
Mobile database server management system

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ABSTRACT

This paper describes database server management system by mobile device. Our system can control database server immediately in any where by mobile device. We have developed the dataset server CE which interface with mobile device, database management system which runs in mobile device and web services which connect the mobile database with desktop database. External mobile device communicate with web service agent via wireless equipment. Our system includes dataset server CE client engine, web service server agent and mobile device management system. Through the test by an application program, we have confirmed that our system operates very well each others.

keyword : dataset server CE, database server, mobile device, web service, remote connection.

요 약

본 논문은 모바일 장치에 의한 데이터베이스 관리 시스템에 관해 기술한다. 본 시스템은 모바일 장치를 사용해서 언제 어디서든지 즉시 원격으로 데이터베이스를 관리 가능하다. 이를 위해 모바일 디바이스와 인터페이스 가능한 dataset server CE와 모바일 장치에서 운용 가능한 데이터베이스 관리 시스템 및 모바일 장치를 데스크톱 컴퓨터와 연결 시켜주는 웹 서비스 프로그램을 개발했다. 외부의 모바일 장치는 웹 서비스 기능과 무선으로 연결한다. 개발한 시스템은 dataset server CE 클라이언트 엔진, 웹 서비스 서버 에이전트 및 모바일 관리 시스템을 포함한다. 애플리케이션 프로그램을 이용해서 시스템의 기능을 테스트 했고, 테스트 결과 개발한 시스템이 원래의 목적대로 잘 운용됨을 확인했다.

I. Introduction

The mobile database system is a connectivity and database integration solution for .net compact framework applications. microsoft SQL server 2000 windows CE edition SQL server CE provides a solid foundation for disconnected by wireless device connected, synchronization, data transfer, and replication scenarios. However, while the windows mobile 2003-based mobile device includes the .net compact framework in ROM, SQL server CE is not yet supported. DataSet server CE mimics the behavior of a SQL server CE remote data access class to pull and push data, and in submitting SQL

statements to remote SQL servers. The technical interfaces of the DataSet server CE interfaces are, technically possible, identical to those of SQL server CE 2.0. The underlying data technologies used to accomplish this are ADO.NET DataSet and DataTable objects. The feature set of DataSet server CE is designed to resemble that of SQL server CE as closely as possible, including names of methods, properties, enumerations, and behavior. For small data volume and from a SQL server 2000 perspective, there is no noticeable difference in performance impact between SQL server CE and DataSet server CE, because both have the server execute the same SQL statements. For larger data volumes The performance of DataSet server

CE may suffer.

Additional SQL server connectivity components are involved in this process and are also located on the server computer running IIS, although they are not shown in the preceding illustration. The dataset Server CE including high performance, security, easy programmatic access, and direct database. Use mobile device can set for remote database synchronization and for larger data volumes the performance of DataSet Server CE may suffer.

II. Technical overview

There is amount of data must be managed immediately, but people can not sit beside the computer for 24 hours. The.net framework support the development of mobile device. In my system includes four parts which interact to implant the remote database. By synchronization and local data stored to query what people want to watch data from remote database. Using the web service can receive and send stored data between the mobile client and remote database server with wireless devices.

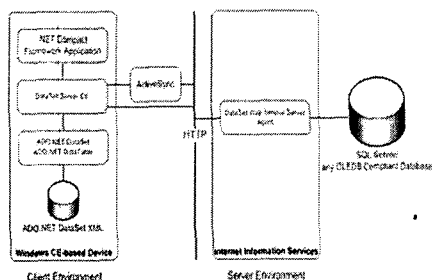


Fig. 1. DataSet Server CE client and server environment

2.1 DataSet server CE client engine

Implements a remote data access with the same interfaces as SQL Server CE. DataSet server CE is the primary part for connectivity on windows CE-based device. It implements the DataSet demote data access which is called DataSet remote data access object and the engine object. By

these objects, application can programatic control connections to SQL Server.

2.2 DataSet web service server agent

Server-side web service that is similar to the SQL server CE server agent. Manages communication with remote databases and implements the synchronization and tracking features. The DataSet web service server agent is a Web service that handles the HTTP requests made by DataSet server CE. When an application makes a request, DataSet server CE sends the request to the DataSet webs service server agent through HTTP. The DataSet web service server agent connects to SQL server and returns the resulting record set to the DataSet server CE through HTTP. Additional SQL server connectivity components are involved in this process and are also located on the server computer running IIS, although they are not shown in the preceding illustration. The DataSet web service server agent is handled by IIS and the ASP engine.

2.3 Support connectivity solutions

Dataset server CE system works with the following network connectivity mechanisms as long as they are configured to support HTTP, ethernet, wireless LANs and wireless WANs. By using .Microsoft active synchronization and mobile device connected using serial, infrared, or USB, you can directly access SQL server through the network connection of the desktop computer. Mobile device client is a windows mobile device client that uses the DataSet server CE client to execute pull, push, and submit SQL statement. DataSet server CE provides a comprehensive as well as extensible feature set for remote database synchronization. The following figure shows the structure of mobile database factual system, and shows us what we can implant the system in fact life and application.

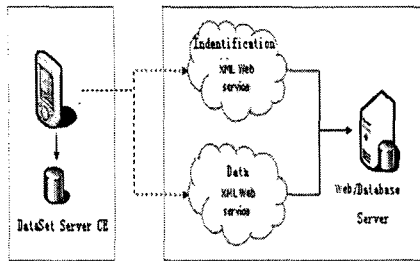


Fig. 2. Actual infrastructure systems

III. Application and result

The mobile database system can be used to industrial production. the following figure lists a measurement system, when measurement machines use laser sensor and camera to scan data that needed to be stored in remote database. Database can not capture data automatically, so we must use the mobile database to help remote database server to capture data. The mobile database system not only can receive the data from wired device but also can send the data to remote server. we can use the mobile device which running dataset server CE and DBMS programming as a data browser device to watch the exchange of database data.

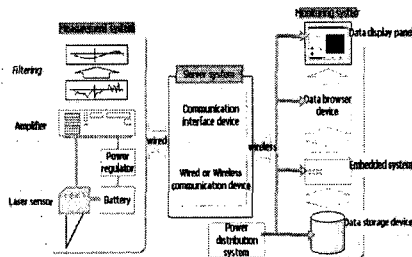


Fig 3. Embedded mobile database system

The roller's data is stored in desktop database and analyses system select it from database. We can watch the data's exchange in time. We have set some parameter to test the roller's data. Through the system we can obtain much data which is used to control industrial production.

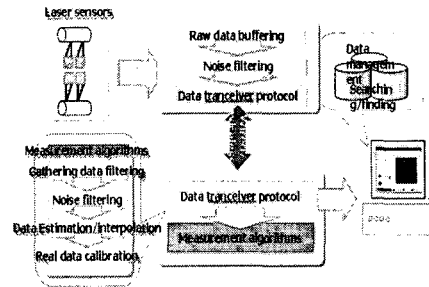


Fig. 4. Mobile database analyses system

Figure 4 shows Laser sensors and cameras scan the roller data then send the data to wireless device. the mobile device can receive and send the roller data it. There are two way in here can receive the roller data. The other way is what data is sent to database for anglicizing it. The mobile device according to data's change to adjust the laser and sensors.

IV. Conclusions

Before, database server can be used in desktop PC, but now it has been extended to mobile device. Network connection by wireless device and home page will be used. Use the mobile device beside mobile windows system and the dataset server CE to control remote database based desktop pc. Watching data's change immediately.

In this paper, we implemented the mobile database management component for small and embedded devices. We discussed the overall architecture of this component, in which comprises several compassable modules that we are implementing specific functions like pull, push and tracking.

In addition, currently, we are working on a query engine following a similar approach of customization. In future work, we plan to study techniques for the configuration and customization by allowing developers to specify requirements as well as dependencies and using these information for generating the final system.

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