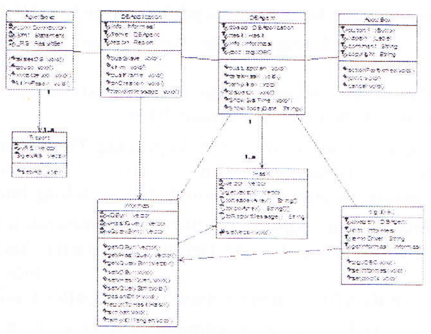

Fig.1

AgletSlave served as a mobile agent can perform the dispatch via the network to the destination hosts. The information collected on each network is stored in the object from the Report class

Results of analysis on the manufacture of an agent use case diagram, class diagram is synchronized with, produce diagrams collaboration making such agents on the object of AgletSlave fig. 2. image is created, the administrator can send it to the network.

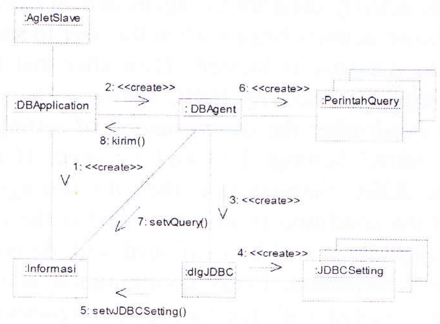

Fig. 2

Object of class AgletSlave then move from one host to another host in the itinerary that has been determined. Database access steps performed by agents with the collaboration diagram depicted in Figure 3

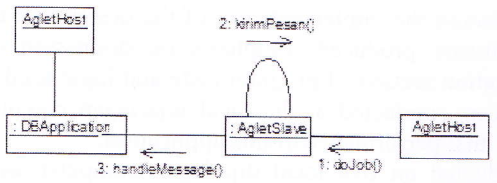

Fig. 3

Figure 2. Collaboration diagram Creating a slave Aglet
When agents arrived at the host destination, Tahiti Server will call the method run () method of containing the agent doJob () to retrieve the necessary data. The file retrieved are stored in the object of a class report as material to make a statement.
Figure 4 Collaboration diagram of database access by AgletSlave

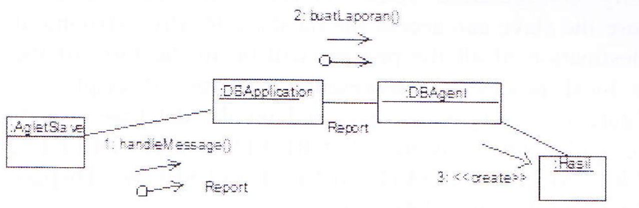

Fig. 4

Unexpected things often happen, for example when the host to be detected is not running, the host will be skipped. When the detection of errors or complete, then the agent will return to host origin with each Report object host.

On the server, will call the method DBApplication buatLaporan () on object DBAgent. Object result storing the result of access performed on each database host. This object is stored into a vector and can be saved into a text file. Reports generated will be the result of the execution of common queries generated by each DBMS at each visited host. It is about the making of reports by DBApplication. Activity diagram is a product of the action to develop and refine the diagram object in the design stage. This diagram describes the user activity that occurred on the system.

At the activity diagram of agent delivery process. In the pictures shown activity begins when the user to specify the hosts where the database is located. Then after that followed by the determination of activity JDBC settings. There are two activities that occur after the determination of setting Setting JDBC JDBC JDBC Settings Fail and Succeed. If an event happens is the JDBC Settings fails then the settings will be repeated until the condition is working. And if the condition has been successfully it will be continued with determination activities Query command. Every configuration activity that occurs will be coupled with the storage configuration to the class information. Then the activities of shipping agents to the hosts that have been determined based on the previous configuration.

V. IMPLEMENTATION

We will discuss the implementation of the design and testing of the software produced. Emphasis on discussion of the implementation section of program code and logic used in the system. Tests conducted at the local dijaringan computer to view the actual performance of this application.

Tests conducted on five local dijaringan computer with the provisions of a computer as a server and four others as a client computer. Accessed the database server is MySQL server installed in each of the operating system. The test is divided into two parts to the query SELECT and CREATE queries.

Slave-making is done through DBAgent. Click the add button that appears on the display DBAgent . This step is done how many times adjusted by the number database to be accessed. Configuration of each database is adjusted with the configuration done on client server Mysql in general. Besides the host destination can be left in the form localhost to simplify configuration JDBC drivers. This can be done because the slave can access the database locally. Arriving at the destination of all the process will be in the form of the slave local processes. represents the type of display to configure the query to be executed on the database server. These applications may include CREATE, DROP, DELETE, INSERT, ALTER, UPDATE, SELECT and SHOW. Display configuration for query DBAgent

Each input query is completed, click the save button to save the configuration to the object information. This configuration can be changed each time the slave will be sent. Execution button is used for sending all the slaves to the destination represents the display of information AgletSlave activity on the host destination. Information presented in the form of start time, the presence AgletSlave in the host destination, time completed and the error information in case of errors in the delivery AgletSlave. represents the display the results of the SELECT query execution. Results displayed in table form. Display tables will be changed according to the selected database in the list view. represents a message display panel tab that displays information about the successful execution of the query. Condition of error, the information line in the table result, the successful execution of the query is displayed in this panel tab.

VI. CONCLUTION AND FUTURE WORK

In the paper we have been designed and built an agent for accessing distributed databases. These applications can access data distributed servers with multiple database vendors on the same types of computer networks. However , our designed architecture , have some issues that are the databaseserver security.

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