

Portability-An XML Based Extension to Existing Database

Shipra¹, Bharti Pahwa², Anjali Sardana³, Mahesh Chauhan⁴

^{1,2,4}AITM Laboratory, Palwal, Haryana (India)

¹shiprachawla05@gmail.com, ²bharti2440@gmail.com, ⁴maresh100nucs@gmail.com

³IMSEC, Gaziabad, U.P. (India)

³anju.sardana@gmail.com

Abstract

Portability is a measure of the ease with which software can be moved to different computing platforms. Software with a high degree of portability is valuable because it reaches more users. Commercial developers expend a considerable effort to make software that can run on multiple platforms. Scientific programmers have the same motivation to make their software portable, but their requirements differ in some respects from those of commercial software. Scientists have a unique need for collaboration and the independent replication of results at geographically diverse sites. Scientific algorithms tend to be expensive computationally, so scientific developers are more likely to use parallel computing. The fast pace of evolution for High-Performance Computing (HPC) systems affects scientific organizations inordinately, causing diversity in their computing platforms.

Keywords: Portability; XML; Utility; Archiving; Database Management System.

1. Introduction

Portability means the ability of a computer program to be ported from one system to another in computer science.

Software portability is the portability of a piece of software to multiple platforms. In telephone number portability (disambiguation) keeping one telephone number while switching one's account to another telephony provider. Portability in high-level computer programming is the usability of the same software in different environments. The prerequisite for portability is the generalized abstraction between the application logic and system interfaces. When software with the same

functionality is produced for several computing platforms, portability is the key issue for development cost reduction. Portability is a characteristic attributed to a computer program if it can be used in operating systems other than the one in which it was created without requiring major rework. Porting is the task of doing any work necessary to make the computer program run in the new environment.

NEED OF PORTABILITY

Existing techniques are not so well developed. Techniques are not easy to use, and these are not user centric. With existing techniques, information is easy to access at any time so user can create replicate copies that leads to various security problem. Replication can create data inconsistency, integrity problem. Only skillable people can work with existing technique so we can say that these techniques are user centric. It is not possible to carry the database all the time and we are almost all the time available at our seat. Extracting the data: It is not possible to extract all the data/schema for single user. Even it is not possible to search all the files in the database. It is not possible for every user to make them available all the time at a particular place. It is not possible to carry the database. It is not possible to restore data/schema when moving from one system to another system. Restoration is very difficult.

2. Related work

An extensive review was carried out in order to understand the intricacies of the techniques which we wish to use. The following section gives a brief overview of the techniques studied.

According to Teijo Peltoniemi, [1], In organizations the conversion from a large database would require manual entry by having a hard copy of the source database. This may lead to typographic errors and there by the database becomes malicious. Also, lot of time and effort are involved over here. In addition they would also have to pay the software vendors for the conversion process. In case of mission critical concerns they would not wish others to go through their database. If they have this software they can carry out the conversion process on their own without the help of a third party's intervention. This project's main goal was to draw up a roadmap for Sybase to Oracle migration within the Fenix system. Additional goals included analysing deficiencies in the current system, giving advice about the feasibility of such a project and review migration in practice. In order to achieve these aims I have covered topics on migration process, analysed the current architecture and development practices, compared Sybase and Oracle and reviewed the migration through discussing designated tools and carrying out a test project.

According to David A. Himes [2], Users want the freedom to choose the best solutions to exchange data between different computer systems. This means that users must be able to build portable applications that can run with a variety of RDBMSs. It would appear that portability problems are solved by the widespread use of SQL Access provides two options: one based on ISO OS1 protocols and RDA, and the other based on TCP/IP.

According to Elisa Bertino [3], XML is becoming a standard for data communication over the Internet. Like HTML, it is a markup language, but it supports a richer set of features, XML is easy to read and understand, there is no fixed set of tags. New tags can be created as they are needed. XML documents can be stored without [schemas] because they contain meta data, contain machine readable context information, separate content from presentation, can embed multiple datatype, XML documents can

consist of nested elements that are distributed over multiple remote servers such as userdefined tags .

According to Shinde Anita Vitthal [4], When a company starts, it usually starts as a Small- Scale industry. But gradually as the company expands its database has to expand too. Thus they have to switch to more efficient databases. A "Database Migrator" is usually developed for individuals and organizations to save time for converting to a new database if a database already exists. Instead of creating all the tables etc. of the already existing database, one can simply use the software to convert it into new database, if required. It can also be used by organizations that deal with complex data import, export and migration issues. After all, importing, exporting or migrating data between different sources is very complicated and time consuming, especially if these data sources store data in different formats. This is where a database migratory comes handy. The existing migrating tools available in the market are Oracle migration workbench.

Security: The application is such that it segregates the authorized as well as unauthorized users.

Time efficient: Migrating every record manually would take quite a lot of time but using a migration tool would take the application few seconds to migrate from the specified source to the specified destination. Flexible: The inherent nature of this application is flexible. The initial concept of data migration that we have implemented on typical case of Access to Sql can be further extended to any source database and to any destination database.

Interactive: The highly interactive nature of this application ensures that minimum special training is required to handle it .

Visually Attractive: Interactive systems designed using Visual Studio makes the system visually attractive.

3. Background

Backup and restore system

Once your system is in use, your next consideration should be to back up the file systems, directories, and files. If you back up your file systems, you can restore files or file systems in the event of a hard disk crash. There are different methods for backing up information. Backing up file systems, directories, and

files represents a significant investment of time and effort. At the same time, all computer files are potentially easy to change or erase, either intentionally or by accident.

Attention: When a hard disk crashes, the information contained on that disk is destroyed. The only way to recover the destroyed data is to retrieve the information from your backup copy. If you use a careful and methodical approach to backing up your file systems, you should always be able to restore recent versions of files or file systems with little difficulty.

Several methods exist for backing up information. One of the most frequently used methods is called backup by name, file name archive, or regular backup. This is a copy of a file system, directory, or file that is kept for file transfer or in case the original data is unintentionally changed or destroyed. This method of backup is done when the *i* flag is specified and is used to make a backup copy of individual files and directories. It is a method commonly used by individual users to back up their accounts.

Another frequently used method is called backup by *i*-node, file system archive, or archive backup. This method of backup is done when the *i* flag is not specified. This is used for future reference, historical purposes, or for recovery if the original data is damaged or lost. It is used to make a backup copy of an entire file system and is the method commonly used by system administrators to back up large groups of files, such as all of the user accounts in */home*. A file system backup allows incremental backups to be performed easily. An incremental backup backs up all files that have been modified since a specified previous backup.

The *compress* and *pack* commands enable you to compress files for storage, and the *uncompress* and *unpack* commands unpack the files once they have been restored. The process of packing and unpacking files takes time, but once packed, the data uses less space on the backup medium

Third party tools

Only Professional can use these tools. These tools are paid. Need a proper knowledge to use third party tools. These tools are not so easy. These tools having unnecessary features that user does not want.

Our purpose is to develop a utility that is easy to use for every type of user.

4. Purposed Technique

The section proposes a new framework which clubs together the best of worlds, Utility extract data/schema from database and convert it in to a portable file. This portable file should have XML based. This file is not readable, having its compressed and encoded format. At the destination point utility convert this portable file in to original data/schema. so we should have this utility at all the points where we want to mobile our data/schema. This utility can work with multiple database like Mssql, Mysql, Oracle. At the point where we need this file should have utility. This utility does not need any new hardware and software. It makes our task easy now it is not necessary to be available all the time at a particular place. Utility is providing security at both the side having compressed and XML based file.

It should operate with multiple database. The utility approach extract data/schema. It should generate portable file. Support multiple user Low memory and Hardware needs.

Export to archive

Step1: Connect to database.

Step2: As connection generated, list of all the tables – ask user to select tables to copy

Step3: For all selected tables, generate meta information, column list properties and keys

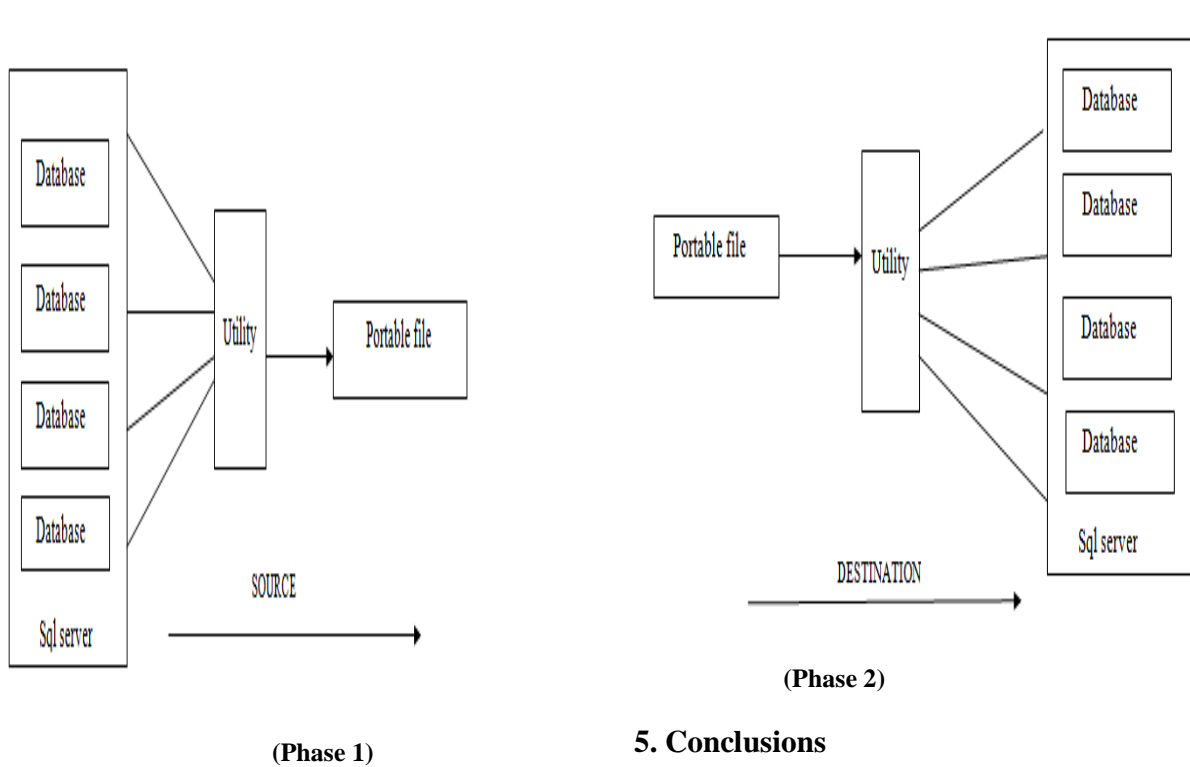
Step4: For all selected tables, retrieve all data rows and column into XML files.

Step5: List all procedures-ask user to select procedures.

Step6: For all selected procedures, retrieve procedure structure and dump into XML files

Step7: Archive all XML files into single compressed files, password protect it using value given by user.

Step8: Save archive to user selected location. clear all temporary files and memory dumps.



Import from Archive

Step1: Read archive files from disk. User is prompted to browse for files. Prompt user for database connection.

Step2: Ask user for password.Using password read archive file.

Step3: List all tables and procedures present in file.

Step4: Generate/Create a database using information in files and create all selected tables and procedures.

Step5: Using data dump files, copy or restore data rows in to destination database tables.

Step6: Discard temporary files and memory.

5. Conclusions

A number of conclusions can be drawn from understanding Portability-An XML based extension to existing database and from looking at some of the defensive measures that are being researched or implemented. Portability is method to make the database tables and procedure portable,so that we could save our time and no need to be redone things. It is a quiet advanced method that we have implemented. It is basically a utility approach used on homogenous platform sql server.

The project presents a utility approach to make the table and procedure portable. It extract the database and convert into portable file that will basically an xml based file. By the other side utility convert XML based file in to database files.it is very easy for every user to run.it does not contain unnecessary feature that a unprofessional user could not understand.There is no need of extra training.

References

- [1] Teijo Peltoniemi, Enterprises database architecture migration, School of Informatics, University of Edingburgh
- [2] David A. Himes Database Interoperability and Portability Through Standards, January 1993 ,IEEE INTERNET COMPUTING
- [3] Elisa Bertino ,Barbara Catania, Integrated xml and databases, JULY • AUGUST 2001 ,IEEE IEEE INTERNET COMPUTING
- [4] Shinde Anita Vitthal, Thite Vaishali Baban, Roshni Warade, Krupali Chaudhari. Data Migration System in Heterogeneous Database, International Journal of Engineering Science and Innovative Technology (IJESIT) , March 2013
- [5] Wilfred Ng Lam Wai Yeung James Cheng, Department of Computer Science, The Hong Kong University of Science and Technology, Comparative Analysis of XML Compression Technologies, Hong Kong
- [6] E. Anderson, J. Hall, J. Hartline, M. Hobbes, A. Karlin, J. Saia, R. Swaminathan, and J. Wilkes, “An experimental study of data migration algorithms,” in Workshop on Algorithm Engineering, 2001.
- [7] L. Golubchik, S. Khuller, Y. Kim, S. Shargorodskaya, and Y. J. Wan, “Data migration on parallel disks,” in 12th Annual European Symposium on Algorithms (ESA), 2004.
- [8] J. Hall, J. Hartline, A. Karlin, J. Saia, and J. Wilkes, “On algorithms for efficient data migration,” in SODA, 2001, pp. 620–629
- [9] A. Arion, A. Bonifati, G. Costa, S. D'Aguzzo, I. Manolescu, and A. Pugliese. Efficient Query Evaluation over Compressed XML Data. Proceedings of EDBT (2004).
- [10] A. Arion, A. Bonifati, G. Costa, S. D'Aguzzo, I. Manolescu, and A. Pugliese. XQueC: Pushing Queries to Compressed XML Data. Proceedings of the 29th International Conference on Very Large Data Bases (VLDB'03), (2003).