WMIC Realize Enterprise Remote Information Management

Hui Peng
Computer Intelligence and Intelligent Engineering
Guangxi Vocational & Technical Institute of Industry
Nanning, Guangxi Province, China
ph2910116@sina.com

Yao Wang
Computer Intelligence and Intelligent Engineering
Guangdong University of Technology
Guangzhou, Guangdong, China
huananwangyao@163.com

***Abstract* - By network to realize remote management, not only can system administrators solve the problems in their own desktop without go to the fault site, but also can take measures to protect enterprise data resources immediately. For the above reasons , developing a software with its own characteristics, more powerful function, shielding the underlying heterogeneous systems ,which can be applied to remote information management business ,has important practical significance .At first, this paper proposed WMIC technology and WMIC had the powerful strength. Through Combined with the actual project design, implementation technology of WMIC -based on the enterprise remote information management framework [1]. The framework provides an innovative solutions, it is has been practiced successfully in enterprise remote management. At the last, to present data which come from different objects managed together, the results of WMIC will be outputted in HTML format By JSP technology.**

Index Terms* - *Component;WMI;WMIC;JSP;Information Management

I. INTRODUCTION

In the times of information technology developing rapidly. The application of new technology will be further promote information technology development. In such an environment, in order to solve the system management problems rapidly and effectively, ensure their availability, computer system managers have to cope with all kinds of tools. Meanwhile, with the expansion of network scale, managers can not complete these tasks personally .consequently, improving the network environment of remote management system is a very economy solution . However, in the process of network management, how to find a more reasonable and feasible methods to improve the efficiency of system, the best solution is follow as: a unified management ; reading more remote data for further studying; controlling and using of network resources from the overall . Computer system resource management strategy is just seen as manage the changing resources. For example, the hardware configuration and management ,options and strategies for the operating system. Thus it need to develop a unified strategy to implementation and management.

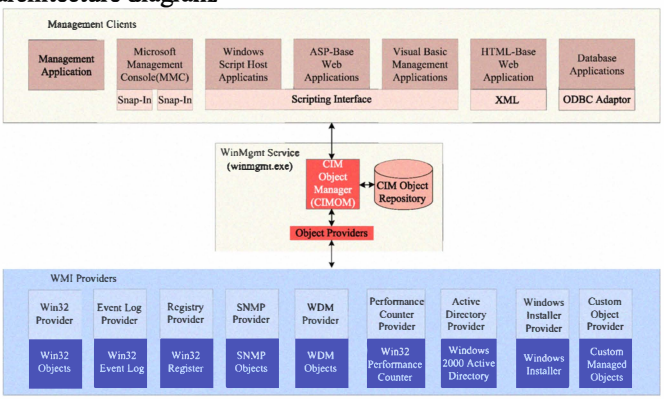
Although many large companies have developed their own computer resource management software, but self-development software had a heavy workload and will exist great security risks. Therwfore, most of the remote management system is provided by the Windows-based component development, more common is based on Simple Network Management Protocol (SNMP) developed the technology, but WMIC has a very powerful function and merits of more small workload. For these reasons, the paper will build a uniform standard of resource management and monitoring programs through WMIC services ,including manage computer systems resources , user resources and some necessary alarming mechanisms.

II. THE RELATED TECHNOLOGIES OF REMOTING INFORMATION MANAGEMENT

A WMI Technology

Windows Management Instrumentation (WMI)[1] is the Microsoft implementation of Web-based Enterprise Management (WBEM), which is an industry initiative to develop a standard technology for accessing management information in an enterprise environment. WMI uses the Common Information Model (CIM) [2] industry standard to represent systems, applications, networks, devices, and other managed components .

CIM is a standard, unified, object-oriented framework for describing physical and logical objects in a managed environment. To provide a common framework, CIM defines a series of objects with respect to a basic set of classes, classifications, and associations. To understand the components of the WMI architecture, shown in Figure 1, it helps to analyze the creation of an implementation of the WBEM standards. WMI consists of several parts: provider, CIM repository, management applications, CIM object manager, principal among the various components through COM / DCOM communication . Fig 1 is expressed by WMI architecture diagram.



978-1-4244-7968-9/10/$26.00 ©2010 IEEE

Figure 1. WMI work diagram

B. *WMIC Principle*

You can access instances of Speech Server WMI classes using the Windows Management Instrumentation command-line (WMIC)[3], a Windows utility that can be run in interactive or non-interactive modes. In interactive mode, you start WMIC at the command prompt and then enter commands. In non-interactive mode, you run the WMIC command with all necessary switches and values from the command prompt. When WMIC execution is complete, it returns you to the command prompt. Either way, WMIC provides a quick way to query WMI objects, set properties, and execute methods without scripting. WMIC have the following advantages[4]:

1) Browse WMI plans, check their class and instance, often use the "alias" or "friendly name", which seems to make WMI more intuitive.

2) Only one command to the local computer, remote computer or computers to work together.

3) Custom aliases and output formats to meet your needs.

4) Create and execute a script based on WMIC (batch file)

Fig 2 is show the relationship between WMIC and Windows Resources.

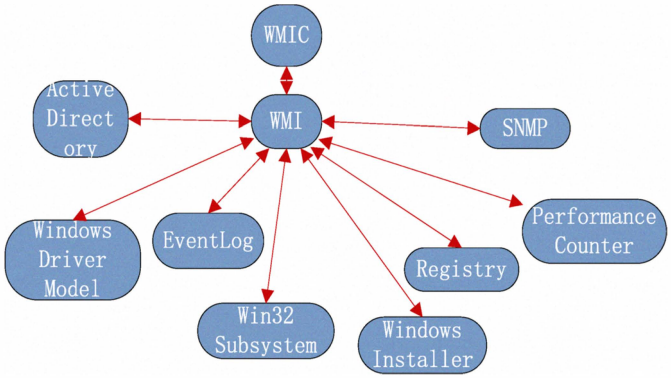


Figure 2. the relationship between WMIC and Windows Resources

C. *JSP Strength*

JavaServer Pages (JSP) technology enables Web developers and designers to rapidly develop and easily maintain, information-rich, dynamic Web pages that leverage existing business systems. As part of the Java technology family, JSP technology enables rapid development of Web-based applications that are platform independent. JSP technology separates the user interface from content generation, enabling designers to change the overall page layout without altering the underlying dynamic content. JavaServer Pages (JSP) is an established and popular technology for building dynamic web applications that can access databases and provide an interactive experience for your website's users.

If you are a Web page developer or designer who is familiar with HTML, you can:

1) Use JSP technology without having to learn the Java language: You can use JSP technology without learning how to write Java scriplets. Although scriptlets are no longer required to generate dynamic content, they are still supported to provide backward compatibility.

2) Extend the JSP language: Java tag library developers and designers can extend the JSP language with "simple tag handlers," which utilize a new, much simpler and cleaner, tag extension API. This spurs the growing number of pluggable, reusable tag libraries available, which in turn reduces the amount of code needed to write powerful Web applications.

Easily write and maintain pages: The JavaServer Pages Standard Tag Library (JSTL) expression language is now integrated into JSP technology and has been upgraded to support functions. The expression language can now be used instead of scriptlet expressions.

III. SYSTEM DESIGN AND IMPLEMENTATION OF ENTERPRISE INFORMATION MANAGEMENT

A. *Design principles*

These principles [5] have been taken into consideration in the preparation of the design: support for remote computer monitoring and control of resources, but mainly for reading the remote data timely; multiple heterogeneous operating systems server can be managed from a single platform; reading system data as comprehensive as possible; to provide a graphical interface, which can present much data come from different object at the same time; high availability of controlling systems; easy to use, easy to expand; general is the low-cost, high-performance information management system software design.

B. *Realization of remote management function*

The remote CPU are able to be operated in the same way as local machine, remote system availability and performance; Monitoring and Performance Statistics, such as: memory utilization, disk free space, the process of implementation, CPU utilization; monitor both file and registry changes caused by software installations; These results which monitor a lot of objects will be outputted to web-based graphic interface at the same time by JSP technology.

IV. WMIC AND JSP SPECIFIC IMPLEMENTATION

WMIC and JSP-based enterprise remote information management principle[6] is that by the client/server approach to achieve. Through Combined with the actual project design, implementation technology of WMIC -based on the enterprise remote information management primary framework .Figure 3 represent the enterprise remote information management primary framework.

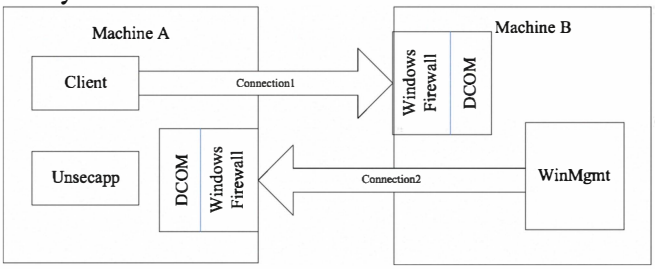


Figure 3. Enterprise remote information management primary framework

A. *Present The Data*

You can see that the combination of JAVA and WMIC to get information from a remote system is relatively simple and easy to implement[7]. Now, we take an example to illustrate the realization ideas, The following procedure is to read the parameter of cpu , baseboard , memlogical , computersystem and present them together at the same time.

```
Properties execCmd(String alias){
Properties result = new Properties();
String cmd = "wmic /node:192.168.26.55/user:administrator/password:pd85574999 " + alias + " get /format:textvaluelist.xsl";
//Connect the remote machine and get the data of object
   try {
     Process p = Runtime.getRuntime().exec(cmd);
p.getOutputStream().close();
// you must shut up the stream for further get data
InputStreamReader reader = new InputStreamReader(p.getInputStream(), "gbk");
        result.load(reader);
        reader.close();
          } catch (IOException e) {
             e.printStackTrace();
           }
           return result;
     }
```

Call the method ,realize the function of system easily by reconstructing of the code

```
Properties cpu = execCmd("cpu");
//read the data of cpu
String cpuName = cpu.getProperty("Name");
String cpuDescription= cpu.getProperty ("Description");
Properties baseboard=execCmd("baseboard");
// read the data of baseboard
String baseboardDescription = baseboard.getProperty("Description");
String baseboardName =baseboard. getProperty("Name");
Properties memory = execCmd("memlogical");
// read the data of memlogical
String memoryName=memory. getProperty("Name");
String memoryDescription = memory. getProperty("Description");
Properties diskdrive=execCmd("diskdrive");
String diskdriveName = diskdrive. getProperty("Name");
String diskdriveDescription= diskdrive.getProperty("Description");
Properties computersystem = execCmd("computersystem");
// read the data of computersystem
String computersystemName = computersystem.getProperty("Name");
String computersystemDescription= computersystem.getProperty("Description");
```

The results of monitoring can be presented together at the same time in Fig 4

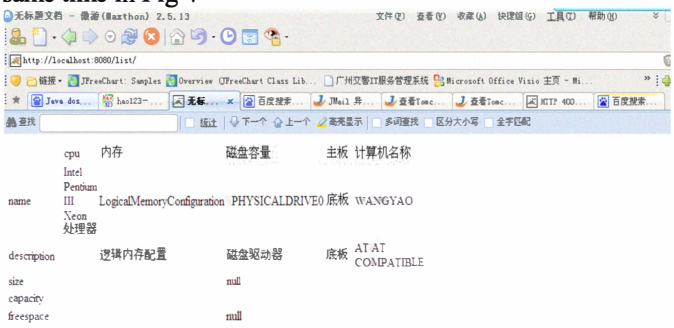


Fig 4 The results of monitoring can be presented together at the same time

V. CONCLUDING

A method based on concept of WMIC is proposed in this paper to resolve the problem faced by the big companies on the remote information management, while the methods lack in valid management plan nowadays. As the WMIC command prompt and function powerful, so useing WMIC and the JSP can make programming easier, which helps you focus more on your application and a variety of technical tuning methods instead of programming, reducing development costs while enhancing the efficiency[8]. Above all, it is a very useful manipulation try and economic instrument for enterprise to remote information management through these norms.

So far, this technology has been applied to a business office resources management system. This solution has made outstanding contributions to enhance the overall management including reasonable using resources, increasing the remote machine response rate, ensuring the quality of services. This system is easy, secure and reliable, so it is possible to be applied to various of offices resources management system.

REFERENCES

[1] A. Boshier , "Windows Management Instrumentation: A Simple, Powerful Tool for Scripting Windows Management" [J] , *MSDN Magazine* , 2000-04

[2] Distributed Management Task Force, Common Information Model (CIM) Infrastructure [S/OL]. 2008-06-12

[3] Windows weapon-WMIC use [J], *Hacker X Files* ,2009

[4] Zhu Qisheng, "I' m ugly but I am strong!--WMIC, the new super-command-line tool" [N] *Windows & .Net Magazine* ,2000-04

[5] Tang Zhong, He Huimin, Su Feiji, "WMI technologies in network management software, server design and implementation" [J] *Guilin University of Electronic Technology* ,2008-12

[6] http://msdn.microsoft.com/en-us/default.aspx

[7] Fan send rain, Xiong Guixi, "based on WMI + .Net Remoting Computer Management System Design and Implementation" [J] *Research Design Results* ,2007-03

[8] J. Cooperstein, "Windows Management Instrumentation: Administering Windows and Applications Across Your Enterprise" [J] , *MSDN Magazine* ,2000-05